Accounting for Nature
A COMMON CURRENCY FOR MEASURING THE CONDITION OF OUR ENVIRONMENT

INITIAL OBSERVATIONS ON THE AUSTRALIAN PROOF OF CONCEPT
REGIONAL ENVIRONMENTAL ASSET CONDITION TRIALS

International Keynote Address by
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Acknowledgements

This paper is a synthesis of the work of the many people who have contributed to the development of the regional proof of concept accounts, two primary sources from which this paper is derived, Accounting for Nature: A Model for Building the National Environmental Accounts of Australia, 2008 and A Common Currency for Building Environmental (Ecosystem) Accounts, 2010,¹ as well as the draft Regional Proof of Concept Accounts.²

We also acknowledge the assistance of members of the Scientific Standards and Accreditation Committee, the Technical Environmental Accounting Committee, and Steering Committee in the development of the Regional Accounts and the financial support of the Purves Environmental Fund and the Ian Potter Foundation.

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Synopsis

People can’t make decisions that will lead to a healthy and productive Australia, if we don’t have a system of environmental accounts that link the management of natural capital into everyday economic decisions.

The first step towards a healthy and productive society that is in harmony with nature - the promise the world’s leaders signed up to in Rio in 1992 - is to develop need an agreed, practical and affordable way for measuring the condition of environmental assets, for every scale at which economic and policy decisions are being made.

If you don’t measure it, you can’t manage it.

In 2008, the Wentworth Group of Concerned Scientists and others developed the Accounting for Nature model that seeks to achieve this. Accounting for Nature is built on three concepts:

1. It is not possible to manage environmental assets if you don’t measure their condition;
2. The condition of environmental assets needs to be measured at a scale at which ecological processes operate; and
3. Environmental accounts need a common unit of measure of condition - a common currency for the environment - so that we can compare the condition of different assets in different places, at different scales, using (where appropriate) different indicators.

Placing scientific information into an environmental accounting framework allows policy makers and the community to:

1. Better understand complex scientific information;
2. Set and evaluate measurable standards and policy targets;
3. Estimate the cost of meeting those standards and targets;
4. Evaluate the cost-effectiveness of investment decisions; and then
5. Monitor progress over time.

In doing so, environmental condition accounts can fundamentally change our understanding of ‘development’ and ‘environment’.

A trial of the Accounting for Nature model of environmental accounting which utilises the common environmental currency, the Econd, has recently been completed. This trial was led by the 56 Regional Natural Resource Management authority Chairs, in cooperation with many dedicated scientists, economists and statisticians in universities, government and elsewhere who shared this vision and lent their considerable personal time and support.

This paper presents the initial findings of the continental scale Proof of Concept trial by NRM Regions Australia, to demonstrate the Accounting for Nature model and its application to natural resource/environmental management across Australia.
1. Introduction

Environmental degradation is a global phenomenon, driven by the ability of humans to harness the power of the machines of the industrial revolution to convert nature into products for human consumption, at scales never before experienced in human history.3 The industrial revolution has led to dramatic improvements in living standards for many people, across many parts of the world, but it has also resulted in the depletion of natural capital.

This depletion is occurring at a scale that is approaching, and in many cases has already exceeded the ability of biophysical systems to meet future demands on them.4 This is not sustainable.

The Organisation for Economic Cooperation and Development (the OECD) is now warning that "providing for a further 2 billion people by 2050 and improving living standards for all will challenge our ability to manage and restore those natural assets on which all life depends". Without new policies, “continued degradation and erosion of natural capital ... (risks) irreversible changes that could endanger two centuries of rising living standards”.5 That’s the conclusion the OECD drew in its Environmental Outlook Report of 2012.

In 1992, over 20 years ago, world leaders convened the first Earth Summit in Rio, Brazil, which produced the Rio Declaration on Environment and Development.

New Zealand, along with Australia, is a signatory to that declaration, the first principle of which is that "human beings ... are entitled to a healthy and productive life in harmony with nature."6 That was over 20 years ago, and by any measure we have failed.

Our generation will not leave this world in a better place than the one we inherited. Why have we failed? We have failed because despite all the science, and all the committees, and all the reports produced over the past 20 years, we still have not addressed the fundamental problem – we do not internalise environmental degradation into our everyday economic decision making.

I suggest a place to start. We can measure degradation by measuring the condition of our environmental assets.7,8 Condition is a scientific measure of the capacity of an environmental asset to continue to deliver benefits to society9 and incorporates elements of both the quantity of an asset (the area of a forest for example) and the quality of that asset (for example, the diversity of plant and animal species that inhabit that forest).

We need an agreed, practical and affordable way for measuring the condition of environmental assets (rivers, soil, native vegetation, groundwater, etc) at all scales at which economic and policy decisions are being made.

If you don’t measure it, you can’t manage it.

In 2008, the Wentworth Group of Concerned Scientists and other experts in science, economics, statistics and public policy in Australia, developed the Accounting for Nature model to place scientific information about the condition of our environment into an accounting framework.10 The primary purpose of environmental accounting is to address the concern that people can’t make decisions that will lead to a healthy and productive environment, if we don’t have a system of environmental accounts that link the maintenance of our natural capital into everyday economic decisions.11,12
The Accounting for Nature model does this by using the long established science of reference benchmarking to create a common (non-monetary) environmental currency that allows us to:

1. Compare the relative condition of one environmental asset with another, and
2. Aggregate information at different scales and for different assets.

This is the unique feature of the Accounting for Nature model, and I'll return to this in a moment.

Over the past three years, the Chairs of the 54 Regional Natural Resource Management authorities across Australia have undertaken an Australia wide scale trial to test the practical application of the Accounting for Nature model.

![Australian Regional Proof of Concept Trials](image)

In my presentation today it is my great pleasure to:

1. Describe how Accounting for Nature uses the disciplines of science and statistics to create a framework for environmental asset condition accounting, using a common environmental currency; and then
2. Show you some of the results of a proof of concept trial that have been produced using this method at a continental scale.

2. Accounting for Nature

Accounting for the condition of environmental assets must confront two problems: first, we do not have, nor will we ever have, enough money to systematically measure everything in nature; and secondly, without a common unit of measure that places diverse scientific information into an accounting framework, it is not possible to link the health of the natural environment to economic decision making.

Before money was invented people exchanged goods and services on a barter system. The creation of money, a common unit of exchange, revolutionised the world’s economic system. The starting point for building a system of environmental condition accounts must therefore be the creation of a common, non-monetary environmental currency, one that can be applied to any environmental asset, at any location, at any scale.
The *Accounting for Nature* model does this by using the science of reference condition benchmarking.

Environmental condition indicators based on reference condition benchmarks are conducive to statistical accounting, because they create a standardised numerical unit capable of addition and comparison. They can assess and compare the condition of environmental assets across regions and between assets, and upscale and aggregate over multiple spatial scales.\(^{13}\)

The reference condition benchmark is a scientific estimate of the natural or potential condition of an ecosystem in the absence of significant human, post-industrial alteration.\(^{14}\) This allows every environmental asset to be described relative to its un-degraded ‘reference’ condition, as an index between 0 and 100.\(^{15}\)

We are calling this common unit of measure, the common environmental currency, an *Econd*.\(^{16}\)

I cannot over emphasise how important it is to use of this unit of measure.

It would be absurd to suggest that every decision maker should establish their own measure of environmental condition - every individual, every business, every industry sector, and every level of government. Yet that is precisely what we are doing.

The best way for me to highlight this point is to reverse the question, and ask you to imagine how much more difficult our life would be, if every transaction of a good or service throughout the economy, had to be conducted without a common unit of exchange.

Imagine you were a farmer who grows bananas for a living, and you wanted to buy a new car, but the car dealer would only accept business shirts in exchange for the car.

If the farmer wanted to buy let’s say, a new Camry, they would have to find some way of acquiring 418 business shirts.

The farmer would have to find a shop that would take her 57,000 bananas in exchange for the 418 business shirts, so she could then go back to the car dealer to buy the new car.

Imagine what our national budget papers would have looked like.

It sounds absurd, and I know that I am laboring the point, but this is how we manage our environment. We count business shirts here and bananas there, and then somehow hope to find a way to combine business shirts and bananas to produce a Camry.

The power of the *Accounting for Nature* model is that it places decades of science into an accounting framework. In the same way monetary currencies convert infinite complexity into an easily understood and usable means of exchange, so too does a common unit of measure for the condition of environmental assets.

It is important to emphasise that an *Econd* does not imply a monetary value, nor does it describe a desired state.

Environmental accounts give decision makers a tool which makes it possible to make better decisions, including target setting processes.

Later in this paper we give an example of how environmental accounts have been used by regional natural resource management authorities to set regional condition targets for both rivers and native vegetation.
3. The Australian Regional Environmental Accounts Trials

Theory is one thing, but the real test is whether we can create a practical and affordable, yet scientifically robust set of accounts that can work effectively in the real world.

So let me give take you through the structure of these accounts and then give you some examples of how we applied the Accounting for Nature model in the regional proof of concept trial across Australia.

First some background. These trials were led by the Chairs of Australia’s 54 regional natural resource management bodies, in partnership with the Wentworth Group and assisted by other scientists, economists, and statisticians from the Australian Bureau of Statistics, the Australia Bureau of Meteorology, Australia’s premier scientific research agency - CSIRO, the Ian Potter Foundation (a major philanthropic institution in Australia), and a number of state government agencies.

These trials are a real world experiment to test a methodology for measuring the condition of any environmental asset using the common currency at a regional scale, with the objective of then aggregating this information to form a set of national environmental asset condition accounts.

Importantly, no additional funds were sought from government to run these trials. We wanted to see what is feasible using existing information, with limited resources.

Ten regions took part in the proof of concept trials.

These ten regions reflect vastly different landscapes (forests, savannahs, rangelands, woodlands, urban). They are being subjected to vastly different environmental pressures and are regions with vastly different resources and access to information.

We did this because the real test is not in the well resourced, data rich regions; it is whether those with the least data, in the remotest locations, with the fewest resources, can create a set of accounts.

Figure 2 displays the assets that were tested.

One asset common to all regions (native vegetation) was chosen so that we could test whether different measures of the same asset could be aggregated to create national accounts.
A range of other assets across the regions were also proposed so that we could evaluate the practical and technical implications for constructing a holistic set of assets across the continent.

These trials have only just been completed, and the accounts are being assessed by our Scientific Standards and Accreditation Committee.

Scientific accreditation is important to the credibility of the accounts because community and policy makers must have trust in the data that is in them. Our model requires any environmental account, at any scale, to be accredited by an independent scientific body, against national accounting standards.

With that important caveat, let me take you through some of our initial findings.

I am going to rifle through quite a number of PowerPoint slides because I want to give you a sense of the amount of information that can be extracted and used to inform policy and investment decisions, when scientific information is placed into a common accounting framework.

**Structure of the Environmental Condition Accounts**

Firstly, the structure of the accounts themselves.

Environmental assets are categorised into what we call Asset Classes: Land, Water, Atmosphere, and Marine (Figure 3).

![Figure 3: Structure of Environmental Condition Accounts](image)

Each asset class comprises a range of environmental assets.

An environmental asset can be any biophysical feature in nature that society, as reflected by our democratic institutions, considers to be an asset.

An environmental asset can be an ecosystem such as a forest or a river or an estuary, it can be an individual species of mammal or bird, or it can be any other feature in nature, such as a fishery, agricultural soils, or a groundwater resource.

The most basic structure of an environmental condition account is a summary table, which describes the environmental asset classes, each environmental asset, the *Econds* for each asset at a particular time, and over different time periods to establish trend.
This table is in no way the only product of an environmental account.

GDP is not an economic account, it is one of many thousands of economic products that are derived from the national (economic) accounts. As you will see, the Accounting for Nature framework does for environmental management, what the national accounts do for economic management. You don’t just get one number, you get thousands of numbers that can be used to derive trends and be applied in many different circumstances for the purpose of environmental management.

A series of tables that sit underneath the summary tables show the condition scores for each indicator, and calculate the Econds for each asset.

Figure 4 is an example of a section of the Native Vegetation Account for the Eyre Peninsula region in South Australia.

<table>
<thead>
<tr>
<th>Class</th>
<th>Indicator [Unit]</th>
<th>Reference Benchmark</th>
<th>Measure</th>
<th>Condition Score</th>
<th>Event</th>
<th>Weighing (% Area)</th>
<th>Weighting by % Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>4571.1</td>
<td>Extent</td>
<td>186,558</td>
<td>3.6</td>
<td>100246</td>
<td>89</td>
<td>2.4</td>
<td>2.7</td>
</tr>
<tr>
<td>4571.2</td>
<td>Composition</td>
<td>66.30</td>
<td>66</td>
<td>2.3</td>
<td>2.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>4571.3</td>
<td>Configuration</td>
<td>73.02</td>
<td>74</td>
<td>2.4</td>
<td>2.4</td>
<td>0.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>

As you can see from this table, condition accounts require much more than a simple measure of quantity. Condition accounts need to measure the quality of an asset, not just its quantity, if they are to be of any value in addressing environmental degradation. 18

If you want to measure quality, indicators for native vegetation condition need to measure:

1. Extent (ie what proportion of the area of the original vegetation remains);
2. Composition (ie the structural integrity of the vegetation, such as species richness and weediness); and

If possible, configuration (where the remaining vegetation is located in the landscape).

Presentation of the Condition Measures

One of the great powers of an accounting system using the Econd (the common environmental currency) is that it allows information for all assets, irrespective of the indicators used or the scale of measure, to be presented graphically.

This next graph (Figure 5) is a summary of the relative condition of all of the assets that have been submitted from each of the regions as part of the proof of concept trials.
It allows you to see the relative condition of every asset in every region, across the continent, in a single figure.

It tells you, for example, that native vegetation is in a better condition in the Northern Agricultural Catchments region of Western Australia than it is in the North Central region in Victoria, and that the regional population of Dugongs in the Moreton Bay Ramsar listed estuary in Queensland are in a relatively poorer condition than the population of Southern Right whales in the Great Australian Bight.

Let me use native vegetation as an example of how we have gone about measuring the condition of each of these assets.

This graph (Figure 6) shows the relative condition of native vegetation in seven regions (which completed or partially completed a full condition based Econd).
Figure 7 shows the level of detail that sits behind the native vegetation account for the Northern Agricultural Catchments of Western Australia. This level of detail sits behind each regional native vegetation condition accounts.

![Northern Agricultural Catchments, Western Australia](image)

Figure 7 shows that the overall condition of native vegetation in this region has an Econd of 27. It also shows that less than 20% of the vegetation types in this region have an Econd of above 70.

There are 22 vegetation types with an Econd of less than 10.

This means that the quality of this vegetation; how much there is (extent), combined with its functional and structural integrity (composition) and how it is configured across the landscape, is less than 10 per cent, when compared to what it would have been prior to clearing and damage from weeds and feral animals.

Figure 8 shows the information for native vegetation in six regions across the continent.
Here (Figure 9) is that same information combined with geographic imagery showing the spatial distribution of the condition of the remaining native vegetation in those same six regions.

This map (Figure 10) shows the level of detail that imagery can provide to show the condition of native vegetation across the Murray Darling region in Queensland.

These graphics and the following maps were produced within a matter of days, using different indicators in each region, because the information was organised in an agreed accounting framework.

And remember, this trial was run without any additional funding from government, using existing data where possible, and then filling data gaps with the assistance of experts and in a few instances, by direct survey.
Now let me burrow down further into one of the regional vegetation accounts to show you more detail. Figure 11 demonstrates how the level of detail that sits in these accounts can show the main drivers that are affecting the condition of the vegetation.

It shows not only the \textit{Econd} for each of the 23 major vegetation groups that we saw in the earlier slide (the red bars), it also shows the relative extent of the remaining vegetation (the green bars), the relative condition of the composition in each of these vegetation groups (the orange bars), and the configuration of this vegetation across the landscape (the blue bars).

The left hand side of the graph shows the five vegetation groups that are in a very poor condition, and that the primary reason for this is that they have been reduced in area to less than 1 per cent of their original extent.

The power of organising information into a common accounting framework is highlighted in this next graph (Figure 12).
Because the survey undertaken to produce the composition indicator also recorded the level of weeds that are affecting each vegetation type, we can even map the impact of weeds across the region. The darker the colour, the greater the impact of weeds.

If this was done for all regions, we will have, almost as a by-product of the accounts, a map of the impact of weeds across the entire country.

How? Because all that detail, all that science, is now organised in this single common accounting framework, using the common environmental currency.

**Measuring Trend**

Understanding the health of an environmental asset requires an understanding of the condition of an asset at a particular point in time. Of equal importance to policy makers and investors is the ability to monitor the direction and rate of change.

Quite often, as we have discovered in these trials, there is a vast amount of existing data about the condition of environmental assets that does go back, in some cases for decades, which can be adapted for the accounts.

We do, for example, have long time series of data for many river and estuary systems across Australia.

South East Queensland’s environmental account includes data from 2003 to 2011 for the condition of estuaries around Brisbane. This data is displayed in Figure 13.

Figure 13 also shows in more detail, the condition of various parts of the Moreton Bay Ramsar listed estuary – a marine estuary of international conservation significance.

Collecting trend data takes time, and in landscapes with high climate variability such as Australia, it can be many years before sufficient data can be assembled to give useful trend information.

In this next example (Figure 14), we used Landsat data which dates back to the 1970s and was acquired for the National Carbon Accounting System to measure Australia’s greenhouse emissions from land use change.
Our national Department of Industry and Climate Change used this same data to hindcast trend in the change in extent of the various vegetation groups across the Central West region of NSW.

It shows that the total extent of native vegetation (a major indicator of condition) in the Central West region in NSW is very low (< 20%).

It also shows that there has been a noticeable change around 1998 and 1999, particularly in two vegetation groups: the ‘Dry sclerophyll forests’ and the ‘Arid shrublands’.

The point is: all of the time series information you see has been gleaned from data that has in many cases been collected over decades.

Another innovation to overcome the lack of historical data is to combine oral history, local knowledge and expert opinion to construct a long term trend graph (Figure 15). This information is for the Wooroonooran Nature Refuge in northern Queensland.
We believe that such knowledge is of profound importance to policy makers in helping set policy targets and base investment priorities.

By putting this information into a common accounting framework, it creates a most powerful tool for policy makers and the community.

There are of course still many questions to be resolved.

For example, is it valid to compare the Econd from one asset (say native vegetation) with another Econd constructed for a different asset (say a river)?

The answer to these and other questions requires further evaluation.

These challenges we can take on in the future.

What these trials do prove, is the incalculable value of a common environmental currency to enable us to simplify nature’s complexity without reducing the rigour of scientific measurement.

4. Using Environmental Accounts for policy and investment decisions.

The purpose of creating a system of environmental accounts is to link the maintenance of our natural capital into everyday economic decisions so that people can make informed decisions that will lead to a healthy and productive environment.

Placing scientific information into a common accounting framework does this by allowing policy makers and the community:

1. To better understand complex scientific information;
2. To set and evaluate measurable standards and policy targets;
3. To estimate the cost of meeting those standards and targets;
4. To evaluate the cost-effectiveness of investment decisions; and then
5. To monitor progress over time.

The first step towards a healthy and productive society that is in harmony with nature – the promise the world’s leaders signed up to in Rio in 1992 - is to understand how our natural systems operate, and the impact policies and economic decisions have on our natural capital.

Natural systems are complex, and when information is too complex, it makes effective decisions impossible. When complicated information is presented simply yet rigorously, it makes for improved decision making.

Presenting complex information using different indicators for a range of different assets is confusing even to experts. Just imagine how impossible it is to non-experts who rely on this information to make judgements with all this complexity. The simple truth is they can’t, and so are forced to resort to opinion, and as a result we have conflict when we should have agreement.

The creation of a common environmental currency provides the opportunity to simplify complexity without reducing the scientific standards that create this information. In doing so environmental condition accounts can fundamentally change our understanding of development and environment.

It is important to emphasise that an Econd does not imply a monetary value, nor does it describe a desired state, but it does inform the setting of targets.
The condition of a river to provide safe drinking water may differ, for example, from the condition needed to flush salt out of inland river systems, or to provide habitat for a sustainable fishing industry, or to provide opportunities for recreation.

The target condition for native vegetation might vary not only depending on the service that it is providing, but also where that service is located in the landscape. For example, include protecting water quality in rivers, or controlling dryland salinity, or providing habitat for threatened species, or protecting agricultural soil from wind and water erosion.

One method of communicating this information that is increasingly being adopted by many natural resource management agencies across the world, is to produce Report Cards which describe the current condition of the assets and highlight future actions that can be taken to ameliorate assets in a poor condition into the future.\textsuperscript{20}

One example in Australia is the annual Report Card produced by the Healthy Waterways Partnership in South East Queensland (Figure 16). It has proven to be a great success in communicating this knowledge by engaging multiple stakeholders (tourism, business, local government, communities) in the process and encouraging them to take ownership for the actions arising from the results of the monitoring program.

The same accounts that inform us of the condition of our environmental assets can also be used to inform policy targets, because this information is presented in an accounting format that can be used to evaluate the impact that policies and economic decisions are having on our natural capital.
The information in Figure 17 was used to set policy targets for prioritising investments in native vegetation management.

It shows the current extent of the 77 types of native vegetation in the Namoi Catchment Management Authority region of NSW.

They used this information in their Catchment Plan process, conducted over a number of years, and concluded that the Namoi valley would be a more healthy and productive environment, if 19 of their 17 native vegetation types were restored to a 30% level.

This has now become a policy target in their Regional Catchment Plan.21

The same information in the environmental account that was used to inform that policy process can also be used to calculate the cost of meeting that 2020 target.

In the Namoi, by calculating the areas of restoration required to restore the under-represented vegetation types, it is possible to establish:

- the area of restoration required to achieve the 30% target;
- the cost of restoring each of those hectares based on previous project expenditure, to produce an estimate of the a total cost of achieving their 2020 target; and
- an estimate of the economic value of the carbon sequestration that would result from achieving that restoration target.

They are able to do this, because we have an environmental condition account which connects asset condition (in this case using an extent measure only) to policy targets and policy targets to investment decisions.

Let me conclude by giving you an example of how environmental accounting can change the way we understand and manage our freshwater resources.

South East Queensland Healthy Waterways Partnership offers an example (Figure 18).
Increased pollution caused by urban development is placing significant pressures on the condition of its waterways which flow into the Ramsar listed Moreton Bay estuary (Figure 19).

Because of their long-term asset condition monitoring program, they can place 10 years of data into their models (Figure 20), which incorporate hydrology, climate, and predicted population growth, and produce an estimate of the added pollution loads on their river and estuary assets into the future.
SEQ Catchments, the natural resources management body for this region, used these environmental accounts to produce an infrastructure investment plan for maintaining the condition of its freshwater assets, as the region grows by a projected 1 million people.

They then used the information in these accounts to evaluate the most cost-effective actions to achieve these abatement targets (Figure 21).22

This analysis concluded that the cost of keeping Moreton Bay estuary at a “B” is an annual cost of $25 million. This is less than 1% of the overall urban infrastructure budget for the region, and from what I’m told, an annual cost to ratepayers of $6.

In other words, it is not nearly as difficult, nor is it nearly as expensive as many people might think, to fix degraded rivers. SEQ Catchments was able to show this because they had built a set of environmental accounts, based on scientific information that could be used to identify cost-effective investment decisions.
As part of the same process they found that sediment was a primary contributor to the decreased condition in the rivers and estuaries of South East Queensland. With this information they were able to locate areas across the landscape that are at high risk of losing sediment, and then prioritise investments into those areas (marked in red in Figure 22).

5. Conclusion

As a result of the leadership of Australia’s regional NRM authorities, and as a result of the phenomenal level of cooperation from the many dedicated scientists, economists and statisticians in state and federal government agencies, universities, the CSIRO, Members of the Wentworth Group of Concerned Scientists, and support from the Ian Potter Foundation, we have made extraordinary progress. The regional trials have shown that when people cooperate and work together things that seem impossible become possible. They show what can be done when you try.

Condition accounting using the Accounting for Nature model to create a common environmental currency has been tested and the results indicate it is an appropriate method for measuring degradation. It is useful in helping set measurable policy standards at a regional scale, and then informing the cost-effectiveness of investments aimed at meeting those policy targets.

Multiply this concept of placing existing scientific information into a common environmental currency for every environmental asset, at any scale (a paddock, a farm, an industry sector, a catchment, a region, a nation), anywhere in the world, and you begin to appreciate the power of the Econd to improve society’s ecological literacy, and make wiser and more effective policies, and make more cost-effective investment decisions.

Having shown what is possible, we are now going back to the Australian national government to seek their commitment to build on the progress achieved with these trials, and establish a system of regional scale national environmental accounts.

It is my great hope that environmental accounts will help us internalise environmental degradation into our everyday economic decision making, and in doing so, blow away forever the
nonsense that in a modern economy, economic progress must come at the cost of the environment.

In the same way national accounts developed from simple beginnings to the complex, sophisticated economic accounts we have today, so too will environmental accounts evolve in their complexity and sophistication.

And, of course, it will be these same environmental accounts that will monitor the progress of our investments towards achieving our targets into the future.

Thank you.
Notes and References


8. Environmental assets are naturally occurring living and non-living components of the Earth, together comprising the biophysical environment, which may provide benefits to society (SEEA (2012) System of Environmental-Economic Accounting Central Framework, section 2.2, para 2.17, p13. United Nations Statistical Division).


17. An Econd is a scientifically accredited measure, metric or model which reflects the condition of an environmental asset, and is created by combining (where appropriate) condition scores of environmental indicators against a reference condition benchmark.

18. SEEA (2013) System of Environmental-Economic Accounting Experimental Ecosystem Accounting, section 4.2.1, p76.


