

# Accounting for Nature

*Leading a Local Response*  
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Peter Cosier  
Wentworth Group of Concerned Scientists

I am going to talk to you today about an issue which on face value may appear a little mundane, even bureaucratic, but I hope to convince you that if we do it well, can transform environmental management across Australia.

It's an initiative to build a system of regionally based national environmental accounts.

I expect that most people in this room today have dedicated much of your professional, and I dare say your person life to improving the health of our natural environment.

I don't need to tell you about the struggles to deal with big issues such as the loss of biodiversity, pollution of the Great Barrier Reef, the invasion of weeds and feral animals.

We struggle day to day with limited resources and poor information to take on these seemingly intractable challenges that cover vast distances and with long time scales.

And whilst we've been struggling to address these challenges, almost out of nowhere, comes the new challenge of climate change.

When I studied climate change at university it was an abstract concept. When I was working in local government in the 1980s it barely received a mention.

When I was advising the former Australia Environment Minister in the late 1990s we knew we had a big problem, but to be honest when Australia signed Kyoto in 1997, most policy makers still thought climate change was an issue with a century time scale attached to it.

I think just about everyone, except for some of the elite climate scientists, have been shocked by the speed of change that is now happening to the world's climate system.

We're now being told that irrespective of whether the world agrees to deep emission cuts, the inertia already in the global climate system means that temperatures in Australia are likely to increase by almost 3 degrees (2.9 best estimate) above pre-industrial levels, within the next 40 years.<sup>1</sup>

The world's climate scientists now believe that even stabilizing greenhouse gas concentrations at around 450 ppm of CO<sub>2</sub>e is likely (best-estimate) to result in global average temperature increases of between 2.0° and 2.4°C (above pre-industrial levels by 2050)<sup>2</sup>.

This "450 ppm" stabilisation scenario requires global CO<sub>2</sub> emissions to peak no later than 6 years from now, and net global CO<sub>2</sub> emissions reduced by between 50 and 85% by 2050 (relative to 2000).<sup>3</sup>

Even then, there is more than 50% likelihood that average global temperature increases will exceed 2.0°C, and there is a 5% likelihood that temperature increases will exceed 4°C<sup>4</sup>.

Australia's landscapes have not seen increases of 2 degrees for over 10,000 years<sup>5</sup>.

The world has not experienced temperature increases exceeding 4 degrees for over 40 million years<sup>6</sup>.

If this happens, the impacts on Australian agriculture, water security, tourism (the Great Barrier Reef) and biodiversity will be profound.

If the science is right, even with concerted action, we are going to experience profound changes to our landscapes within the lifetimes of most people here today.

We need to urgently begin the process of adaptation and to do this we need to begin monitoring the change in the condition of our natural resource assets so we can respond effectively.

I sometimes feel overwhelmed by all this news. I'm sure many of you do too.

So it was with this background that the Wentworth Group sat down a couple of years ago and decided to take stock. How do we get ourselves out of this?

What we do know is that business as usual is not working.

So what can we do that is practical and affordable that can help us respond effectively to these challenges?

And we came to the conclusion that if we are to have any hope of adapting to climate change and addressing the other great environmental challenges of the 21<sup>st</sup> century, we need to apply a new level of discipline to environmental decision making: the same discipline to environmental management that we apply to managing other complex issues in our society – the economy for example.

We came to the conclusion that the lack of an environmental accounting framework is one of the great failures of public policy of our generation and is at the core of our environmental problems.

It has resulted in policy and land use decisions that have caused significant and unnecessary damage to our natural environment, it has resulted in the massive waste of billions of dollars of public funds aimed at repairing this damage, and now as climate change imposes its footprint on the Australian landscape, it means we do not have the tools in place to adapt to these changes.

So we gathered a small number of experts, including the chairs of the 1996 and the 2001 Australian State of the Environment Reports, and regional NRM and local government experts, to put forward a better model, and last year produced a document called *Accounting for Nature*.

As you can see, it's a deceptively small document. It is a model for building a set of national environmental accounts that monitors the health of our key environmental assets at a local and regional scale and the change in condition of these assets over time.

The power of this model is that it achieves this outcome in a way that allows these same accounts to be used to guide investments, both public and private, Commonwealth, State and Local, to areas with the greatest environmental benefit.

It sounds simple and mundane, even a bit bureaucratic, but we are convinced that unless we deal with this fundamental problem of poorly assembled information, Australia has no chance of successfully confronting the challenges of land and water degradation, the loss of biodiversity, and how we adapt to climate change.

What I find exciting about this document is that it builds national environmental accounts not from the top down in the way the State of the Environment Reports do, but from the bottom up.

And the foundation of this model comes from innovative practices from around Australia, and in particular some of the world's best practice that is taking place right here in Queensland such as the work of river and estuary health monitoring by the Healthy Waterways Partnership in SEQ.

I have a few copies here with me today and it is available on our web site, and I would like to take you through some of the key design elements as they affect your regional NRM and land use planning in a moment.

But firstly, let me put environmental accounts in an economic context.

How is it that the world was able to coordinate a response with such speed and precision to confront the global credit crisis.

How do we know whether the response is working?

How did we even know we were having a financial crisis?

The shops were full of food, the factories were still open.

The reason is that sophisticated and detailed economic accounting, developed over the last 50 years, allows us to monitor the health of and changes in our economy with incredible precision.

Yes, as the crisis deepens and spreads into the real economy, people are starting to lose their jobs, but we should not lose sight of the fact that governments around the world were able to put in place a suite of economic measures to give us a fighting chance of correcting the damage.

So why then didn't the world move with similar speed and precision when the most comprehensive assessment of the health of the world's ecosystems ever undertaken concluded that *"Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history (and) this has resulted in a substantial and largely irreversible loss in the diversity of life on Earth"*?

The Millennium Assessment was ignored because whilst it provided an expert assessment of the state of our environment, it did not provide any institutional means by which the world could react to these challenges.

The world is confronting a global economic crisis, the worst of our generation, because we borrowed more from the future than we were able to repay, and the system broke.

We are also facing the greatest environmental crisis ever to confront western civilisation for the same reason – we have been increasingly living off and degrading our natural capital beyond the ability of nature to replenish.

The difference of course is that we have a far greater ability to correct our economic mistakes than we have in correcting our environmental mistakes, because after the crisis of Great Depression the world put in place a system of economic accounts.

But when it comes to environmental accounting we are still in the dark ages.

If we are to have any hope of managing the great environmental challenges of the 21<sup>st</sup> century, we are going to have to apply the same discipline to environmental management that we apply to managing our economy.

We need to build a system of national environmental accounts.

It's actually a very simple proposition: if you don't measure it, you can't manage it.

In Australia we face the same challenges with our State of the Environment reporting: sound advice is provided by experts on the condition of our environment, but where are the measurable ways of assessing the health of our environmental assets, and the change in their condition over time, and hence, providing a practical basis for investing in actions to manage them?

As many of you would know, the Australian Bureau of Statistics has undertaken a certain degree of natural resources accounting.

Water, energy, salinity, mineral and fish reports have been produced at varying intervals with an environmental-economic accounting approach, a satellite framework of the System of National Accounts<sup>8,9</sup>, but they too have encountered the same problems that have plagued the Millennium Assessment and our State of the Environment Reports<sup>10</sup>:

1. *"There is no definitive set of indicators that encapsulate progress in the environmental domain"* and
2. *"Data gaps and data inconsistency present problems in many areas of environment analysis"*.<sup>11</sup>

We are now aware that our future prosperity is linked to effective stewardship of nature: our land and water, a stable climate, clean air, healthy coasts, and marine resources.

We now know that without stable functioning natural systems, our economic prosperity is transient and intergenerational financial security is a mirage.

The great challenge of our age is not wealth creation – certainly not in the western economies – the great challenge of our age is climate change, global food security, the growing scarcity of fresh water resources, and the catastrophic loss of the world's biodiversity.

Our problem is that our political institutions are designed to manage economic growth and distribute wealth. They are simply not designed to manage the economics of nature.

As I said, it is very simple: if you don't measure it, you can't manage it.

Environmental accounts must be designed so that they can to guide decision-making and investments, and assess the relative effectiveness of management scenarios, otherwise environmental accounting becomes purely academic, just another record keeping procedure.

Just measuring stuff for the sake of it.

Which is why the \$5 billion Commonwealth program attempting to redress the *"radically altered and degraded Australian landscape"*, highlighted in the 1996 State of the Environment Report and emphasised again in the 2001 and 2006 reports, received a damning condemnation from the Auditor General.

He said that they could not make an informed judgement as to the progress of the programs towards either long term or even intermediate outcomes.

Our taxes are now making major investments in our environment. Australian governments collectively spend over \$8 billion a year on the environment. In 2007, the Commonwealth government alone spent over \$4 billion. Yet because we have no accounting system in place, we do know if these investments are improving or maintaining our natural capital.

I don't need to tell to you about the scandalous waste of time, human capital and money that goes to creating thousands of different programs and separate assessment processes, simply to overcome the lack of basic information of where to best direct our investments to achieve the greatest environmental benefit.

It is a national scandal.

With your help, Australia can once again be at the forefront of environmental reform.

Where the *Accounting for Nature* document differs from the traditional SOE processes is that it is built from a regionally based model, which monitors and tracks the health and change in condition of Australia's major environmental assets.

Why regional? Because active management requires accurate data at a scale that is fit for purpose.

Regional reporting is necessary in order to manage the landscape at an appropriate scale, not just one defined by political boundaries.

Each region is unique and needs to be managed in a holistic manner to cater for its specific landscapes, land use profile and environmental assets.

At a regional level, the accounts can communicate changes in condition of environmental assets using the report card approach.

This has been successfully used for 10 years in south-east Queensland by the Healthy Waterways Partnership<sup>12</sup>.

Report cards offer Australia a clear picture of how their regions are changing.

The proposed National Environmental Accounts of Australia in our *Accounting for Nature* model are essentially biophysical accounts that sit alongside the economic and social accounts.

Environmental accounting is complex and expensive, which is why it is essential they are in a form that can both inform policy and guide future public and private investments at a local, catchment, state-wide and national scale, across the Australian landscape.

The National Environmental Accounts we have proposed are built on ten design principles<sup>13</sup>.

Let me briefly mention four:

1. The core to our model is a regional data collection and reporting framework that measures the 'health' of five environmental assets, and publishes an annual report on any change in their condition, in each region.

The regional reports are then scaled up to produce the national report.

We are not particularly wedded to the actual structure, but offer as a starting point five asset classes:

1. Land (native vegetation, native fauna, soils);
  2. Water (rivers, wetlands and estuaries);
  3. Atmosphere (greenhouse emissions which cause climate change);
  4. Marine and coastal resources (fish stocks, reefs, beaches); and
  5. Towns and cities (air quality, waste, water use, consumption).
2. Another design principle is that National Environmental Accounts must be based on scientific measurements of specific indicators to measure the health and change in condition of each asset in each region and the threats to those assets.

This and the regional structure will have significant resourcing issues, which we believe can largely be dealt with through co-ordinating, streamlining and prioritising existing local, state and Commonwealth resources.

3. This one is very important: The indicators used for evaluating the health of each asset class, and the frequency of data collection, may vary from region to region and from indicator to indicator, but within nationally accredited accounting standards.

This allows each region to select the indicators that are most appropriate for managing the major environmental issues in their region.

4. And finally, for one that is certain to please some people more than others: Commonwealth funding of all environmental programs (to Commonwealth, state/territory, regional and local government agencies) should be tied to the supply of any required data to a standard consistent with the data accreditation standards.

It simply won't happen otherwise, there are too many vested interests in existing agencies and too much institutional inertia.

As we have found with the SEQ Healthy Waterways Partnership, the Sustainable Rivers Audit for the Murray Darling Basin, the native vegetation assessments in NSW, and in the Whitsunday water quality improvement plan, the use of 'health' indicators is fundamental to an effective system of environmental accounts.

Each of these examples have been successful because they have successfully cracked the code in defining what a 'healthy' environmental asset looks like. From that base, the relative health of one assets compared to other asset can be determined.

This is really important stuff.

A healthy environmental asset is not necessarily one in a pristine, pre-European condition. For example, the Sustainable Rivers Audit of the Murray Darling Basin describes a healthy river as ensuring the "long-term integrity of the system is preserved while meeting human needs."<sup>14</sup>

As you know, no two rivers, or two bushland patches, nor two coastlines are the same.

How can we compare the condition of the Murray-Darling with the Burdekin? They are totally different systems.

Defining health for each system, resolves these differences, because it puts all assets on a common scale, where the condition of an asset is benchmarked against what it would be in a healthy condition.

This not only allows the health of each asset to be tracked, it also allows every asset to be compared relative to that same asset at any scale, Australia wide, and it allows us to compare the rate of change not only within each asset class, but between different assets.

With health based metrics we can now compare the relative health of a sand dune with a Eucalypt forest, or one local creek with another.

An asset in a healthy condition would score a 10, an A rating. A score below 50% would receive an F. As an asset improves or degrades, from say a 6.5 to a 7, this change is measurable and comparable.

And knowing this, we can then determine where the greatest environmental gain can be achieved for a given investment.

This is the magic of the 'health metrics': if we can benchmark the cause of a change on a local stream, for example, such as a specific management action to restore riparian vegetation to capture diffuse water pollution, then we can finally get to the point were we can evaluate the environmental improvement of one action over another, at any scale, from the billions of dollars of investments we are making.

As I hope you can now see, what we are proposing is large scale, institutional reform.

Reform of this scale requires a radical rethink of environmental monitoring and reporting in Australia.

If adopted across Australia – and lets start right here in Queensland - this *Accounting for Nature*<sup>15</sup> framework will change the way we manage Australia: the design of our cities, how and where we produce our food and fibre, how we direct public and private investments as we strive to improve and maintain the health of our environmental assets, and they will guide us as we adapt to the impacts of climate change.

Its successful implementation will require leadership from the Commonwealth government in establishing the national accounting framework, setting the standards for data collection, negotiating intergovernmental agreements and auditing the assembly and reporting of the information. Local government must be involved with these agreements.

State governments too will be major beneficiaries of a robust environmental accounting framework, and should be enthusiastic contributors to these reforms, by allocating resources to provide the institutional support for regional (catchment management) authorities and local government to undertake data gathering and reporting programs.

Local government is critical because of your on-ground management responsibilities relating to local area planning, development approvals, stormwater and sewerage management, catchment management, and public education and engagement.

Which is why we believe it needs to play a central role in the data collection and decision-making framework under any system of environmental accounting.

An example that is already operating in Queensland is the level of co-operation in data assembly and reporting through the Healthy Waterways Partnership, which is unmatched anywhere in Australia.

Similar co-ordination is needed for the measurement of environmental assets other than water quality, and for all regions, not just the south-east corner of Queensland.

This will assist Councils in prioritising the expenditure of their competing resources. But more importantly it will mean that the resources from all levels of government - State and Federal – public and private - will be better directed towards the priorities.

The other benefit to local government is that the information derived from these environmental accounts can then guide the rules that are built into your land use planning instruments, therefore harnessing the power of the private sector as well.

What is essential now is not another committee to negotiate yet another so-called intergovernmental agreement to another new process. That is a guaranteed recipe for failure.

We have more than enough institutional and scientific capacity around Australia today to create these accounts. The only thing that is lacking is the leadership to pull them together.

Just as our economic accounts were built with what resources were available in 1942 and then improved over time, so too must we adopt the same practical adaptive management philosophy in creating the national environmental accounts.

We need to agree on a common structure and reporting framework and get on and start the process. We need to get regions that already have the capacity to move towards 'health' based metrics to begin rolling the report cards out. Having made the start with what we have, each region can then build on and improve the quality of the information over time.

And again, I'm looking to Queensland to lead. I see from recent publications such as the Whitsunday NRM Group's water quality improvement plan that they are already moving in this direction.

Let me conclude by returning to my opening comments that the lack of an environmental accounting framework has been one of the great failures of public policy of our generation and is at the core of our environmental problems, and leaves us ill equipped to confront the new challenge of climate change.

The economic parallels are compelling.

The world is confronting a global economic crisis – the worst of our generation, because we borrowed more from the future than we were able to repay.

We are also facing the greatest environmental crisis ever to confront western civilisation for the same reason – we have been increasingly living off and degrading our natural capital beyond the ability of nature to replenish.

The difference is that we have a far greater ability to correct our economic mistakes than we have in correcting our environmental mistakes, because the world put in place a system of economic accounts.

If we are to have any hope of managing the great environmental challenges of the 21<sup>st</sup> century, climate change, global food security, the growing scarcity of fresh water resources, and the catastrophic loss of the world's biodiversity, we are going to have to apply the same discipline to environmental management that we apply to managing our economy.

Thank you for inviting me to your conference.

*Accounting for Nature* is available as a download at: [www.wentworthgroup.org](http://www.wentworthgroup.org)

## Notes and References

<sup>1</sup> Estimated temperature increases in Australia in 2050 above 1990 levels in "Climate Change in Australia" report of CSIRO/BoM in 2007. "By 2050, annual warming over Australia ranges from 1.5 to 2.8°C (best estimate 2.2°C) for the A1FI scenario." [http://www.climatechangeinaustralia.gov.au/technical\\_report.php](http://www.climatechangeinaustralia.gov.au/technical_report.php)

<sup>2</sup> Pers comm. Prof. David Karoly

<sup>3</sup> IPCC AR4 Synthesis Report Table SPM.6

<sup>4</sup> V. Ramanathan and Y. Feng, 2008. On avoiding dangerous anthropogenic interference with the climate system: Formidable challenges ahead. *PNAS*, **105**, 14245–14250.

<sup>5</sup> Pers comm. Prof. David Karoly

<sup>6</sup> Cosier, P 2008. *The Economics of Nature*. State Library of NSW, February 2008

<sup>7</sup> Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC.

<sup>8</sup> Australian Bureau of Statistics, 2008. *Information Paper: What are Environmental Accounts?* Canberra.

<sup>9</sup> Australian Bureau of Statistics, 2006. *Australian System of National Accounts, 2005-6. Reissue*. Canberra.

<sup>10</sup> Department of the Environment, Sport and Territories, 1994. *State of the Environment Reporting: Framework for Australia*. Canberra.

<sup>11</sup> Australian Bureau of Statistics, 2008. *Australia's Environment: Issues and Trends, 2007*.

<sup>12</sup> South East Queensland Healthy Waterways Partnership, 2006. *Annual Report 2006-7*. Brisbane, Australia.

<sup>13</sup> Ten Design principles for the National Environmental Accounts of Australia from *Accounting for Nature*:

1. National Environmental Accounts need to be based on a regional data collection and reporting framework.
2. This regional data collection and reporting would measure the 'health' of five environmental assets, and publish an annual report on any change in their condition in each region:
  - Land (native vegetation, native fauna, soils);
  - Water (rivers, wetlands and estuaries);
  - Atmosphere (greenhouse emissions which cause climate change);
  - Marine and coastal resources (fish stocks, reefs, beaches); and
  - Towns and cities (air quality, waste, water use, consumption).
3. National Environmental Accounts should be produced annually, as an aggregation of the regional (catchment) accounts, using an agreed common scaling standard.
4. National Environmental Accounts must be based on scientific measurements of specific indicators to measure the health and change in condition of each asset in each region and the threats to those assets.
5. Data collection will need to be coordinated at a regional scale and delivered 'fit for purpose' within a cooperative, but tightly specified national framework, acquired from a range of existing and new national, state/territory and local sources, as appropriate.<sup>3</sup>
6. And this one is very important: The indicators used for evaluating the health of each asset class, and the frequency of data collection, may vary from region to region and from indicator to indicator, but within nationally accredited accounting standards.
7. An independent, expert based National Environmental Accounts Advisory Council, chaired by Australia's Chief Scientist should be created to establish these accounting standards, accredit and monitor the regional reporting process, and publish the annual national report.
8. National Environment Accounting Standards should set out the criteria for the selection of indicators most relevant to each region, and define the method for determining a common single rating standard for what is considered 'healthy' for each asset type in each region.
9. The Australian Bureau of Statistics should be responsible for the management of the underlying data bases that make up the environmental accounts and the public release of the raw data as it is collected.
10. Commonwealth funding of all environmental programs (to Commonwealth, state/territory, regional and local government agencies) should be tied to the supply of any required data to a standard consistent with the data accreditation standards.

<sup>14</sup> Davies, P., Harris, J., Hillman, T. and Walker, K., 2008. *Sustainable Rivers Audit: A report on the ecological health of rivers in the Murray-Darling Basin, 2004-2007*. Prepared by the Independent Sustainable Rivers Audit Group for the Murray-Darling Basin Ministerial Council

<sup>15</sup> Wentworth Group of Concerned Scientists, 2008. *Accounting for Nature: A Model for building the National Environmental Accounts of Australia*. April 2008.