

Compelling case for pre-emptive action and deeper cuts



Peak oil crisis, climate change and food and water insecurity were all predicted to occur in the 1972 book, *Limits to Growth*.

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An Australian scientist has validated an early computer model developed for the 1972 book *Limits to Growth*, which challenged a core assumption of free-market economic theory – that the Earth’s resources can infinitely sustain human prosperity.

CSIRO physicist Dr Graham Turner has also dismissed some prevalent myths about the book, which he thinks may have prevented it being taken more seriously by current-day economists.

Limits to Growth modelled a series of alternative global economic scenarios over a 100-year period, concluding that drastic changes to the late-20th century way of life would be needed to pre-empt the worst predictions. Soon after, the book became a target for criticism from supporters of free-market economics, who erroneously dismissed it as alarmist for predicting global resource catastrophe by the end of the 20th century.

Despite this, *Limits to Growth* became the best-selling environmental book ever, selling more than 30 million

copies in 30 languages.

Dr Turner, who came across the book in the course of developing a model of the Australian economy, was intrigued by ‘why it was so often mentioned but also discredited’. He discovered that the authors’ assumptions about the extent and timing of global resource depletion had been misquoted – for example, that resource limits would occur within a century, not by the end of the 20th century as critics had proposed.

In a paper published in the international journal *Global Environmental Change*, Dr Turner compares forecasts from the book with modelling results using global data from the past 30 years, which he collated from different sources.¹

‘The real-world data basically supports the *Limits to Growth* model. It shows that for the first 30 years of the model, the world has been tracking along the unsustainable trajectory of the book’s business-as-usual scenario.

‘The original modelling predicts that if we continue down that track and do not

substantially reduce our consumption and increase technological progress, the global economy will collapse by the middle of this century.’

Limits to Growth documented the results of a Massachusetts Institute of Technology (MIT) study carried out by researchers commissioned by The Club of Rome to analyse the implications of unchecked economic growth and resource use using a computer model developed at MIT called ‘World3’.

Dr Turner believes the World3 model is still one of the most comprehensive global models available linking the world economy to the environment.

‘This was the first real application of systems dynamics modelling at such an ambitious scale. Systems dynamics modelling takes system complexity – such as feedback loops, resource depletion and recovery, delayed

technology solutions over the past 30 or so years ‘has not led to a sustainable trajectory’.

He believes this may be due to the rebound effect: as many countries have become more productive and energy efficient and fewer workers are required for the same production output, they have spent the cost-savings on stimulating consumption to prevent excessive unemployment.

‘So technological efficiency makes things work better, but we also need the changes in lifestyle to reduce consumption.’

Dr Turner agrees that the 1970s model provides support for government initiatives on emissions trading such as the recently released Treasury modelling report, ‘Australia’s low pollution future: the economics of climate change mitigation’.

The Treasury modelling demonstrated that early action is less costly than later action, that many Australian industries

Dr Turner says our reliance on efficiency improvements and technology solutions over the past 30 or so years ‘has not led to a sustainable trajectory’.

responses to impacts, and flow-on effects – into account.’

Despite the book’s predictions of a global environmental and economic collapse later this century as a result of ‘business as usual’ economic activity, its recommendations – moderating consumption and lifestyles and implementing sustainable technologies – have been largely ignored.

Dr Turner says our reliance on efficiency improvements and

will maintain or improve their competitiveness under a global emissions trading scenario, and that a 25 per cent cut in emissions by 2020 is affordable and achievable.

‘The contemporary issues of peak oil, climate change, and food and water security resonate strongly with the overshoot and collapse displayed in the business-as-usual scenario of *Limits to Growth*’, concludes Dr Turner.

● **Mary-Lou Considine**

1 Turner GM (2008) A comparison of *The Limits to Growth* with 30 years of reality. *Global Environmental Change* 18, 397–411. www.sciencedirect.com/science/journal/09593780