

# 24. Limits to Growth ... Again<sup>1</sup>

Jeff Bennett

The numerous definitions of sustainability that appear in the economics, ecology and policy literature all focus on the key societal goal of self-preservation. No society wants to see itself reduced in stature with the passage of time just as most of the individuals who comprise society want to see their descendants enjoy a quality of life that is at least as good as their own.

The constant and apparently accelerating rate of change in the factors that determine the wellbeing of society make the goal of sustainability increasingly 'top-of-mind' for individuals and society's decision makers. For example, concerns that we are 'running out' of scarce natural resources are exacerbated when people see the world's population exceeding seven billion along with increasing standards of living (and hence rates of resource use) in populous countries like China and India. The fear is that future generations will not be able to access the bounty of natural resources that has made their parents well off.

As well as this 'economic' element of the sustainability concern, there is the environmental dimension. The fast pace of changing circumstances is feared to involve increasing environmental degradation. This takes the form of more pollution (the 'brown' side) as well as less biodiversity (the 'green' side). So one of the natural resources feared to be in increasingly short supply into the future is 'the environment'.

The third part of the sustainability trifecta (or 'triple bottom line') is broadly defined as the social dimension. Concern is expressed for the integrity of social systems as communities fracture under the pressures of fast-paced change. For instance, greater employment mobility within the population makes it increasingly difficult to establish stable social networks. This, in turn, is feared to have negative consequences for communities facing more change in that people's resilience to change is diminished.<sup>2</sup>

All of these concerns orbit around the issue of society's ability to adapt to change. With the growth of information technology and burgeoning population levels, the current pace of change certainly appears faster than anything ever experienced by humanity; the concerns summarised by the term 'sustainability' are not new.

---

1 Paper presented at 'Economic Growth and Wellbeing: A symposium in honour of Ian Castles AO'. Much of this paper is drawn from material assembled in Bennett, J (2012).

2 This contentious hypothesis (given the increased social 'connectivity' provided by lower costs of transport and electronic communication) is proposed by Albrecht (2010).

Thomas Malthus conceived of the concept if not the terminology in 1798 in his 'An essay on the principle of population'. Malthus forecast an unsustainable world in which poverty and starvation would prevail. The dire prediction was based on a comparison between the perceived rate of growth of population (a geometrical progression) and the rate of growth of food production that was deemed possible at that time (an arithmetic progression). The same theme was picked up by Meadows, et al (1972) in their 'Club of Rome' sponsored analysis of resource use rates and known resource stocks entitled *The Limits to Growth*. Numerous non-renewable natural resources were shown in the analysis to have stocks that would be exhausted by current use rates within two to three decades. Furthermore the 'peak' phenomena (Peak Oil, Peak Phosphate, etc) is an expression of sustainability fears: For example, hitting 'peak oil' means that the rate of extraction begins to fall over time as the available reserves are no longer sufficient to maintain production. The implication is that we are 'running out' and the next generations will no longer be able to enjoy the largess of readily available oil.

All of these analyses focus on the changing circumstances faced by humanity and the potential for those changes to make people worse off. The analogy is to the boxer standing still with gloves lowered as his opponent winds up a big right hook. In the reality of the ring, the boxer ducks and weaves not only to avoid the right hook but also to ready himself to deliver a left jab. So too for society: with change underway and more forecast, societies set up mechanisms to adjust and adapt. In doing so, people work to avoid the negative consequences of changes and to take advantage of opportunities to make themselves better off that are presented by change.

A primary adaptive mechanism that society has evolved over time is the market. Competitive trading in well-defined and well-defended property rights to resources between self-interested individuals and entities has been consistently demonstrated to offer the capacity to deliver improved societal wellbeing, particularly when changing circumstances prevail. The process of arbitrage and its consequential wealth creation capacity has ensured, for example, that the dire predictions of the Club of Rome have not eventuated over the past 40 years. Where increasing relative scarcity of a resource has emerged, the increasing price generated by market exchange has signaled to people that they should economise on their use of that resource and search for alternatives. Producers of the resource have also responded by investing in more exploration or technological developments to increase the efficiency of resource extraction. Similarly, the higher price encourages entrepreneurs to develop substitutes. Markets thus facilitate the process of adaptation to change with prices performing the role of 'signaling' emerging patterns of resource relative scarcity and abundance.

With these market-driven adaptation processes in place, resource exhaustion – epitomised by ‘peak oil’ – continues to be postponed. The number of years of crude oil supplies that are available given current rates of use has stayed stubbornly at around 42 for a number of decades. Alternative energy sources ranging from natural gas through to photovoltaic cells have become increasingly competitive and consistent improvements in oil use efficiency have been achieved. Most significantly, oil exploration has pushed geographical boundaries so that new fields have been discovered as old oil fields go out of production. Technological advances in energy supply – including the development of ‘fracking’ for natural gas extraction – have effectively matched expansions in demand.

Of specific importance in refuting the Malthusian concerns regarding the potential starvation of humanity as population growth outstripped food production has been agricultural adaptation. Agricultural productivity has increased dramatically over time with major technological advances in crop and livestock breeding, insect and weed control, mechanisation and irrigation. Markets have, by and large, provided efficient signals to farmers as well as the suppliers of farm inputs that have facilitated this productivity response.

But it is not only the decentralised market mechanism that reacts to change. Collective decision making processes also adapt. Most notably, governments have instituted policies that have been directed toward increasing agricultural productivity through research and development,<sup>3</sup> lessening the pollution loads imposed on open access resources such as air and water and increasing the supply of environmental public goods such as biodiversity. These policies have been introduced in response to political demands from the citizenry. In well-functioning democratic societies, governments that ignore calls for change in response to declining environmental conditions (such as pollution and species extinction) face electoral retribution.

Even Malthus saw that doom was not inevitable. His prescient analysis called for the protection of the rule of law, the education of the citizenry, democracy and a free press as the key foundations of a society that is able to respond and adapt to change. And those foundations underpin both the effectiveness of the market and the capacity of governments to achieve this adaptation. Without the rule of law, markets are unable to operate. Without a well-informed community of voters in a democracy, who are alerted to contexts and government actions (or lack there-of) by an independent press, welfare improving collective adaptation through government policy is also unlikely to be delivered.

The process of adaptation to change, and the generation of gains in social welfare through change are reflected in the concept of the Environmental Kuznets Curve

---

<sup>3</sup> See Alston and Pardey (1996) for a rationale for government involvement in agricultural R&D.

(EKC).<sup>4</sup> The underpinning notion of the EKC is that as economic development proceeds and financial wealth grows, the condition of the environment initially declines but eventually improves. In turn, this relationship between wealth and environmental condition is determined by both demand and supply responses. The (eventual) improvement in the condition of the environment comes about because increased wealth is associated with greater education and hence increased demand for improved environmental conditions. And as wealth increases, the capacity of societies to meet that demand is enhanced. Technologies are developed to lessen environmental damage. Society can afford to set aside resources from the development process for dedication to the supply of biodiversity reserves.

But the EKC processes should not be seen as automatically ensuring that environmental protection and improvement flows from the development of increased wealth. The important link between the two (wealth and the environment) that must be present is an institutional framework that facilitates adaptation. Institutions are the rules of social coordination and can be internal or external.<sup>5</sup>

Internal institutions, such as honesty, punctuality and trust, come from within a society and are developed in an evolutionary manner through time. External institutions, such as codified law, are imposed on society by organisations such as parliament and the courts that originate from within society but which are external to it.

Markets are formed as a result of complex mixtures of internal and external institutions. People trade with each other on the basis of trust and honesty but do so within a regime of property law established and enforced by exogenous organisations. Markets however, can largely be characterised as decentralised instruments of social coordination. In contrast, government policies emerge as exogenous institutions but sit within a context of the endogenous institutions of each society. They therefore are centralised collective instruments.

Market adaptation and policy adaptation to change are fundamentally different but both represent mechanisms whereby the links between increased wealth and environmental improvements can be achieved.

Markets are driven by individual self-interest and their decentralised nature enables fast response to change that is tailored to individual circumstances. Individuals choose to adapt only if it is in their best interests to do so. But through the competitive exchange process whereby both buyer and seller are made better off, reallocations of resources are achieved that are societally beneficial

---

4 See Yandle, Vijayaraghavan and Bhattarai M (2000).

5 See Kasper, Streit and Boettke (2012).

as well as in the best interests of the individual. Adaptation through markets is therefore fast, efficient and responsive to the preferences of individuals and involves low transaction costs.

In contrast, the collective response is likely to be slow and broad-brushed. It is also likely to come with far higher transaction costs, given the expense of both forming policy and enforcing it as well as the costs of those who are affected by it.

The incentives for policy reform are also more complex. Politicians may respond to voters' demands for change but the political process runs the risk of capture by vested interest groups. By promising to deliver votes in marginal electorates that are critical for political success, an interest group may be able to secure a policy shift that generates returns for itself at the expense of the wider community. If that expense can be spread sufficiently thinly so as not to be 'vote changing', the policy shift can be very attractive to the politician despite its net negative impact on society. Such are the risks where collective action is imposed on the individual. In particular, there are risks that vested interests collude with those genuinely seeking environmental improvement. The analogy is to the prohibition era when the 'baptists' sought to improve social conditions by having alcohol banned and the 'bootleggers' provided support for the cause in order to improve their financial positions.<sup>6</sup>

Yet the collective, external institution route to adaptation may be important in the development of the EKC link between wealth and environmental improvement because the public good characteristics of the environmental goods and services may cause the transaction costs of markets to rise to the point where trade will not take place. The critical aspect of the policy response in that case is to ensure that a 'brake' is in place to stop the actions of rent-seekers from hi-jacking the adaptive process. Put simply, policy initiatives must be safeguarded against the vested interest groups. Admittedly, this slows the collective adaptation process down even further but it would ensure that only welfare improving policies are introduced.

The policy vetting process should involve the use of benefit cost analysis, applied by politically independent analysts. The fundamental process that underpinned the Regulatory Impact Statement (RIS) requirement for new legislation in both federal and state jurisdictions is consistent with this approach.<sup>7</sup> With the results of such analyses transparently available to the press and the voting public, politicians need to establish sound (alternative) logic to argue for the introduction of policies that are not – according to benefit cost analysis – in

---

<sup>6</sup> See Yandle (1983).

<sup>7</sup> <http://www.finance.gov.au/obpr/ris/gov-ris.html>.

society's best interest. Making sure that institutions such as the RIS requirement are in place, and once in place are not diluted to the point where their impact is neutered, is a matter of consistent political vigilance.<sup>8</sup>

Without that vigilance, the prospect is that policy becomes a 'limit to growth' and thus a circumvention of the EKC link between wealth and environmental improvement. For instance, policies that install subsidies on 'green' production or place restrictions on 'brown' competitors diminish competitive pressures. Instead of adaptation taking place, the lack of competition can cause complacency. Cost padding is another potential factor that detracts from the wealth creating process. The process of 'picking green winners' in the policy process can shift the incentive away from adaptation to changing external conditions to one that involves more lobbying for further protection. In this sense, policy acts as a limit to both growth and achieving a more sustainable society.<sup>9</sup>

The policy response to the issue of climate change illustrates these prospects. Concerns regarding the impacts of anthropogenic greenhouse gas (GHG) emissions on the state of the world's climate have given rise to national and international policy measures. The lack of well-defined and well-defended property rights to the use of the atmosphere for the disposal of GHG emissions has provided a conceptual foundation for the introduction of these policies: without those rights, markets will not form to ensure efficient use of the atmosphere as a waste disposal site. Over use is predicted by conventional economic analysis.

The question that remains is whether or not the policies that have been instituted are welfare improving and thus worthwhile contributions to securing the EKC link between wealth and environmental condition.

It is first worth noting that the analyses offered by Stern (2011) and Garnaut (2006) in support of policy measures did not correctly address the welfare impact question. Their logic was that in the absence of any measure to control GHG emissions, the predictions were of climate change consequences that would be very costly to society. In comparison, they argued that the costs of policy action were low. This analysis is incomplete in that it ignores the impact that the policy measure may or may not have on the climate and hence the costs caused by climate change. Put simply, the correct comparison in terms of welfare impacts is between the climate change costs that policy measures will avoid and the costs of implementing the policy. The assumption made by Stern and Garnaut is that the policy measure implemented will be 100 per cent effective in reaching

---

8 Exemption from RIS examination on the grounds of projects being of 'national significance' is an example in Australia of a breakdown of this vigilance.

9 The introduction in Australia of 'renewable energy certificates' to facilitate the achievement of the 20 per cent of energy use being generated from renewable sources by 2020 is an example of such policies: <http://www.energymatters.com.au/carbon-trading/recs/>.

a given atmospheric concentration of greenhouse gases. This is unrealistic both at a national and an international level. Furthermore, both Garnaut and Stern implicitly assume that the costs of climate change fall on countries in a way that would encourage those who are being asked to pay for mitigation to agree to act. In fact the costs do not fall in this way making the reaching of international agreements to mitigate carbon emissions almost impossible.

Given this oversight, it is useful first to consider the benefits and costs of policy measures in place and then to investigate the political economy of the policy development process.

The establishment of a price for carbon dioxide emissions (an example of a 'Pigovian pollution tax') in Australia will certainly be costly to the economy in so far as it will encourage the substitution away from lower cost carbon-based fuel sources and toward more expensive renewable energy. If this were not the case, the point of the tax would be lost.

But what of the benefits – the avoided costs of climate change? There are numerous factors that indicate these benefits will be relatively small if not zero. They range from the small proportional impact an Australian change would make on the world's climatic regime (consistent with difficulties in reaching international agreement on GHG reduction targets) through to the offsetting impacts created by compensatory measures introduced along with the carbon tax legislation to 'ease the pain' of higher energy costs and even to the probability that the climate science predicting catastrophic impacts turns out to be wrong.

The conclusion to be drawn then is that the policies being instituted are not welfare improving. Why then have they been introduced? What coalitions of vested interest groups have been formed to ensure that policies contrary to the general public's best interests have been introduced through the political process?

There are many groups within society that are made better off by climate change policies. These betterments often have nothing to do with avoiding the costs of predicted climate change. No doubt there are the proverbial 'baptists' in society that are genuinely concerned about future climate change consequences and want to use the political process to make others in society who do not share their concerns conform to a pattern of behaviour they advocate. But there are also plenty of proverbial 'bootleggers'. They range from 'carbon accountants' who have a new income creating job estimating the extent of GHG emissions from businesses through to the carbon 'brokers' who start new businesses arranging carbon offset schemes to reduce clients' tax incidences. They are researchers who secure lucrative grants to investigate more and more aspects of the social, environmental and economic impacts of climate change as well as

the manufacturers – and their work force – of (protected, subsidised) renewable energy sources. That is to say nothing of the army of bureaucrats and diplomats at both national and international levels who find themselves in well-paying ‘important’ jobs.

There are also gains to be made by the government from the collection of another source of tax revenue. The funds raised from the tax can be distributed in ways that secure the support of wavering voters be it in the form of direct compensation payments or investments in assets that benefit specific groups of people.

Along the way, these redistributive policies cause impacts on the wealth creation process. They may even have unintended consequences in terms of environmental and social impacts. An example is the US and Brazilian governments’ policies that subsidise the production of bio-fuels as a substitute for petroleum. First, biofuels (ethanol from corn in the US and sugar in Brazil) are more costly to produce than petroleum. If they weren’t, there would be no need for the subsidy payments. Second, the increased demand for corn and sugar has increased their prices and the prices of a wide range of other food stuffs (grains, meat, milk that either compete with the subsidised crops for land and labour or use those crops as inputs). The food price spikes in 2008 and 2011 caused by (amongst other factors such as droughts in the US and Russia) biofuel subsidies sent shock waves around the world.<sup>10</sup> Finally, the subsidies on ethanol have not reduced GHG emissions. The expansion in biofuel crop growing caused increased fuel and fertilizer consumption as well as the clearing of vegetation such that CO<sub>2</sub> emissions increased.<sup>11</sup>

So while such climate change policies are likely to have very little impact on the world’s climate they are already having a decidedly negative impact on the functioning of the world’s economy to generate wealth that in turn has the capacity to allow the smooth adaptation to climate changes that may arise.

Furthermore, it is important to recognise that while these climate change policies are directing scarce resources to the pursuit of a goal that isn’t being achieved, other potential uses for those scarce resources are being neglected. Those alternatives may be improved health for developing country people, increased educational opportunities, more reserves for endangered species, etc. etc. These are the unseen opportunity costs of climate change policies.

---

<sup>10</sup> <http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/>.

<sup>11</sup> See Timilsina, Beghin, Mensbrugge and Mevel (2012).

In conclusion, it is clear that change, and adaptation to change, has been and will be a continuing feature of our society. The caution expressed in this paper is that collective action to assist in the adaptation process needs to be carefully vetted to ensure that policy is not the most pressing limit to growth.

## References

- Albrecht, G (2010). 'Solastalgia and the Creation of New Ways of Living' in *Nature and Culture: Rebuilding Lost Connections*, Earthscan: 217-234.
- Alston JM and Pardey PG (1996). *Making Science Pay: the economics of Agricultural R&D Policy*, The AEI Press, Washington DC.
- Bennett J (2012). *Little Green Lies*, Melbourne: Connor Court Publishing.
- Garnaut R (2011). *The Garnaut Review 2011: Australia in the Global Response to Climate Change*, Cambridge: Cambridge University Press.
- Kasper W, Streit M and Boettke P (2012). *Institutional Economics: Property, competition and policies*, 2nd ed. Cheltenham: Edward Elgar.
- Malthus, T (1798). *An essay on the principle of population*, Oxford World Classics reprint. Meadows D, Meadows G, Randers J and Behrens III W (1972). *The Limits to Growth*. New York: Universe Books.
- Stern N (2006). *Stern Review on the Economics of Climate Change*, London: HM Treasury.
- Timilsina G, Beghin J, van der Mensbrugge D and Mevel S (2012). 'The Impacts of Biofuel Targets on Land-Use Change and Food Supply: A Global CGE Assessment', *Agriculture Economics*, (43): 315-332.
- Yandle B (1983). 'Baptists and Bootleggers: The education of a regulatory economist'. *Regulation* 7(3): 12.
- Yandle B, Vijayaraghavan M and Bhattarai M (2000). *The Environmental Kuznets Curve: A Primer*. Bozeman: The Property and Environment Research Center.