

Blueprint for a Healthy Environment and a Productive Economy

WENTWORTH GROUP OF CONCERNED SCIENTISTS

November 2014

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ACKNOWLEDGEMENTS

The Wentworth Group of Concerned Scientists gratefully acknowledges the contributions of Carley Bartlett, Caroline McFarlane, Claire Parkes, Carla Sbrocchi, Paul Sheridan, Paula Steyer, Brad Tucker, and Rachel Walmsley. We also thank the *Purves Environmental Fund* and *The Ian Potter Foundation* for their financial support.

Blueprint for a Healthy Environment and a Productive Economy

On several occasions in the past, Australian governments, businesses, communities and individuals have responded creatively and energetically to environmental challenges, with positive outcomes for the health of the environment and economic productivity. It is time for another such occasion.

There are thousands of examples across Australia every day, where individuals, communities and businesses strive to live sustainably, but too often, despite best intentions, we place short-term interests over long-term benefits.

As a consequence, the scientific evidence is that while much of Australia's environment is in good shape or improving, other parts of the continent are in a poor condition or are deteriorating.¹

What is needed is a national commitment to long-term reforms that build a productive economy that conserves natural capital rather than degrading it.

This is not a pipe dream. The Wentworth Group believes that we know what has to be done and that, as a nation, we are capable of doing it.

Nature has provided us with a safe operating space to create wealth and grow the economy to improve the wellbeing of people without causing long-term damage, but we are rapidly exceeding these limits.

Greenhouse gas emissions are warming our planet, and the destruction of native vegetation, over-extraction of water, invading weeds and pests, degradation of agricultural soils, and poorly planned urban and industrial development, have set in train processes that are now driving long-term degradation of the Australian landscape.

As our population and incomes grow our demands will place even more pressure on our environment. Climate change will add a whole new dimension to these pressures with major shifts in weather systems, increased risks from higher temperatures, sea level rise, and more extreme droughts, floods, and bushfires.

We present a very different vision for Australia, a practical forward-looking vision, a vision that embraces a productive economy in a healthy environment.

The challenge we all face is that the collective actions required to support a growing economy and a healthy environment are far beyond the ability of any individual or company or government to address on their own.

Australia is enjoying a remarkable 23 years of uninterrupted economic growth. Opportunities created by Asia's extraordinary economic rise, balanced by the risks of climate change and the increasing demands on Australia's natural resources, mean we are entering a transformative period in our history.

Australia is at a crossroads. If we continue with the short-term view where we can take more and more from nature without any consequences, we will forfeit our long-term future by destroying the ability of our environment to sustain us.²

As a nation we are taking more from our environment than its natural systems can replenish, and that by any definition is unsustainable. We need to change:

- reactive planning that is driving long-term degradation because it fails to take into account the cumulative impact of development on our environmental assets;
- economic signals that reward pollution and discourage conservation;
- under-investment in the conservation of Australia's native plants and animals causing many to be at high risk of extinction;
- too many layers of government and too many government agencies who influence urban and rural land and water management, creating confusion, duplication, and at times contradictory decisions; and
- our GDP fixation on material production that is not linked to a national balance sheet that records the depreciation of the nation's natural capital.

Over the next 12 months the Commonwealth Government is embarking on major reforms to Australia's federation and taxation system. These reforms can present a golden opportunity for Australians to create a productive economy with a healthy environment.

Turning this vision into a reality is the collective responsibility of all of us – governments, business, civil society and individuals – to embed sustainability throughout the economy so that everyday actions contribute to a healthier environment.

There are a whole range of things we need to do differently. Australia needs to power machines using renewable energy technologies, it must recognise the true value of the services that nature provides us, and it needs a set of environmental accounts to monitor the health of our natural world.

The Wentworth Group believes there are five transformative, long-term economic and institutional reforms that Australia must implement if it is to create a healthy environment with a productive economy:

1. Fix land and water use planning:

We must put in place regional scale land and water use plans that address the cumulative impacts of development on the environment and the long-term costs to the economy.

2. Use markets:

We must eliminate fossil fuel subsidies, set a long-term emissions reduction target and introduce an equitable, broad-based land tax to finance programs that pay farmers, indigenous communities and other landholders to transform the way we manage the Australian landscape.

3. Conserve natural capital:

We must close the gaps in our national system of public and private reserves, and commit resources to a long-term plan to conserve our threatened native plants, animals and ecosystems.

4. Regionalise management:

We must embed and give prominence to natural resource management at the regional scale to reconnect people to the land, so that investment decisions are underpinned by an understanding of how landscapes function.

5. Create environmental accounts:

We must put in place regional scale, national environmental accounts that monitor the condition of our environmental assets, so that people can make better decisions to support a healthy and productive Australia.

This blueprint describes the magnitude of the environmental challenges we face, establishes the case that it is possible to grow the economy and protect the environment, and describes these five long-term institutional and economic reforms that we believe are essential to achieve this.

We do this because we believe Australia does have a choice.

We believe we can leave our world in a better condition than the one we inherited, and in doing so make Australia a more secure place for future generations.

... And we all have a role.



An interconnected, comprehensive package of long-term institutional and economic reforms to create a healthy environment and a productive economy.

The contribution from businesses and individuals

Productivity is the key to long-term economic growth. It is also a pillar of sustainability because people can create greater value using less materials, less energy, and with less impact on the environment. To achieve this:

1. Commit to a duty of care to do no harm.

Communities and businesses would uphold a duty of care that would apply to all landholders, on both private and public land, to do no net long-term harm to the nation's land, water, coastal, marine and biodiversity assets.

2. Invest in renewable energy.

Households and businesses would join the energy revolution by investing in renewables, saving money, and turning homes and businesses into sources of renewable power.

3. Create sustainable cities.

Households and businesses would recognise the benefits of greening their cities, the financial savings from retrofitting existing homes and businesses to make them energy and water efficient, and create a better environment for people to live.

4. Support sustainable farming.

Consumers, suppliers, and retailers would support the development of industry-based sustainable farm certification, so that consumers can make informed choices, and farmers receive financial benefits for managing their land sustainably.

5. Participate.

For a productive economy and a healthy environment, it is incumbent on each of us, no matter where we live, or what we do, to actively participate in public processes, so that the plans for our cities and regions truly reflect the future we want to leave for our children.

The role of governments

1. Create regional plans that manage the cumulative impacts of development.

The Commonwealth must lead by matching funding to state and territory governments to integrate management of natural resources into statutory land use planning systems in regions of high population growth and resource development pressure, and tie public infrastructure investments to those plans.

2. Set long-term emissions reduction targets and reform taxation arrangements to create the economic foundations to restore degraded landscapes.

The Commonwealth must create the economic conditions by setting long-term emissions reduction targets. This will manage climate change and finance carbon farming to transform the way we manage the Australian landscape.

State and territory governments must put in place a long-term and equitable land tax to fund programs that pay farmers, indigenous communities and other landholders to restore and maintain our environmental assets in a healthy condition to benefit everyone.

3. Turn around the systemic decline in Australia's biodiversity.

Governments at all levels must work together to turn around the systemic decline of biodiversity: strengthening standards on development to maintain or improve the nation's environmental assets; closing the gaps in our national reserves on public, private, and indigenous land; connecting these across the landscape; and committing to a long-term plan to conserve Australia's threatened species.

4. Regionalise the management of Australia's natural resources.

State and territory governments must overhaul governance of natural resources to ensure that regional scale priorities are provided with statutory recognition through land use plans, ensuring local communities are engaged and investment decisions are underpinned by an understanding of how landscapes function.

5. Create the National Environmental Accounts.

Australia must create regional scale national environmental accounts that measure the condition and changes in Australia's environmental assets. If we don't measure, we can't manage.

Benefits of a Healthy Environment

The health of the natural environment matters because it affects the wellbeing of people directly, and because it underpins other things that people value:

- Healthy landscapes improve agricultural production, reduce costs, and protect land and water resources from degradation and extreme events;
- Our international competitiveness is enhanced when we demonstrate that we are determined to implement policies of clean air, clean water, and clean products;
- High environmental standards create opportunities for innovation and investment in areas that enhance sustainability, such as renewable energy technologies, waste management, water conservation and carbon farming; and
- Access to nature and healthy environments improve mental and physical health, and in an increasingly congested urban world, our natural environment will be valued more highly by Australians and attract growing numbers of international visitors.

Environmental assets are healthy when their capacity to provide food and materials, filter the air and water, absorb wastes, provide habitat for humans and other species, and give people the opportunity to enjoy the benefits of nature, can be sustained:

- **Healthy atmosphere** provides clean air to breathe, protects life against harmful radiation, and helps maintain a stable climate.
- **Healthy rivers**, wetlands and groundwater systems have the capacity to provide habitat for native aquatic plants and animals, be used for swimming, fishing, drinking and irrigation, have sufficient flows to flush pollutants such as salts, and recover from floods and droughts.
- **Healthy soils** maintain their structure and store carbon and nutrients, support production of food, fibre and raw materials, store and filter water, and host rich biodiversity.
- **Healthy native vegetation** and forests protect river corridors, filter water, store carbon, provide wood products, protect against erosion, give people access to nature, manage salinity, and provide habitat for native plants and animals.
- **Healthy coasts**, estuaries and beaches provide habitat for plants and animals, buffer the effect of storms on nearby communities, and give people a place to enjoy the benefits of nature.
- **Healthy oceans** provide food, a place for recreation, and habitat for marine plants and animals.

Australia's Environmental Assets

Australians have known for decades that many policies and economic activities have led to the long-term degradation of our land, water and biodiversity assets.

The health of the natural environment matters because it affects the wellbeing of people directly and because it underpins other things that people value (see page 4).

On those occasions when governments, businesses, communities and individuals have responded positively to these challenges, the results have been that aspects of Australia's environment have improved:

- water and air pollution controls have improved air quality, created cleaner waterways, and restored the health of coastal estuaries;
- land clearing controls, the creation of national parks, and investments to manage fire and restore native vegetation on private land have afforded greater protection to Australia's biodiversity;
- new farming practices such as minimum till and landcare have improved soil structure, increased vegetation and reduced soil erosion;
- overused water resources, such as in the Great Artesian Basin, have started to recover in line with the 2004 water agreement that provides the foundation for the long-term sustainable management of Australia's freshwater resources; and
- incentives to generate renewable energy are driving the transformation of energy markets.

Despite these improvements, the scientific evidence is that while much of Australia's environment is in good shape or improving, other parts of the continent are in a poor condition or are deteriorating.¹

It is the destruction of native vegetation, over-extraction of water from rivers and aquifers, introduction of weeds and pests, stripping soils of carbon and nutrients, and poorly planned urban development, that have set in train processes that are driving long-term decline in the condition of Australia's natural assets.



A national asset: the historic Callyamurra waterhole on Coopers Creek in outback Australia.

Condition of Australia's land, water and biodiversity assets

Successive Australian State of the Environment reports have described the impacts of policies that cause land and water degradation and biodiversity loss.

Land: Australia's first State of the Environment report in 1996 concluded that: *"much of the land is degraded and continues to deteriorate from clearing, pastoralism and other land uses"*.³

Despite a raft of policies and regulations, and billions of dollars of public and private investments aimed at repairing this damage, the most recent assessment in 2011 reported that the trends for many indicators remain adverse.

Rivers, wetlands and estuaries: The first State of the Environment report described Australia's rivers as *"increasingly being consumed, diverted, polluted and degraded, particularly by population centres and intense land use areas"*.⁴

In 2004 major national reforms were agreed by Commonwealth, state and territory governments to address these problems. Despite these reforms, many of Australia's catchments are in a degraded condition. Within many of Australia's major drainage basins, river condition is affected by inadequate environmental flows, pollution, and/or changes in ecological processes.⁵

In Australia's food bowl, the Murray–Darling Basin, 20 of the 23 river systems are in a poor or very poor condition (Figure 1),⁶ and despite the appropriation of \$10 billion by the Commonwealth in 2008, the 2011 Basin Plan will not restore these river systems to a healthy condition.^{7,8}

Biodiversity: Australia's first State of the Environment report described the loss of Australia's biodiversity as "*perhaps our most serious environmental problem*".⁹ Since then the rate of land clearing – a prime driver of land and water degradation and species extinction – has slowed.

This is major progress. However land clearing for agriculture, mining, coal seam gas and urban development is still continuing to fragment and degrade native vegetation. In the decade to 2010 the clearing of native vegetation across Australia still averaged one million hectares a year.¹

Clearing of native vegetation, when combined with pollution and over-extraction from waterways, the introduction of weeds and feral animals, and unsustainable fire practices, has resulted in the listing of over 1,600 species of native plants and animals as threatened with extinction.¹⁰

Coasts and oceans: The latest State of the Environment report (2011) concluded that while the overall health of our marine ecosystems is good, a particular concern is the incremental nature of coastal development which reduces native vegetation and breaks down the connectivity between habitats.

The Great Barrier Reef, one of the seven great natural wonders of the world, has suffered a decline in condition over the past two decades. Since 1986, on average across the whole reef, hard coral cover has declined by 50 per cent.¹¹

Agricultural runoff and water quality decline, water temperature changes over short periods of time, dredging and illegal fishing continue to threaten the recovery of the central and southern parts of the reef.¹¹

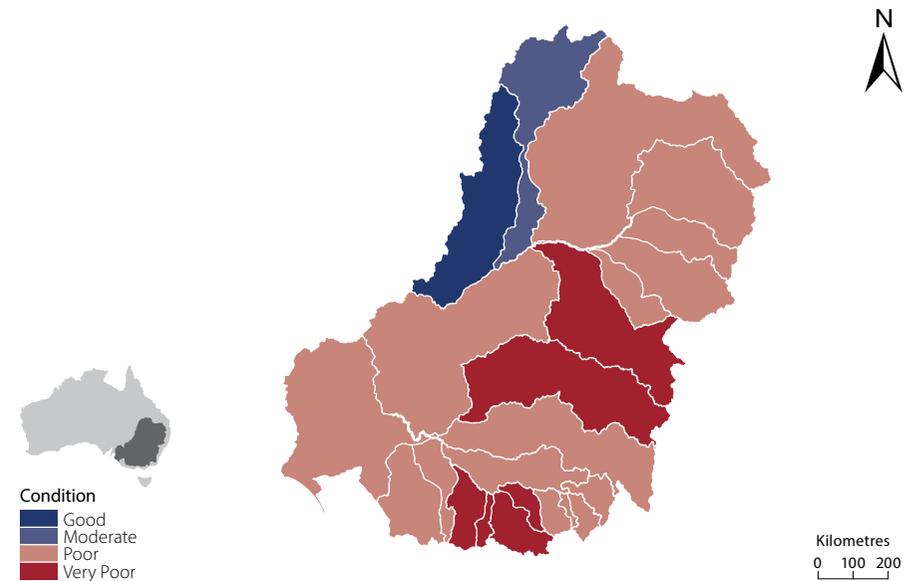


Figure 1: Condition of river systems across the Murray–Darling Basin (red = very poor, pink = poor, blue = moderate, dark blue = good).⁶

Climate change and demand for food, materials and energy

Principal drivers of the condition of Australia's environment in the future will be climate change, population and economic growth.

Australia is one of the developed countries most vulnerable to climate change. Australia's climate has already warmed by nearly 1 degree since 1910, drying soils, increasing evaporation and intensifying droughts. The bushfire season has lengthened across southern Australia, rainfall has declined in the southeast and southwest, sea levels are rising, and our oceans are becoming more acidic.¹²

Any increase in global temperatures beyond 2 degrees will add a whole new dimension to our efforts to create a healthy and productive Australia.¹³ The continent will continue to get hotter and experience changes in rainfall patterns, more droughts, and higher bushfire risks.¹²

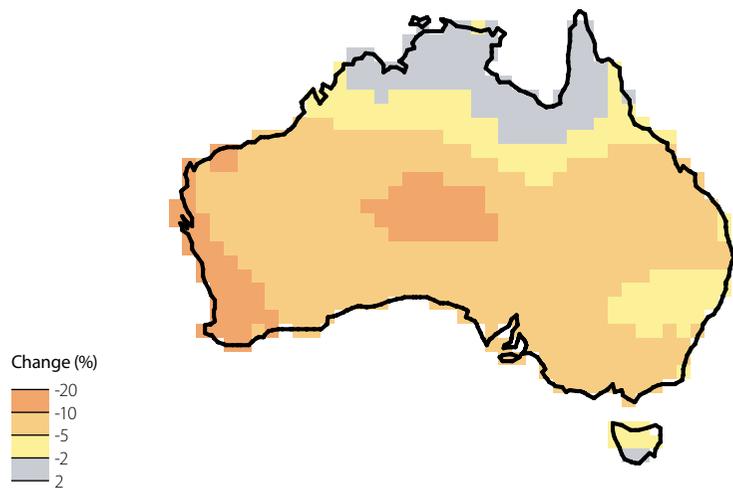


Figure 2: Projected (best estimate) changes in rainfall across Australia in 2050.¹⁴

Agricultural productivity is likely to be diminished by decreased rainfall and soil water availability (Figure 2),¹⁴ and climate change is expected to drive higher rates of biodiversity loss. Some native vegetation types will disappear.¹

Over the next 35 years Australia's population of 23 million people is projected to grow by 60 per cent to over 35 million. Over this same period the Australian economy is projected to grow by 2.7 per cent per year. Higher labour productivity could increase this to 3 per cent.¹⁵

In the short term, continued population and economic growth can be expected to increase demand for energy and production of waste. Global pressures to increase food production will also have an impact.

The FAO estimates that over the next 40 years world food demand will increase by 70 per cent.¹⁶ While there are opportunities to contribute, the reality is that Australia feeds less than 1 per cent of the world's population,¹⁷ and on-going degradation of our soil and freshwater assets will increasingly affect Australia's productive capacity.

As population growth and adverse climate change impacts affect production, we can expect a future with years when Australia imports more food than we export.¹⁷

Consequences of inaction and the benefits of action

Unless Australia becomes more effective in repairing past damage and addressing future challenges of climate change and increasing population and economic growth, we will leave a legacy where:

1. Soil degradation, diminishing water supplies and declining productivity will result in Australia producing less food, not more.¹⁸ Acidification from fertilisers has already degraded over 50 million hectares of agricultural land.¹ Once acidification encroaches into subsoil it cannot be reversed.¹⁹
2. Fragmentation of native vegetation, a changing climate, changes in fire regimes, and spread of weeds and feral animals, leads to extinction of native species, and the degradation of many ecosystems.
3. Climate change will damage coastal assets including beaches, billions of dollars of infrastructure, as well as peoples' homes and livelihoods, by more intense storms, sea level rise, floods and bushfires.²⁰
4. River and groundwater systems continue to deteriorate from over-extraction, pollution and poor management, and our catchments and coastal waters will continue to be affected by agricultural runoff and invasive species.

Alternatively, we can leave for the future:

1. Healthy landscapes that improve agricultural production, reduce costs and protect land and water resources from degradation from extreme events such as droughts, floods and fires.
2. Enhanced international competitiveness when we demonstrate that we are determined to implement policies of clean air, clean water, and clean products.
3. High environmental standards that create opportunities for innovation and investment in areas that enhance sustainability, such as renewable energy, waste management, water conservation and carbon farming.
4. Green cities and access to nature, that in an increasingly congested world provide opportunities for people to improve their mental and physical health, making a healthy environment an asset that will be valued more highly by present and future Australians, and attract growing numbers of international visitors.

Economic Growth and a Healthy Environment

The health of the natural environment matters because it affects the wellbeing of people, both directly and indirectly.

The Australian Treasury defines wellbeing in terms of the total stock of capital – human, physical, social and natural – that is maintained or enhanced for current and future generations. It relates to all aspects of life, and encompasses much more than simple measures of economic activity.¹⁵

The massive increase in the consumption of materials and energy that has underpinned economic growth has led to great advances in human, physical and social capital, for many people and for many nations (Figure 3).²¹

It is this growth in material consumption that is also driving the depletion of the world’s natural capital: the degradation of land, water, marine and biodiversity assets, and pollution of the atmosphere.

If we are to improve the stock of natural capital to enhance the wellbeing of current and future generations, we need to transform the economy so that a healthy environment becomes a partner to economic growth rather than a competitor. The way to do this is ensure that sustainability principles are embedded across all sectors of public policy.²²

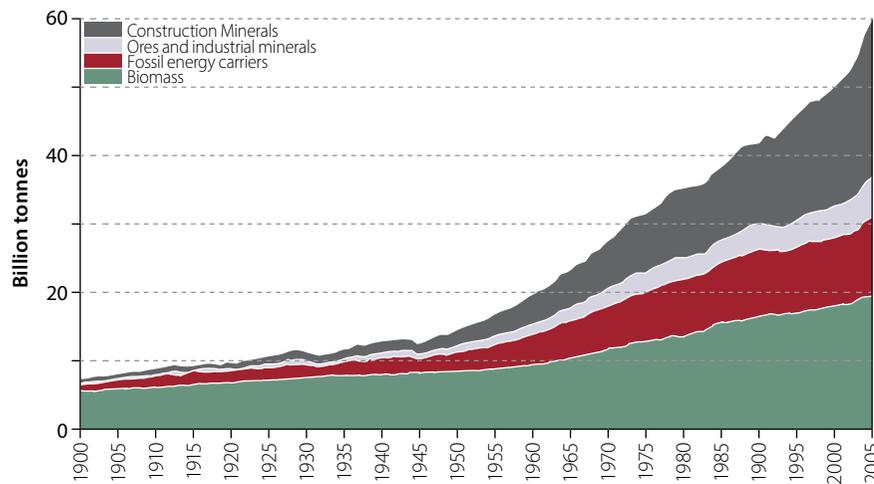


Figure 3: Global consumption of natural resources, 1900 to 2005.²¹

Productivity, or what we make with what we use, is the key to long-term economic growth.¹⁵ It is also a pillar of sustainability, because people can create greater value using less materials and less energy, and with less impact on the environment. Technology will play an important role, but it has its limits.

As our industrial economy grows there is an increase in the use of natural resources and energy, but the rate of increase is substantially lower than the growth of the economy (Figure 4).^{23,24} This is because expenditure is increasingly devoted to services and high-value, more energy efficient products.

What really matters is how these resources are produced and extracted, and whether this is having an adverse impact on the condition of the environmental assets.²⁵ That is why it is so essential that we have environmental accounts that measure the condition of these assets.

We will create a sustainable Australia when consumption of fossil fuels results in no net increase in greenhouse gases, and the extraction of renewable resources such as food and fibre, result in no long-term degradation to the environment.

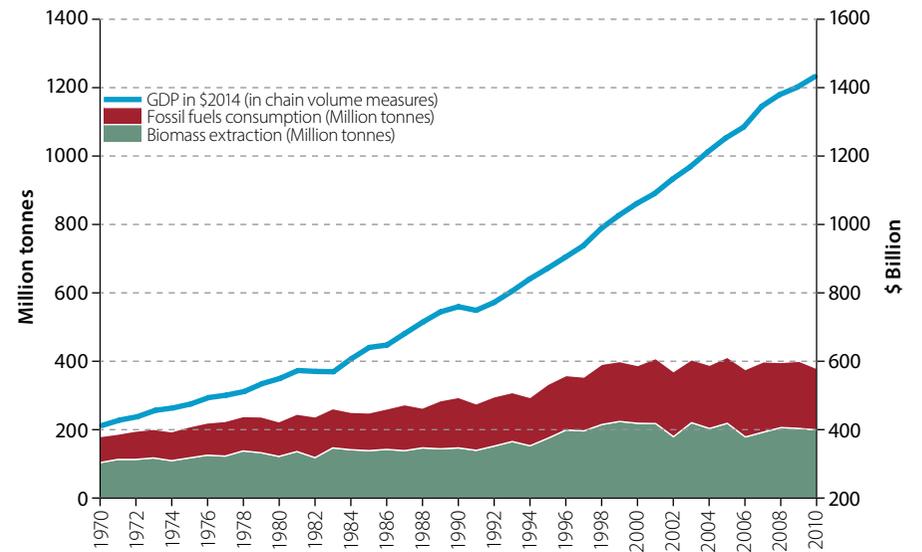


Figure 4: Australian economic growth (blue), consumption of fossil fuels (red) and extraction of biomass (green), 1970 to 2010.²⁴

The marriage of business and environment

People, businesses and governments make decisions on a daily basis that affect the environment. In many cases, people are either unaware of these impacts because they are hidden in production processes, or they do not value the impacts as highly as others would, particularly future generations.¹⁵

It is the cumulative impacts of these many thousands of individual decisions, every day, which is leading to the long-term degradation of environmental assets.

Business can benefit from healthy landscapes either through supply chains, around operating sites or via customers.²⁶

The challenge is that economic transformations needed to create a growing economy with a healthy environment are far beyond the ability of any individual or company to address on their own.

A sustainable economy is created when governments set limits so that economic activity does not degrade environmental assets, and then promote the economic conditions for business to grow the economy within those limits.

Many natural systems are sensitive to threshold boundaries. Once these thresholds are exceeded, environmental assets are degraded, usually in a non-linear way, and sometimes permanently.²⁷

Setting long-term limits will drive greater efficiencies and investment in resource use, promote recycling of materials, more sustainable farming practices, and create incentives to commercialise new technologies such as renewable energy.

There are many examples of this beginning to happen across the economy:

- **Efficiency in resource use:** The capping of water extraction combined with the creation of water property rights and the ability to trade these rights has driven significant improvements in the efficiency of water use, even though the volume of water available for consumptive use has been reduced. By the end of the Millennium drought of 2000 to 2006, the consumptive use of water across the Murray–Darling Basin fell by 30 per cent, yet trading of water by irrigators saw the gross value of irrigated agricultural production actually increase 11 per cent, from \$5.1 billion to \$5.6 billion.²⁸

- **Recycling:** The more we recycle, the less impact our consumption has on the environment. While the average Australian generates over 1,000 kilograms of waste a year,²⁹ the Australian Bureau of Statistics has found that 99 per cent of Australian households now participate in recycling and/or reuse of waste.³⁰ While over 50 per cent of this waste is now recovered,²⁹ the remaining, particularly plastics, is still a large contributor to the pollution of our waterways and oceans.³¹
- **Sustainable farming:** New farming practices such as minimum till, landcare and carbon farming, show that it is possible for Australian agriculture to both contribute to global food production and reverse the degradation of land, water and biodiversity assets.³² This can be achieved by avoiding the expansion of agriculture into sensitive ecosystems, closing yield gaps by improving practices and technologies, improving efficiency in the use of water, nutrients and chemicals,³³ and improving food delivery systems to reduce waste.³⁴
At a global scale such actions have the potential to double the world's food availability, and reduce greenhouse emissions, biodiversity loss, water use and water pollution.³⁵

A sustainable economy starts with a price on carbon

Energy use is and will continue to be essential to economic growth. If more people are to benefit from industrialisation, the world will need to produce more energy.

How this energy is produced will be the foundation of a sustainable economy, because the world also needs to reduce greenhouse emissions by at least 50 per cent within the next 40 years and then continue towards net zero emissions if it is to avoid dangerous climate change.³⁶ This will require developed countries with high emissions profiles such as Australia to commit to a long-term target to reduce our net greenhouse emissions by more than 95 per cent by 2050.³⁷

Accelerating global action to place limits on greenhouse gas emissions and air pollution in countries such as China is driving a rapid shift in energy production to renewables. Under their new policies scenario, the International Energy Agency expects that within 20 years renewables will approach coal as the leading fuel for power generation.³⁸

Some analysts suggest that the resulting momentum is likely to be enough to largely decarbonise the world's electricity generation by mid century (Figure 5).³⁹

China is one of 98 countries that has made international pledges to limit greenhouse gas emissions. These 98 countries represent more than 80 per cent of the world's emissions and around 90 per cent of the global economy.⁴⁰ In 2013 China invested over US\$50 billion in clean energy, and investment in renewable energy across the United States was over US\$35 billion.⁴¹

Advice from the Productivity Commission, Treasury, and the Garnaut Review, is that an emissions trading scheme is by far the most cost effective way for Australia to reduce greenhouse gas emissions.^{42,43,44}

In 2013 China introduced seven emissions trading schemes that cover a quarter of a billion people, and a national trading scheme is planned based on these models. More than half of US states now have policies to encourage renewable energy and California, the world's 9th largest economy, commenced an emissions trading scheme in 2012.^{40,45}

Emissions reduction policies are driving unparalleled investments in renewable energy technologies, which is creating a positive feedback; the increase in demand drives innovation in technology, and this results in falling prices from economies of scale.

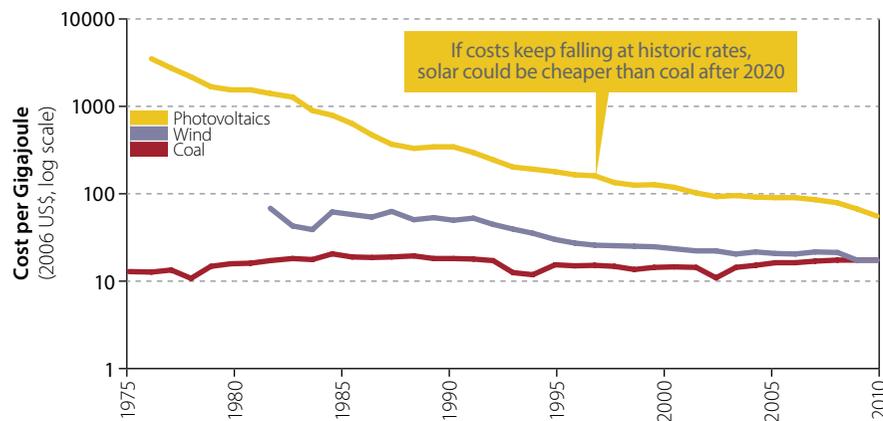


Figure 5: Global electricity cost trends, 1975 to 2010, for photovoltaics, wind and coal.³⁹

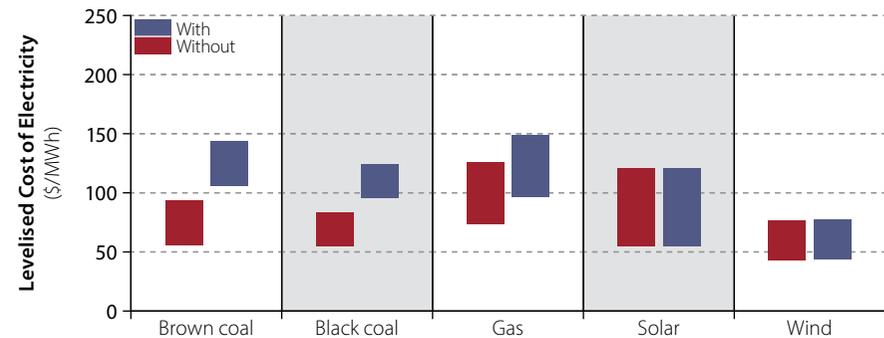


Figure 6: Projected 2030 energy costs in Australia with and without a price on carbon.⁴⁶

Rapid advances in technology have implications for consumers and investors in the Australian energy market. CSIRO projections indicate that with a price on carbon, by 2030 costs of solar and wind technologies would be lower than all fossil fuel energy sources (Figure 6).⁴⁶

If prices keep falling for solar energy as projected, it is possible that going off-grid with 100 per cent renewable energy will soon be a more attractive economic proposition for Australian households than staying on the grid.⁴⁷

Carbon farming benefits production and conserves biodiversity

Australia can achieve net zero emissions by 2050 without fundamental change to the economy, through a combination of energy efficiency, low carbon electricity generation, fuel switching and carbon farming.⁴⁸ Whilst the focus of climate change mitigation is centered on reducing emissions from energy generation and transport, removing carbon from the atmosphere and storing it in vegetation and soils will make the targets far more achievable in the time frame required.

In Australia a long-term emissions reduction target, coupled with a price on carbon linked to global markets, holds the long-term potential for carbon farming to offset Australia's existing greenhouse gas emissions by 25 per cent.⁴⁹

Carbon farming also provides an economic foundation for the restoration of degraded land, because natural landscapes and healthy agricultural systems store vast quantities of carbon.

Five transformative institutional and economic reforms

Over the next 12 months the Commonwealth Government will be developing major reforms to Australia's federation and taxation system. The outcome of these reforms, individually and collectively, will have long-term implications on the way we manage the economy and protect the environment.

These inquiries into Australia's federation and the taxation system present a rare, golden opportunity to restructure the way Australia manages its environment and finances the repair and maintenance of its natural capital.

Within the context of these reforms, **the Wentworth Group believes there are five transformative, practical, long-term economic and institutional reforms for Australia that will lead to a healthy environment with a productive economy:**

1. Fix land and water use planning:

We must put in place regional scale land and water use plans that address the cumulative impacts of development on the environment and long-term costs to the economy.

2. Use markets:

We must eliminate fossil fuel subsidies, set a long-term emissions reduction target and introduce an equitable, broad-based land tax to pay farmers, indigenous communities and other landholders to transform the way we manage the Australian landscape.

3. Conserve natural capital:

We must close the gaps in our national system of public and private reserves, and commit resources to a long-term plan to conserve our threatened native plants, animals and ecosystems.

4. Regionalise management:

We must embed and give prominence to natural resource management at the regional scale to reconnect people to the land, so that investment decisions are underpinned by an understanding of how landscapes function.

5. Create environmental accounts:

We must put in place regional scale, national environmental accounts that monitor the condition of our environmental assets, so that people can make better decisions to support a healthy and productive Australia.



Transformation of a landscape in Hamilton, western Victoria, from an eroded gully in 1987 (note the tree stump), to a restored landscape in 2014.⁵⁰

1. Long-term land and water use planning

Australia sits on the edge of the most rapid economic expansion in human history. Asia is set to become not only the largest producer of goods and services, it will also be the world's largest consumer of them.⁵¹ This is lifting many millions of people out of poverty and could within 20 years produce an Asian middle class of over 3 billion people, one hundred times greater than the entire population of Australia.⁵² This will create a vast array of new economic opportunities for Australia. It also means that competition for and conflict over Australia's land and water resources will grow.

There are massive mining, coal and gas resources, and rural and urban infrastructure developments in the pipeline, there are proposals to double Australia's food production, and build new dams.⁵³ These pressures combined with a 60 per cent increase in Australia's own population, will put additional pressures on our increasingly fragile ecosystems.

We know that development is inevitable, we know that planned growth is more desirable and in the long run more profitable than uncontrolled growth, and we know that the cumulative impact of uncontrolled growth is destructive.⁵⁴

Yet today's reactive land use planning is piecemeal and occurs in response to development pressures. Proactive planning creates sustainable communities, profitable industries and resilient landscapes (Figure 7).⁵⁵

The Wentworth Group identifies four opportunities where land and water use planning can take advantage of these economic opportunities and protect the environment:

1. Modernising Australia's planning systems to give greater emphasis to long-term regional scale, strategic land use planning that addresses cumulative impacts on the environment and long-term costs to the economy;
2. Making our towns and cities sustainable by encouraging innovation in waste management, water efficiency, reducing emissions, improving amenity and protecting biodiversity;
3. Recognising the risks to public safety and infrastructure, agriculture and biodiversity from climate change and adjusting our plans accordingly; and
4. Recognising that water will always be scarce in Australia by embracing the next generation of national water reform.



Population and economic growth create pressures and opportunities.

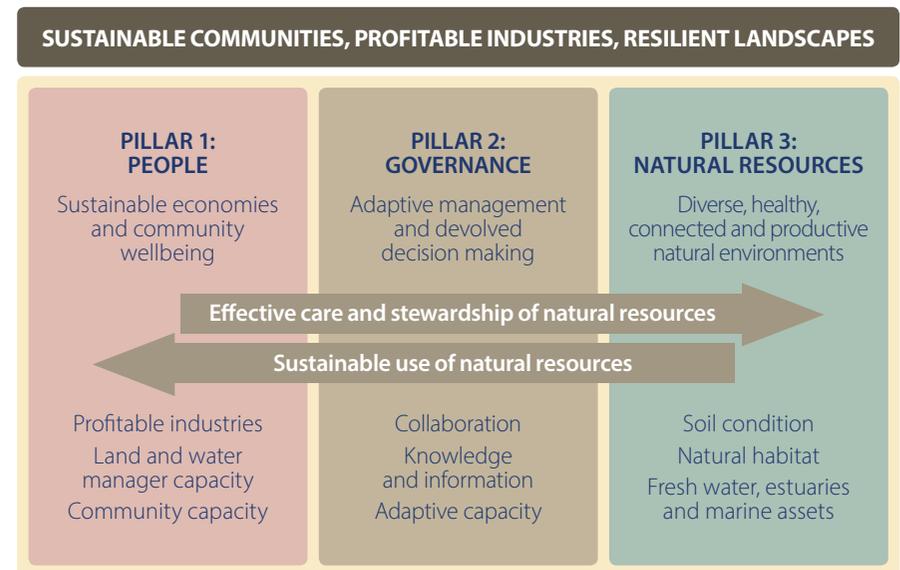


Figure 7: The benefits of regional planning to people, industries and landscapes.⁵⁵

2. Using markets

Many market activities damage the environment, but this is often not reflected in the market price of the goods or services these activities produce.⁵⁶ For example, industries will continue to emit excessive greenhouse gases if there is no market value placed on a stable climate system, and farming may cause land degradation if no market value is placed on the ecosystem services they provide to society.

The cumulative impacts of individual decisions are often masked within the production of the goods and services that people consume and as a consequence, people are not fully aware of the long-term impact of their actions.

Often these problems arise because many aspects of the environment have public good values – that is, because no individual or company owns them, these values are not priced by the market, and are often used without regard to the costs that may be imposed on others as a consequence.

It is therefore in the public interest for governments to create the economic conditions for these impacts to be incorporated into the cost of doing business.⁵⁷

The only systematic attempt to cost the repair to Australia's degraded natural resources was commissioned over a decade ago by the Australian Conservation Foundation and National Farmers' Federation.⁵⁸ This work estimated that a capital investment in excess of \$100 billion (in 2014 dollars) was required to achieve a range of natural resource management targets.⁵⁹

These targets included direct investments in river health, native vegetation and soil health, as well as indirect investments in improved planning, better information systems and extension services for landholders.

This equates to an investment in the order of \$5 billion a year for at least 20 years. By comparison, Commonwealth environmental programs have traditionally invested around \$400 million a year in private and public land conservation, and budget cuts in 2014 have almost halved this investment.⁶⁰

Even if funding is restored to historical levels the reality is that there is not, and most likely never will be, sufficient funding from governments to repair past damage and maintain Australia's natural capital in a healthy condition.



Carbon farming on the New England tablelands in NSW. Carbon farming benefits production, stores carbon and conserves biodiversity.⁶¹

The Wentworth Group identifies four opportunities to mobilise people and markets at the scale needed to create healthy and productive landscapes:

1. Applying a duty of care, on both private and public land, so that future actions of individuals, businesses and government result in no net long-term harm to the nations' environmental assets;
2. Eliminating fossil fuel subsidies that cause pollution and their replacement with a broad-based land tax to provide a long-term, equitable funding base to pay farmers, indigenous communities and other landholders to restore and maintain environmental assets in a healthy condition to benefit society;
3. Setting an effective long-term emissions reduction target with a price on carbon to encourage carbon farming to transform the way we farm and manage the Australian landscape; and
4. The development of voluntary, industry-based farm certification, supported by strong and effective regulation based on international standards, so that suppliers, retailers and consumers can have confidence, and farmers can receive financial benefits for managing their farms sustainably.

3. Conserving natural capital

Australia is home to over half a million species. Of these 90 per cent of plant species, 90 per cent of mammals, and half of the species of Australian birds are found nowhere else on Earth.⁶²

We enjoy this extraordinary heritage because of Australia's ancient landscapes, frequent bushfires, nutrient-poor soils, and the isolation from other continents for around 40 million years.

The clearing of native vegetation, pollution of rivers and estuaries, over-extraction of water, the introduction of weeds and feral animals, and inappropriate fire management, have resulted in the extinction of nearly 100 species, including 29 mammals,⁶³ 23 birds and at least 39 plants.¹⁰ Over 1,600 species are threatened with extinction.¹⁰

The main pressures on biodiversity are: habitat loss affecting around 80 per cent of all threatened species; introduced species affecting 60 per cent of all threatened species; and inappropriate fire regimes affecting 46 per cent of all threatened species.¹

Despite significant investments over many decades there has been no observable slowing in the rate of biodiversity loss because the main causes driving extinction have not been addressed. There is evidence of continuing decreases in population sizes and geographic ranges of many species across the continent. Populations of native mammals across northern Australia are in collapse, and even once common shorebirds are disappearing along Australia's coasts.

While governments have passed laws and set goals to conserve Australia's biodiversity, these aspirations have not been matched with resources that are capable of achieving them.

There is no scientific, technical or economic reason why Australia cannot restore viable populations of the vast majority of Australia's threatened species and ecosystems.

This should be our nation's goal if we are genuine about passing on this remarkable natural heritage to future generations.



Once common around Perth, Carnaby's Cockatoo is now critically endangered from land clearing, urban development and climate change.⁶⁴

The Wentworth Group identifies five opportunities to reverse the decline in biodiversity that has become part and parcel of industrial development over the past 200 years:

1. Strengthening national standards so that new development 'maintains or improves' the long-term condition of the nation's environmental assets;
2. Completing the national system of public and private reserves and indigenous protected areas, and supporting private landholders to covenant areas of high conservation significance on their properties;
3. Establishing a national river classification system comparable to our national reserve system to identify heritage, conservation and working rivers, along with policies to ensure that public and private land and water use in their catchments, are consistent with maintaining those values;
4. Committing to a 20 year plan to protect and restore viable populations of Australia's threatened species and ecosystems; and
5. Improving the health of ecosystems so that species have the best possible chance of adapting to climate change.

4. Regionalise management

Australia's landscapes are diverse: from Cape York to the southwest, from New England to the Kimberley. Each region has unique features that define it and create a shared identity and sense of purpose amongst its occupants. These interests transcend political boundaries.

Regional management of Australia's natural resources is not a new concept. In 1944, T.A. Lang, the great Queensland water engineer recognised *"that there are sound reasons for adopting a regional basis, rather than a political one, when planning the development and management of natural resources"*.⁶⁵

The benefit of a regional model is that it operates at a scale large enough to manage the pressures on our landscapes, yet is small enough to use local knowledge to tailor solutions to suit those landscapes. It produces better results for taxpayers, as well as supporting economic opportunities and social benefits that a healthy landscape provides to many rural, coastal, and urban communities.

Today there are 54 regional Natural Resource Management bodies across Australia that work with governments, farmers, indigenous communities, and thousands of community groups who have a passion for public land conservation.⁶⁶

We are not proposing a fourth tier of government. What we are advocating is that governments pioneer a new era of managing the Australian environment by working together, and with communities and industries, at a regional scale.

Connecting people to their landscapes

If farmers, indigenous land managers, other private landholders and citizens across Australia are to be given the opportunity to contribute to healthy and productive landscapes, they need access to information that is directly relevant to their community and about the place of their land in their region.

This year we celebrate one of this nation's great social reforms of the past half century – the 25th anniversary of the Australian landcare movement. The emergence of Landcare, Coastcare, Bushcare, indigenous rangers, and thousands of other *"care"* groups have brought a fundamental change in the way Australians see our landscape and our place in it.

The Commonwealth government should use the 25th anniversary of landcare to rebuild the connections of people to the land, and better connect local action to the needs of the regions.



Regional scale management of fire in northern Australia improves the land, conserves biodiversity and reduces greenhouse gas emissions.⁶⁷

The Wentworth Group identifies two opportunities for governments to work with farmers, indigenous people, and local communities to manage Australia's landscapes:

1. Embed responsibility for planning and coordinating natural resource management at the regional scale with Natural Resource Management bodies so that investment decisions are underpinned by an understanding of how landscapes function; and
2. Build a network of technical facilitators across the continent to work with farmers, indigenous communities and local 'landcare' groups to ensure that everyone's actions contribute to the overall health of their region.

5. Environmental accounts

If Australia is to become a sustainable society, one that creates wealth without degrading its natural capital, a most fundamental reform is to integrate the management of our environment into everyday economic decisions.

The lack of environmental accounts is one of the great failures of public policy of the past century. It has resulted in policies and land use decisions that have caused significant and unnecessary damage to our natural environment. Despite many achievements, billions of dollars of public funds aimed at repairing this damage have been wasted, and as climate change imposes its footprint across the Australian landscape, the lack of an environmental accounting system hampers our ability to adapt to these changes.

It is not possible to manage the economy without economic accounts. Neither is it possible to manage the environment without accounts that measure the condition of the environment.

Environmental accounts allow policy makers and the community to better understand complex scientific information, evaluate and set measurable policy targets, estimate the cost of meeting those targets, identify the most cost-effective investment decisions, and then monitor the success of these investments over time.

Australia needs an agreed, practical and affordable way to measure the condition of environmental assets (rivers, soil, native vegetation, estuaries) at all scales at which economic and policy decisions are being made.

The Wentworth Group of Concerned Scientists and other experts have developed the *Accounting for Nature* model that provides a framework for tracking the change in condition of environmental assets through time.⁶⁸

This common unit of measure, an *Econd* (environmental condition index), enables policy makers to compare the condition of different assets, in different locations, at all scales at which policy and investment decisions are made.⁶⁹

Australia's Natural Resource Management bodies have conducted a continental scale trial of this *Accounting for Nature* model (Figure 8).⁷⁰ This is the building block for developing the practical, technical and scientific requirements for a permanent national program that measures the condition of the nation's environmental assets.

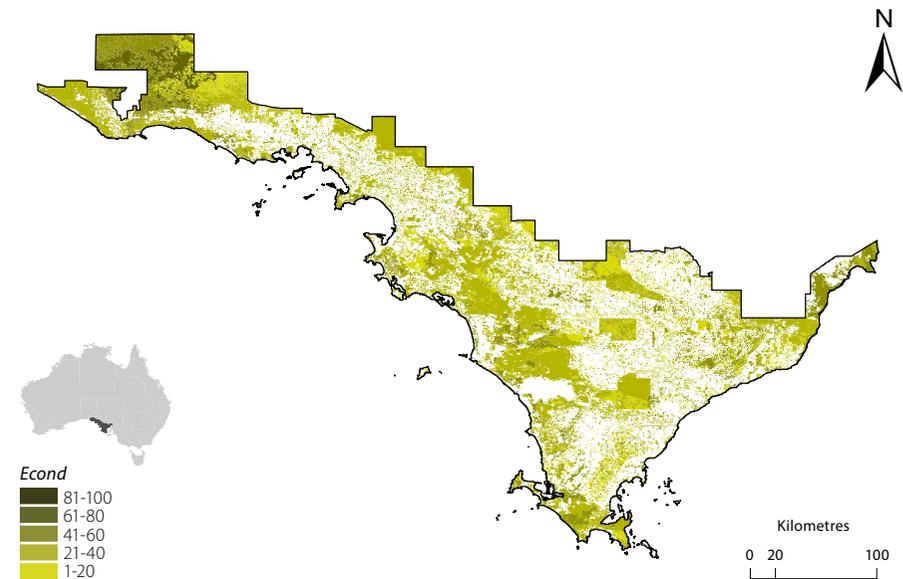


Figure 8: The condition of native vegetation assets across the Eyre Peninsula, SA. The darker the colour, the better the condition (= a higher *Econd*).⁷⁰

The opportunity now exists to create the National Environmental Accounts of Australia:

1. The Commonwealth would oversee national accounting standards for measuring the condition of environmental assets for reporting at multiple (regional to national) scales;
2. With financial and technical support from Commonwealth, state and territory, and local governments, Australia's Natural Resource Management bodies would compile annual environmental accounts for each region; and
3. The Commonwealth would then use this information to produce the annual National Environmental Accounts of Australia.

We all have a role ...

The twenty-first century challenge of promoting economic growth and meeting environmental goals has long been thought of as a trade-off, where the environment and sustainable management of our precious natural resources have lost out to short-term rewards that do not reflect the needs of the future.

We have to move on from this phase of our industrial history.

The Australia of today is more than capable of dealing creatively with environmental issues using regulatory and other models that promote innovation and competitive advantage, produce positive environmental outcomes and grow profitable businesses.

It is possible to grow the economy, create jobs and maintain a healthy environment.

With land use plans that promote development and protect the environment, long-term emissions reduction targets to address climate change, the elimination of fossil fuel subsidies that cause pollution and their replacement with a tax system that finances conservation, it is possible to have a productive economy and a healthy environment.

If we want to leave our world in a better condition than the one we inherited:

it is incumbent on each of us, no matter where we live, to participate actively in public processes to plan for these long-term outcomes, and then take action so that they take us on a pathway where a healthy environment becomes a natural by-product of our economy – a partner to economic growth, rather than a competitor.

When we do, we will create a truly sustainable society, because the market will direct investments that grow the economy and protect the environment.

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