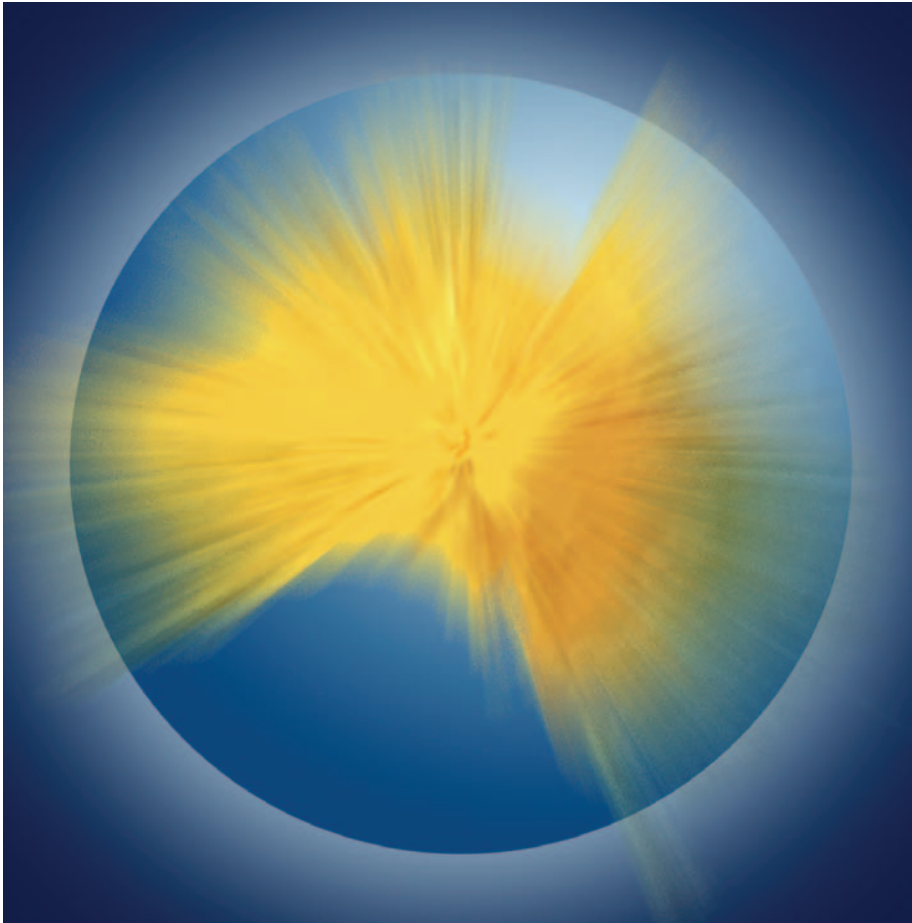


# Future Dilemmas



James Kelly

**A SOBERING REPORT** on Australian life towards 2050 suggests that we need wholesale societal changes to break excessive consumer habits and uncouple the economic growth driving the depletion of our natural resources.

In 1999 the Commonwealth Department of Immigration and Multicultural and Indigenous Affairs commissioned a report into the future effect of three population/immigration scenarios on Australia's infrastructure, resources and the environment, out to the year 2050.

The first scenario considered what would happen if the net overseas immigration rate was zero – the preferred policy position of some environment groups. The second scenario considered what would happen if the rate was 70 000 people a year – the current policy setting – resulting in a population of 25 million by 2050. The third scenario examined the consequences of an

immigration rate set at 0.67% of the current population per year. This scenario is advocated by many business interests and will result in 32 million people by 2050.

To gain insights into what these scenarios might mean for Australia, Barney Foran and Franzi Poldy of CSIRO Sustainable Ecosystems developed a complex model of Australia's physical economy – the vast array of physical transactions that underpin the monetary economy. The scientists used this model to canvass the consequences of the three scenarios for people, urban infrastructure, the natural environment, energy, water and a broad range of other issues.

Their resulting report, *Future Dilemmas: Options to 2050 for Australia's population, technology, resources and environment*, identifies six core dilemmas posed by the population scenarios, which require national policy consideration. These relate to popu-

lation ageing, physical trade balances, energy use and greenhouse gas emissions, per capita material flows, resource availability and environmental quality.

Around these, Foran flagged five 'key drivers' underlying current and future impediments to sustainability, which should be considered in any population debate:

- The need for individual Australians to recognise that it is their lifestyle choices and behaviour that determine national patterns of consumption and waste.
- The need to accept that Australia's social, economic and physical systems are linked together over very long time-scales, and that short-term decisions have long-term consequences.
- The need to recognise the in-built inertia in our institutional systems, and the amount of time needed for change to take effect.
- The need to understand the physical impact on Australia of continued growth of our global trade in order to pay for imports and service debt.
- The need to recognise the physical limits imposed on us by finite resources such as fisheries, oil stocks and arable land.

Foran says understanding the issues underlying these drivers is essential if the causes, rather than the symptoms of unsustainability, are to be addressed.

## Lifestyle choices and behaviour

Only 30 years ago our lives were filled with backyard fun, fêtes, board games, barbecues, books and imagination. Today our lifestyle expectations have changed, with the need for expensive electric goods, vehicles and home renovations dominating many people's lives. As consumption drives economic growth, society is encouraged and facilitated to consume more and more. This means that if growth goes up at three per cent a year, our consumption will double every 20 years.

Whether we have 20 million or 32 million people by 2050, a continuation of this trend will increasingly impact on the sustainability of our resources.

'It's the energy and material implications of economic growth, rather than economic growth per se, that is the problem,' Foran says.

'We need to uncouple the process of economic growth from the increased requirement for material and energy usage.'

One way to address this issue may be to increase intellectual, rather than physical

CSIRO Sustainable Ecosystems



**Barney Foran (pictured) and Franzi Poldy of CSIRO Sustainable Ecosystems have produced a report that confirms the urgent need for a fundamental change in our consumer and economic mentalities.**

activities, to develop a knowledge-driven economy, or what Foran calls a ‘music and poetry society’, rather than an economy driven by energy-intensive commodities. Health, education and community services, for example, use less energy and materials per dollar of economic growth, than say manufacturing and mining services.

‘Australians use around 250 GJ (giga-joules) of energy per capita, but we may have to stabilise at around 100 GJ or less,’ Foran says.

‘An increase in knowledge and community based activities in a future economy may decouple the economy from energy and material things. That has a range of implications for housing, how we get to work, the number of televisions we have, and living our lives in general.’

Foran points out that, if we want a sustainable society, we also need to consider a new social structure, where community and personal fulfilment are optimised and maximised, but where material implications are significantly

reduced. Part of this new structure may involve a shift from the current trend towards single person households, to a more communal living environment.

‘It will be a challenge for architects and social scientists to think about new modes of habitation which may still have self-owned space, but where energy

consuming and material items are in a communal area,’ he says.

If we opt for a high-population scenario, Foran warns that the energy efficiency of our machines, and other aspects of our lives, will have to improve. ‘Cross-compliance’ – where environmental measures are implemented as part of other policy innovations – could prove to be a way forward on this issue.

‘We could penalise low-energy rated fridges in the same way we’re paying more for leaded petrol,’ Foran speculates.

‘We could use the money from there to subsidise the costs of higher energy rating fridges and get manufacturing and technological innovation up to scale, so that they’re just as cheap.’

It’s a similar case with green power. Currently we pay around 10c per kilowatt hour for ‘green electrons’ and 6c per kilowatt hour for ‘black electrons’. But if we charged more for coal-fired electricity, we could use cross-compliance measures to allow the green energy sector to increase and penetrate the market in a meaningful way.

Foran says these overlooked opportunities are due in part to a tendency for individuals and businesses to look after their own interests, rather than focus

**‘We need to uncouple the process of economic growth from the increased requirement for material and energy usage.’**

on the bigger picture. Fortunately though, changes are afoot.

‘We’re starting to appreciate the system-wide outcomes of a range of partial decisions that are defensible within the confines of a single entity, be that an individual or a company. But when you look down at the chequerboard of entities, each small, marginal decision means we’re not moving forward,’ Foran says.

Triple bottom line accounting, where companies report on the financial, social and environmental aspects of their performance, is a move in the right direction. Companies such as BP, with its ‘Beyond Petroleum’ concept (*Ecos 115*), are leading the way.

**Long-sighted decisions are needed**

Foran identifies that the key issue underlying this driver is that electoral processes and decision makers operate on short time scales, while subsequent decisions often pertain to long-term variables, such as infrastructure or the environment.

For example, Foran says, the first home-buyers scheme, which tried to re-bounce the housing industry after the goods and services tax shock, was a lost opportunity for cross-compliance and long-term thinking.

‘We could have insisted on efficient energy ratings for all new houses built under the scheme, but we didn’t. So a limited environmental reward came from it,’ he says.

‘These houses will be around for perhaps 100 years and attempts to bring them up to standard will require expensive retrofitting.’



James Kelly





CSIRO Fisheries Research

**Key fish stocks, such as the orange roughy fishery, are already under excessive pressure from our high consumption lifestyle and economic incentive.**

Foran points out that society is very good at cross-compliance in other areas, for example, when parents have to have their children immunised in order to claim family benefits.

‘We need to extend this to housing, air quality, energy, water and so on,’ he says.

## In-built inertia

Changing the way our institutional systems work takes a long time. Environmental issues such as salinity, or fish stock depletion (see below), for example, need rapid action on a range of fronts, but resistance to change by parts of society and policy, and/or lack of technology, stalls or slows the process.

Foran says better information and the ability to analyse the potential impact of our actions, through simulation models, for example, could help overcome this problem and build ‘resilience’ into any decision.

‘The better informed we are and the more numerate our analysis, the better chance we have of making an informed decision,’ he says.

‘But we can never be sure we’re going to make the right decision, so we need to build resilience into that decision.’

Resilience could come in the form of a transition to a biofuel economy, where petroleum fuels are replaced by bio-methanol and bio-ethanol. This could lessen oil imports and trade balance tensions, ‘re-clothe’ Australia’s farm lands in the tree cover they need, and provide a much needed social optimism and cash flow for regional economies.

‘Crosscutting innovations such as these could help buffer our economy and our regions from the slow moving tsunamis that appear to be on a roll,’ Foran says.

## Physical impact of global trade

Imports increase as our population, affluence and economy grow. To pay for these imports we must increase exports, and to do this, we’re pushing our commodity and manufacturing base harder and harder. The Wentworth Group (*Ecos 115*) highlighted our failure to incorporate environmental costs into our exports. Until this happens, Foran says we’ll continue to take one step forward and two steps back.

‘We export more from our physical world and the promise of our intellectual world (the services economy) isn’t living up to it yet,’ Foran warns.

For example, the business pages in the national dailies promise that the services economy will be our saviour in the sustainability marathon. Foran notes that while some service sectors do well and earn export dollars, we still rely predominantly on the physical sectors of mining, agriculture and manufacturing.

‘Is it physically sustainable to keep doing this?’ he asks.



Willem van Aken

**Australia’s next generation will need to learn a different set of lifestyle values.**

## Physical limits from finite resources

In *Future Dilemmas*, Foran and Poldy identified direct population effects on resource consumption and environmental quality, in particular, stocks of marine fish, stocks of oil, and air quality.

Already, stocks of marine fish are depleted, and as our population grows, per capita consumption is expected to increase. Managerial and technological responses are underway, but given the in-built inertia of the system (gradual uptake of new fishing practices by industry, and the slow response of fish populations to change),

**‘As we move forward, we need to be remaking the old and inventing a new physical economy that will serve us well in the year 2100.’**

human population increases will continue to apply pressure.

Similarly, Foran says supplies of domestic oil stocks will be constrained by 2020. Imports may fill the gap temporarily, but in the longer term we will need to discover new petroleum resources, use energy efficient vehicles, and develop other fuel sources such as natural gas and biofuels.

‘If Australia’s population is to increase, it has to be decided in terms of whether we have the natural resources to sustain it,’ Foran says.

‘As we move forward, we need to be remaking the old and inventing a new physical economy that will serve us well in the year 2100.’

## Constructing our game plan

Given the inherent inertia in each of these issues and the vast range of decisions required, Foran emphasises that we need to begin discussing the issues now.

‘The sooner we start the real discussion, rather than the marginal ones, the better placed we’ll be to make decisions about enduring, rather than coping,’ he says.

Adapting the national analytical model Foran and Poldy developed for the *Future Dilemmas* study, for state use, may assist these decisions. It would allow states to consider different population and planning scenarios and their impact on water, energy, the environment, and infrastructure.

‘Each state should be incorporating analytical tools, that have the physical realities of how the place works, into planning mechanisms,’ Foran says.

‘Then we can begin analysing, planning and constructing our game plan for the future, with the same amount of intellectual endeavour we give to World Cup rugby games or Olympic team selection.’

● Wendy Pyper

**More information:** The *Future Dilemmas: Options to 2050 for Australia’s population, technology, resources and environment* report can be accessed from: [www.cse.csiro.au/research/Program5/futuredilemmas/](http://www.cse.csiro.au/research/Program5/futuredilemmas/)

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