

# Towards a Sustainable Balance of Population and Resources: Australia to 2050

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Australia, the 'lucky' country,<sup>1</sup> currently enjoys one of the highest standards of living in the world. It ranks second in the UN Human development index,<sup>2</sup> it has weathered the recent global financial crisis with little damage, its short to medium term economic prospects seem bright, its government and social structures are stable and generally benevolent, its environment although fragile and damaged, has not yet impacted on human wellbeing, and its resources, needed for its own population and export earnings, seem adequate. For most Australians, general material prosperity, indexed by GDP per capita, has increased significantly over the last 50 years and there is general expectation that it will continue to do so. But can it and should it? There are clear warning signs that this 'luck' may not last, certainly over the medium term to 2050. Australian population growth coupled with resource depletion and environmental degradation is of increasing concern. The world too is changing; the challenges of global population increase, global warming, global inequities, and global power realignments will all impact on Australia. How then can Australians balance and help shape these various forces to ensure an equitable and desirable quality of life and an environment that their descendants would like to inherit and in accord with our global obligations?

This report brings together a range of resources, points of view and statistical data that integrates current trends and projections with more human factors of world views, motivations and identity (what will it mean to be Australian?). It is speculative rather than predictive. It aims to raise awareness and understanding rather than suggest specific policies and actions; the latter are urgent but must rest on the former. There are many excellent reports and blueprints for action on a range of specific demographic and resource issues for Australia. Here, emphasis is placed on relatively less explored global factors and human world views and behaviours that if not factored into planning for a future Australia, may well overshadow much of current concern and debate. In the discussion below, balance will be taken as the collective of population/resource/environmental interaction and will include Australian exports that affect the global situation.

## Global Forces and Trends

Planning for the future requires consideration of key variables including population, consumption, resources and the environment, world governance and social change and science and technology. Here we look towards 2050 as a reasonable waypoint: many contend that

massive technological, social and environmental change over this period and how we adapt to or direct such change could prove crucial to long term human and world futures. If we accept this view it would seem prudent to put major effort into scenario building and preparation to direct and not just adapt to change if we are serious about bringing population and resources into a sustainable balance. At the same time reducing gross mal-distribution of resources in the greater Oceania/Asia regions could be seen as crucial in terms of equity and human wellbeing and prudent in terms of mitigating social and political unrest that could confound any population/resource balance attempted within Australia.

A balance of population growth and resource availability is clearly central to medium and long-term human and world futures. Given our present understanding, it is also one of the hardest issues to model, let alone credibly predict or influence. But these are the precise reasons why much more effort is required, why public awareness and understanding needs to be raised, why government, business, industry, education, communication sectors and civil society need to be involved; they will all have their unique and collaborative role in any change directed at creating a balance that ultimately is needed to preserve a world our future generations will want to live in.

## Population

The world population is currently near 7 billion people; most projections suggest this will rise to 9-10 billion by 2050 with maybe a gradual decrease thereafter.<sup>3</sup> It would be prudent to plan now for an extra two billion people and perhaps a further three to four billion (upper estimates are around 11 billion by 2050) albeit, such projections could be lessened with enlightened action on world population growth. Population in developed countries is generally shrinking with a decrease in natural fertility but this may easily be countered by net migration. The major population increase will be in underdeveloped and developing countries already under considerable environmental and resource stress. This is likely to spawn much higher rates of emigration and thus population and other pressures on recipient countries.

## Consumption

Together with population growth, increased consumption per capita will add to current problems of scarcity of resources, depletion of non-renewable resources, pollution, likely land degradation and global warming. There are clear trends in major countries, including China and India, of rising standards of living and thus consumption. Advances in education and communication increase opportunities and expectations, as does increasing investment in 'low' salary regions. Global views and advances in equity and justice should result in overall increased consumption including basics of food and energy and, if not specifically countered, increased global CO2 levels and global warming. How to balance an increasing world population and justifiable increase in consumption per capita in developing countries with a sustainable resource and environmental base is a major problem to be faced. Raising world consumption levels to that of the fully developed countries is certainly not sustainable; a correction of consumption rates at a global level is needed. How quickly this can be achieved will depend on global and national governance and values and social agreements. Economic growth and development based on human centred wants and desires rather than on increased GDP could achieve improved quality of life with

minimal environmental risk. This might include less focus on classic indicators of GDP including material resource throughput and more on information and service industries, alternative renewable energies, entertainment and other resource limited activities, changes in eating habits (less meat more vegetables) changes in food production, changes in housing, transport and other life style factors of significance to overall resource utilisation. Such changes should be fostered in developing countries under resource stress but, in the interests of equity, also instituted in affluent, resource rich countries. The real question is whether such change will be initiated by calamity or by foresight?

## **Resources and the Environment**

Though debated in detail, there is now clear consensus that many of our non-renewable resources, including fossil energy and arable land are running out faster than alternatives are being brought on line. Renewable resources, such as fish stock, are being rapidly depleted and may soon be considered non-renewable in practice for some time. Our physical environment is also threatened; global warming, is now of major concern and although difficult to predict in detail, may well mean decline of many agricultural regions and rising sea levels and, although subject to debate, could result in 150- 200 million climate refugees by around 2050 which could obviously impact on Australian migrant projections.<sup>4</sup>

## **World Governance, Social Change, National Interests and Sovereignty**

Many projections of population and resource demand tend to avoid this area; it is harder to predict or even envision than population growth and resource availability but at the same time could have a major impact on human and world futures. This area relates to human behaviour; how we are likely to deal with pressures of population increase and resource depletion at local and regional and national levels and at a global level, with major environmental changes such as global warming that will impact on all other aspects of the population/resource balance. There are signs that global thinking is progressing albeit very slowly. The response to global warming has at this stage been mightily fractured through national and other vested interests not to mention party political expediencies. Aid to raise educational standards and infrastructure in developing countries, which in turn can help contain population increase, has been very limited. Sharing of technology directed at more sustainable food and manufacture would again aid the population/resource balance. Finally the incredible and unsustainable consumption behaviours of the most affluent countries, including Australia, will have to be given some check if a viable population/consumption/ resource balance is to be effected at a global level. All of this requires substantial behavioural change; urgently needed over the next 40-50 years.

## **Science and Technology**

Science and technology will be crucial in redressing the population resource balance. Massive advances in agricultural practices (food security) energy supply,

(away from fossil fuels) and water security will be needed. Changes here could radically change carrying capacities of various regions and slow or even reverse current depletion of resources and environmental degradation. Medical advances promoting quality of life and longevity are highly desirable and directly accord the Millennium Project's goals but could lead in the short to medium term to greater population numbers and overall consumption rates. Reduction in mortality rates, particularly of children, has already made a major impact on national fertility rates in many developing countries and is usually factored into estimated population growth rates. Advances in social sciences, city planning, the built environment could also have a major role in improving quality of life for an increasingly urbanised global population while at the same time relieving pressure on productive land use from low density urban sprawl and reducing resource waste of transport and other utilities needed to service a more dispersed city population (this would particularly apply to Australia).

Each of the above key variables will affect the population/resource balance at global, national, regional and local levels. The uncertainty of their estimation and complexity of their interactions obviously preclude confident predictions. However, without positive change in all key variables a population/resource/environment balance is very much at risk at a global and regional level, impacting Australia.

## **Asia and Oceania and Australia's large neighbours: China, India and Indonesia**

Global geopolitics, population growth and resource demands will all impact on Australia's population/resource futures. Here we focus on closer regional concerns of Asia and Oceania and particularly on Australia's three largest neighbours, China, India and Indonesia.<sup>5</sup> Asia and Oceania currently include over 4 billion people or around 60% of the world's population. India, the Peoples Republic of China (China) and Indonesia comprise 40% of the world's population: about 100 times the population of Australia.

### **The People's Republic of China**

China currently has the world's largest population (1341 million), the second largest economy (projected to become the largest, above USA by 2016), and highest sustained economic growth rate (recently around 10% of GDP). This has brought major improvements in standard of living, education and health in a remarkably short period of time. However, it has been accompanied by rapid urbanisation, industrialisation, energy use, pollution, degradation of water sources and increased CO<sub>2</sub> emissions. The government has been active and interventionist in countering some of these problems. Population has largely been stabilised through one child and other policies and the projected 2050 population is 1303 million, slightly below the current figure. China occupies a large territory that includes good agricultural land and energy and mineral resources. It could be relatively self-sufficient and sustainable in terms of resources and the environment, even while supporting a further increase in the general standard of living. However, this would require resolving the present high dependence on coal, greatly reducing pollution, recovery of depleted or polluted water resources and agricultural land. Will this be achieved? Population control was a major step. Now the government needs to achieve its commitment to further raising the economic and general living standards together with the aim of achieving environmental and resource

sustainability. China is already the world's greatest investor in renewable energy and plans to increase its use to 30% of the total by 2050. It may well become a leader in establishing a population/resource/ environmental balance by 2050.

### *Implications to Australia*

China is Australia's major trading partner and generally credited with boosting Australia's economy and protecting it from much of the fall out of the GFC. This is likely to continue into the near and perhaps medium term future (2050); China's need for Australian mineral and particularly energy resources shows no sign of abatement. This means economic growth for Australia but at some global environmental expense particularly if coal exports are maintained. How the global community will see this is an important question as global warming fears mount. Gas development and sales to China are also growing rapidly. This might prove competitive with domestic demand and thus delay the shift from coal to gas electricity generation in Australia with consequent implication to carbon emissions. China's imports of Australian agricultural produce, particularly meat, could grow with increased prosperity; this could foster increased meat production in Australia with potential further environmental costs. Finally in terms of balance of trade, China's ability to produce consumer goods could help maintain a consumerist Australian culture. Although environmental concerns are shifted off shore with these imports, they are considered in the overall Australian population/resource balance. From an economic/political viewpoint, China needs to secure its access to raw materials and thus is likely to develop policies to influence Australia. This is already evident through economic pressures and buying of Australian properties and companies with a measure of control. The competing interests of China's needs and Australia's concerns to sustain environmental resources will have to be negotiated. Finally, a major issue will be continued migration to Australia. As prosperity grows in China and educated and skilled numbers increase, there is likely to be considerable increase in migration partly to ensure China's interests and partly due to interest in the Australian life style (see Table 1). Given China's success in population control and improved standards of living, China-Australia migration is likely to be measured rather than a response to drastic overcrowding or resource scarcity or environmental damage. It alone however, could radically alter projected population numbers in Australia over the next 40-50 years.

### **India**

India is the world's largest democracy and has the second largest population 1224 million. Like China, it has achieved remarkable economic development with GDP growing by 5.8% over the last two decades and 7.5% over the last few years. With economic growth, general living standards are rapidly improving albeit with major social inequalities. Business, education and the science and technology sectors have been actively promoted and look set to continue growing and setting the foundation of further overall economic and social progress. Population size is still growing. Active fertility control programs and improved general education is slowing the rate of growth but it is still projected to reach 1692 million by 2050 (over 450 million extra people). India is Australia's third largest export market and demand for energy supplies (coal and more recently uranium) will almost certainly grow as will food and mineral needs. If India continues to grow at present rates in population, industrial development and per capita consumption, it is likely to greatly exceed its bio-capacity to be self-sufficient

and thus will rely heavily on countries like Australia to provide for its food and energy needs with potential further stress on the Australian environment.

### *Implications to Australia*

India lags behind China in rate of economic development but given its projected population growth and more problematical resource and environmental considerations, it may well ultimately have a greater impact on Australia's population/resource/environmental balance by 2050. There is likely to be considerable increase immigration to Australia; there are three reasons for this. It is expected that a relatively affluent middle class will reach 580 million by 2030; more by 2050. A significant component of this group is likely to have the resources and aspiration to immigrate to Australia. A second group of immigrants could derive from Australian demand for skilled and professional workers and a 'cheaper' or more compliant unskilled work force. A third group may represent 'climate' refugees. It is extremely difficult to estimate this latter group, but India and Bangladesh will almost certainly be badly affected by any climate change, resulting in mass migration. How many will come to Australia can only be conjectured: it may be felt that Australia has an obligation to accommodate a sizable component of the climate refuge group given its inequitable contribution to climate change through one the highest rates of CO<sub>2</sub> emissions per capita. In addition to immigration, demand for Australian resources could, as for China, put further strain on Australia's resource base and environment. Australian coal export to India could become a major environmental problem, how major will depend on advances in alternative renewable energies. India is currently interested in importing Australian uranium, which could arguably reduce its dependence on fossil fuels although the recent nuclear disaster in Japan is likely to slow this alternative down.

## **Indonesia**

Indonesia has the fourth largest population in the world, currently around 239 million spread over many small islands with consequently high population density. It is still considered a developing country and has a low human development index (see Table 1). The consequent low consumption rates per capita and ecological footprint coupled with relative abundance of natural resources means that currently Indonesia is in a close population/resource balance. This is likely to change with increasing industrial and general economic development; like India, it is likely to have a rapid growth in its middle class with potential increase in consumption and migration aspirations. Most importantly, its population continues to increase and is projected to reach 239 million by 2050.

### *Implications to Australia*

Perhaps the major issue is migration. Indonesia has been described as a labour-surplus nation.<sup>6</sup> At the end of 2006, an estimated 11 percent of Indonesian workers (11.6 million) were unemployed, and underemployment was over 20 percent (45 million workers). There are an estimated 2.6 million Indonesians working legally or illegally overseas; the latter include around 600,000 in Malaysia alone. Almost certainly pressures from population increase, environmental and resource degradation, improved economy, education and rise in middle class, will mean even greater pressures for emigration. So far, Australia has not been a major destination for Indonesian migrants, but given the proximity of the two nations and increasing development of economic,

business and educational ties, this is likely to change considerably in the lead up to 2050 with the three groups, skilled and professional, cheap labour source and climate or environmental refugees all having an impact.

## **Australia**

Australia is a relatively young nation grafted onto one of the world's oldest and environmentally fragile continents. Its indigenous inhabitants developed a rich and enduring culture and lived in close harmony with the environment for over 40,000 years. Colonisation radically degraded this environment in less than 250 years and damaged the original indigenous cultures with their intrinsic concern for country. Further 'development' could worsen the situation. Population will almost certainly increase. Economic growth, still directed primarily at increasing consumerism, could exacerbate the situation. However, there are signs of change in human interests and behaviours. Population growth is now seen as a potential threat to the environment and an excessively consumerist culture is being challenged. Powerful determinants of population/resource balance or unbalance are likely to be worldviews, attitudes and actions towards Australia, and Australians view of themselves, visions of the future and the will to work towards those visions.

Complicating these issues is that Australia and Australians have already undergone massive change over the last 50 years in terms of population size and structure, utilisation of resources, environmental degradation, life style, worldviews and beliefs, identity and visions of futures. To list but some: since 1960 we have seen the end of the white Australia policy, recognition of Indigenous Australians as full citizens, a relatively successful multiculturalism, greater urbanisation and significant areas of denser living in inner city regions. One in four Australians were born overseas and this proportion is unlikely to change in the foreseeable future.

Australia is currently in a unique situation. A sovereign country, with massive resources in terms of minerals, gas and coal, an extensive agricultural sector, sparsely populated, a stable government and one of the highest 'standards' of living, but equally one of the highest environmental polluters in terms of carbon footprint. To a large extent it has been sheltered from global crises by its isolation and its good fortune in having earlier on a thriving agricultural sector and now a thriving mineral sector. Its geographical isolation and relatively homogeneous cultural identity, even with multiculturalism, and history give it a stable government, high level of education and wellbeing. Having said that, it's good fortune to date may mean that it is not well prepared for the changes that will be required over the next 40 years. It is hard for Australian society and government to recognise the importance of global forces so clearly evident in less fortunate countries (eg acid rain in Europe may have helped usher in their now greener policies). Further, until recently it was generally felt that Australia's resources were way greater than its needs and there is still some justification for this view; Australia's ecological footprint is still only around half of its biocapacity (Table 1). Whilst these indices are at best approximate, they do suggest that a doubling of population could be effected even at present rates of consumption (omitting carbon footprint).

## Concluding Comments

The above explores a few variables likely to have significant impact on Australia's growth and resources. There are many more; for example major countries Japan, Malaysia, Bangladesh have not been considered but should be in a larger analysis as should projections of technological change, world views, security and possible influence of stronger world governance on individual nations. But the major import of this contribution lies in its opening up of dialogue beyond the politically motivated and media dominated discussions to date. It also emphasises the need for integration of a wider range of issues and events into overall judgements. The simple question of achieving a population/resource/environmental balance for Australia is revealed as a wicked problem, one that demands increased interest and investment and one that will impact not only on the wellbeing of present and future generations but could have an irreversible effect on Australia's environment into the foreseeable future.

Given the scope and uncertainties of the above considerations and projections what can be recommended now? We suggest the following.

- 1) Broadening the dialogue base: 2050 demands innovative thinking, futures thinking, urgent thinking. The political cycle of effectively 3 or fewer years is dangerous. Government institutions need more support for the longer term view and greater recognition. The vision must be put as to how Australia can accommodate a 30 to 50 million population by 2050 with in a sustainable state: What would be required, what would it cost, how can it be accomplished if population did indeed increase within these boundaries.
- 2) Preparing Australia for a substantial population increase perhaps above 50 million.
- 3) Preparing for a different life style including such factors as denser living, lower consumption rates, carbon neutrality.
- 4) Recognising the need for and inevitability of globalisation including increasing porosity of borders, and national interests affected more by global interests and forces.
- 5) Redressing what is perhaps Australia's biggest problem, the parlous state of its original inhabitants, the Indigenous Australian. This problem is likely to be exacerbated with continued migration to Australia.
- 6) Collectively, and by integration these approaches could maintain a population/resource balance compatible with world needs at least to mid century.

Table 1. *Australia's relationships with China, India and Indonesia*

	Australia	China	India	Indonesia
Population (million) 2010	22	1341	1224	239
Projected 2050	31	1295	1692	293
Active defence personnel (thousand) 2010	57	2285	1325	302
Australian exports (% total)		23	7.4	2-3
Australia: country of birth (thousand)	4,956*	203	153	68
Human development index	0.937	0.66	0.52	0.60
World ranking	2	89	119	108
Migration to Australia assuming 1% of 2050 projected population (million)	* 32.7 total population increase with migration	12.9	16.9	2.9
Ecological footprint (global hectares)	6.8	2.2	0.9	1.2
Biocapacity (global hectares)	14.7	1.0	0.5	1.4
Co2 emission/capita metric tons	17.9	4.9	1.4	1.8

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## Notes

- 1 The lucky country, see: <http://australia.gov.au/about-australia/australian-story/lucky-country>
- 2 Human Development Reports, see: <http://hdr.undp.org/en/humandev/>
- 3 World population projection, see: <http://esa.un.org/unpd/wpp/Other-Information/faq.htm>
- 4 Climate change refugees summary, see: wikipedia [http://en.wikipedia.org/wiki/Environmental\\_migrant](http://en.wikipedia.org/wiki/Environmental_migrant)
- 5 China; [http://www.dfat.gov.au/geo/china/china\\_brief.html](http://www.dfat.gov.au/geo/china/china_brief.html); India; [http://www.dfat.gov.au/geo/india/india\\_brief.html](http://www.dfat.gov.au/geo/india/india_brief.html)
- 6 Indonesian migration, see: <http://www.migrationinformation.org/Profiles/display.cfm?ID=594>

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HDI values from <http://hdr.undp.org/en/data/profiles/>  
 Population values: [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm)

Australian exports: <http://www.dfat.gov.au/geo/fs/aust.pdf>

Active defence personnel: [http://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_number\\_of\\_troops#IISS2010](http://en.wikipedia.org/wiki/List_of_countries_by_number_of_troops#IISS2010)

Australia: country of birth: [http://en.wikipedia.org/wiki/Demographics\\_of\\_Australia#Country\\_of\\_birth](http://en.wikipedia.org/wiki/Demographics_of_Australia#Country_of_birth)  
\* overseas total

Ecological footprint <http://www.footprintnetwork.org/en/index.php/GFN/>

CO2 per capita emissions: [http://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_carbon\\_dioxide\\_emissions\\_per\\_capita](http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions_per_capita)