Australian Government

# ENVIRONMENTAL ECONOMIC ACCOUNTING

April 2018

## A common national approach

Strategy and Action Plan

Prepared by the Interjurisdictional Environmental-Economic Accounting Steering Committee for the Meeting of Environment Ministers

**Acknowledgement of traditional owners and country**

The Australian, state and territory governments acknowledge the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.



This report should be attributed as '*Environmental Economic Accounting: A Common National Approach Strategy and Action Plan*, prepared by the Interjurisdictional Environmental-Economic Accounting Steering Committee for the Meeting of Environment Ministers, Commonwealth of Australia 2018.

The Australian Government Department of the Environment and Energy coordinated preparation of this publication on behalf of the Interjurisdictional Environmental-Economic Accounting Steering Committee. The Interjurisdictional Environmental-Economic Accounting Steering Committee consists of representatives of the Australian, state and territory governments.

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**Front cover:** Yellow Waters Wetland Lagoon in the World Heritage Listed Kakadu National Park © Jim Mollison

# MEETING OF ENVIRONMENT MINISTERS FOREWORD

Australia's natural environment is fundamental to our economic prosperity and quality of life. Each day it provides us with a range of goods and benefits including clean air, fresh water and a variety of foods and fibres for our consumption. As well as provisioning and regulating services, it supplies a suite of cultural and spiritual values that are fundamental to Australians' way of life.

Yet our decisions do not always reflect their importance. Incomplete and fragmented information on the condition of our environment, its relationship with our economy and its contribution to our wellbeing impede it being represented in policy and decision making across government, business and the community. Measures of national progress such as GDP or national income fail to adequately reflect the sustainability of our economy or our societal needs and values.

With continued population growth, rising global food demand, and a changing climate set to impact on Australia over the coming decades, integrated environmental and economic information is required to respond to the challenges and opportunities our nation faces.

Environmental-economic accounting is a means of capturing and organising environmental information in a way that improves our understanding of our natural systems' contribution to economic and human wellbeing and the impact that our economy has on our natural assets. The information provided by these accounts supports evidence based environmental policy making and better targeted natural resource management by identifying assets that are being depleted, lost, or are declining in condition.

The applications of environmental-economic accounting go beyond environmental management to informing broader public investment and policies. Through integrating environmental information with social and economic indicators at the industry, local or regional level, enhanced decision making and improved outcomes across all three areas becomes feasible.

Outside of government, environmental-economic accounts can be used to inform private sector sustainability initiatives and investment decisions; and better equip businesses to integrate consideration of natural capital into their operations.

A nationally consistent approach to environmental-economic accounting will help address current information gaps and bring together environmental and economic information in a coherent way which allows for like accounts to be compared and aggregated across state and territory borders. This is why we have agreed to collaborate on a common national approach to environmental-economic accounting.

This strategy sets out how a common national approach to the implementation of the United Nations System of Environmental-Economic Accounting will provide coherent and integrated data for decision making by governments, business and the community. Similar to the System of National Accounts, the creation of a robust set of nationally consistent environmental-economic accounts requires a long-term iterative process, with the quantity and quality of accounts built and improved over time. Governments will work in partnership with academia, the community and the business sector to deliver these essential accounts and to integrate them into public and private decision making.

Our approach is based on international best practice and collaboration, and builds on the existing efforts of state and territory governments and the Australian Bureau of Statistics. This will ensure we are successful in better accounting for the contribution of the environment to our quality of life and our prosperity.

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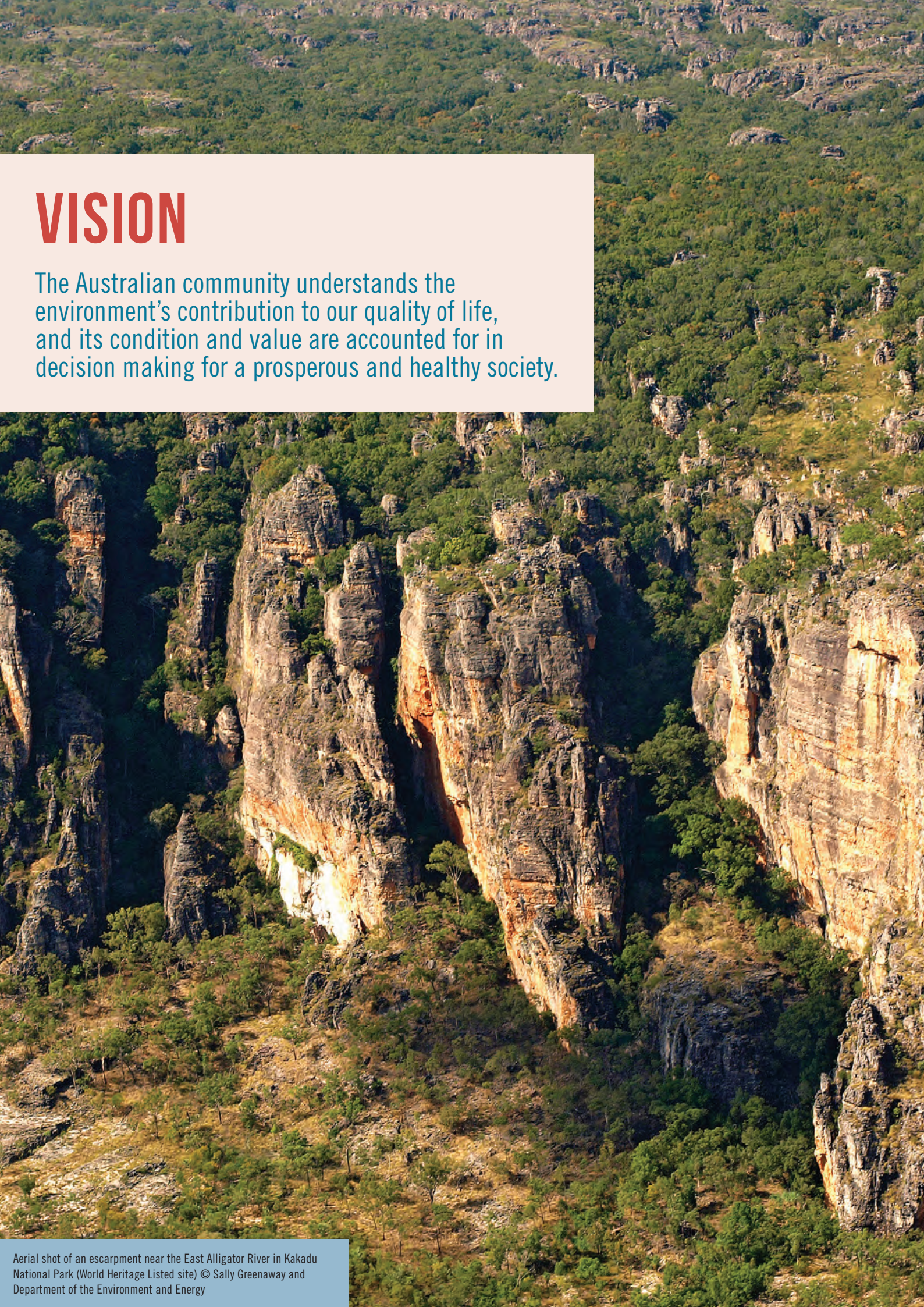
# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **ABBI** | Australian Business and Biodiversity Initiative |
| **ABS** | Australian Bureau of Statistics |
| **ACT** | Australian Capital Territory |
| **AEEA** | Australian Environmental-Economic Accounts |
| **CBD** | Convention on Biological Diversity |
| **DELWP** | Department of Environment, Land, Water and Planning |
| **DPSIR** | Drivers, Pressures, State, Impacts and Responses |
| **EEA** | Environmental-Economic Accounting |
| **GDP** | Gross Domestic Product |
| **NCC** | Natural Capital Coalition |
| **NCFA** | Natural Capital Finance Alliance |
| **NRM** | Natural Resource Management |
| **NSW** | New South Wales |
| **SDG** | Sustainable Development Goal |
| **SEEA** | System of Environmental-Economic Accounting |
| **SNA** | System of National Accounts |
| **SoE** | State of Environment |
| **WAAEE** | Waste Account Australia, Experimental Estimates |
| **WAVES** | Wealth Accounting and the Valuation of Ecosystem Services |

# VISION

The Australian community understands the environment's contribution to our quality of life, and its condition and value are accounted for in decision making for a prosperous and healthy society.



Aerial shot of an escarpment near the East Alligator River in Kakadu National Park (World Heritage Listed site) © Sally Greenaway and Department of the Environment and Energy

Evidence shows that the quality of our environment influences our economic and social wellbeing. Environmental assets underpin economic growth and our quality of life.

The environment's contribution to our prosperity and wellbeing are often overlooked in decision-making by governments, business and the community. Whilst great progress has been made in monitoring and reporting on the environment, existing environmental information is sometimes piecemeal or inconsistent, doesn't provide sufficient insight into long term environmental trends and crucially, is not linked to socioeconomic data or the services and benefits the environment provides. As a result, many decisions do not account for changes in environmental assets over time, the value of outcomes and trade-offs affecting the environment, or the linkages between environmental and socioeconomic objectives.

Tracking changes in the extent and condition of environmental assets over time can help us understand if our natural resources are being depleted and if their condition is improving or declining. When this is done in a way that is readily integrated with socioeconomic data, a more complete picture can be presented to decision makers on how to make best use of these assets to optimise social, economic and environmental outcomes, and to appropriately minimise the risk of environmental degradation. Environmental-Economic Accounting (EEA) provides this.

At a national level, the Australian Bureau of Statistics has supported environmental-economic accounting in Australia, producing a selected set of environmental-economic accounts annually.[1] Beyond this work, there have been state and territory efforts to integrate environmental and economic information into decision making including the piloting of accounts at different scales and timeframes. A common national approach to EEA will make these efforts consistent and integrated through the use of a single framework – the United Nations System of Environmental-Economic Accounting (SEEA) – going forward.

The value proposition of a common national approach to environmental-economic accounting over other approaches is the ability to:

- provide a more complete picture of the environment's contribution to economic and human activity and the impact that our economy has on the environment
- reach a broader audience and increase our ability to deliver stronger environmental and socio-economic outcomes
- capture information at the industry, local and regional level enabling reporting and analysis at different spatial scales and comparisons across state and territory boundaries
- identify gaps in existing environmental information where investments by both public and private sectors are required
- more readily develop time series and conduct scenario modelling and analysis to inform forward-looking decisions
- ensure consistency across jurisdictions, minimising duplication of effort.

This strategy sets out how a common national approach to the implementation of the United Nations SEEA[2] (see **Box 1**) will provide coherent, comprehensive and integrated accounts to support decision making by governments, business and the community.

Red necked wallaby in the Carnarvon Range Area © Cathy Zwick

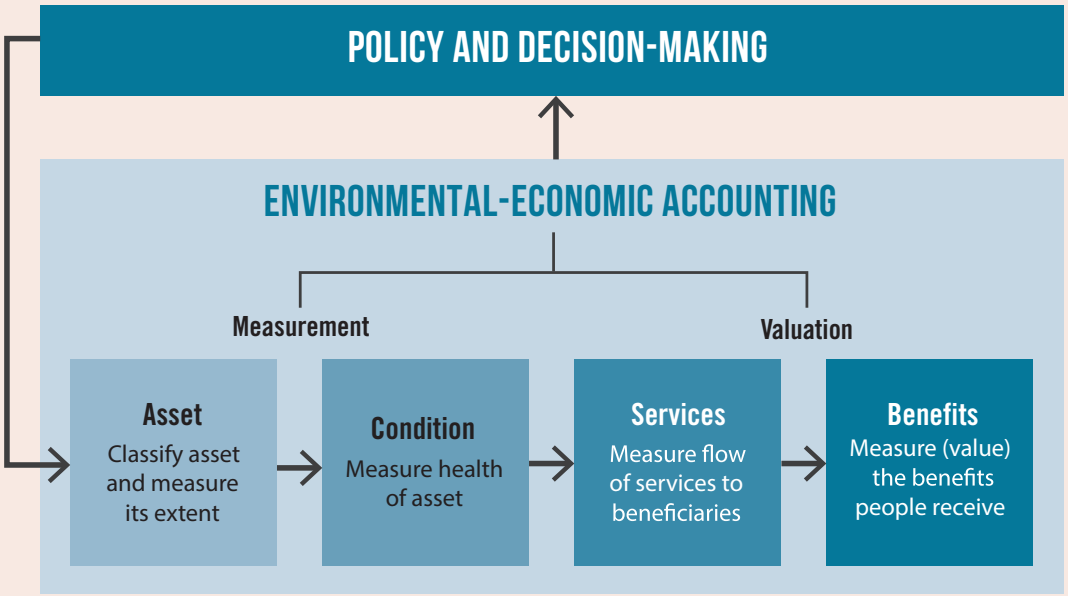
1 See the ABS Australian Environmental-Economic Accounts releases: http://www.abs.gov.au/ausstats/abs@.nsf/mf/4655.0

2 https://seea.un.org/

## BOX 1: THE SYSTEM OF ENVIRONMENTAL ECONOMIC ACCOUNTING (SEEA)

The SEEA is a framework for capturing and organising information on the environment including its contribution to economic activity and the impact of economic activity on the environment. It is based on internationally agreed accounting concepts to gather and organise information in a consistent manner that enables integration with socioeconomic information such as National Accounts and employment data. The figure below depicts the components which comprise EEA: the measurement of stocks of biophysical assets; the condition of the assets; the flows of goods and services that environmental assets provide in various landscapes or regions; and the estimated value of these assets and services to the community, government and businesses based on market transactions or non-market valuation techniques. This information will support policy and decision-making resulting in a better balance between social, economic and environmental outcomes, including improved natural resource management, environmental condition and community benefits.

Environmental-Economic Accounting components informing policy



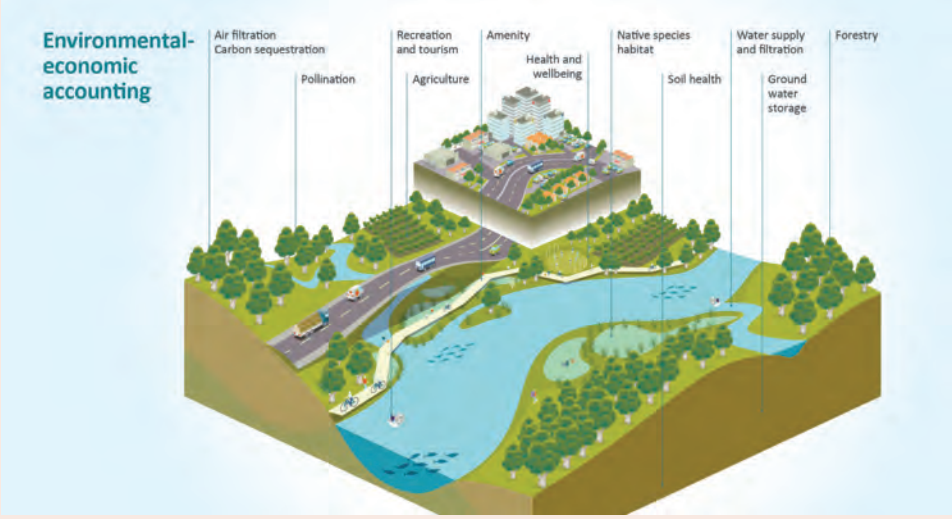

Source: Adapted from DELWP 2015, Valuing and accounting for Victoria's environment: Strategic Plan 2015-2020, p 1.

Recent applications of environmental-economic accounting have demonstrated that it is feasible to assess the interactions between the environment and the economy and to provide valuable and relevant information for policy and investment decision making. **Box 2** illustrates a recent application of the SEEA framework to quantify the benefits provided by Victoria's parks network.

## BOX 2: VALUING VICTORIA'S PARKS

In 2015 Parks Victoria and the Victorian Department of Environment, Land, Water and Planning collaborated on the Valuing Victoria's Parks project, which used the SEEA framework to report on ecosystem assets within the parks network and the flow of ecosystem services from these assets. This supported an assessment of the benefits Victoria's park ecosystems provide to the community in monetary terms.

### Conceptual approach used for Valuing Victoria's Parks

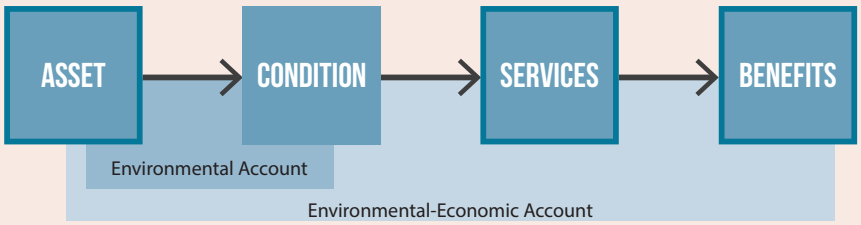



The study quantified a range of benefits provided by Victoria's parks network, finding that:

- tourists spend $1.4 billion per year associated with parks visits, generating $1 billion gross value added and 14,000 jobs to the Victorian economy;
- health benefits for physically active visitors to parks are valued at around $80-$200 million per year from avoided disease, mortality and lost productivity;
- pollination benefits to producers and consumers of relevant agricultural products are valued at $123-$167 million per year;
- water supply and filtration benefits from over one million hectares of park catchments are valued at $83 million per year;
- flood protection benefits are valued at $46 million per year from avoided infrastructure costs.

The Valuing Victoria's Parks study was a successful demonstration of the SEEA framework and the information it can provide, and has helped inform debate about the value of parks and natural assets. The study was well received by government agencies and external stakeholders.

The study is available at: https://www.environment.vic.gov.au/accounting-for-the-environment




This study focused on the asset, services and benefits components of the SEEA framework.

# PURPOSE AND OUTCOMES

At the Meeting of Environment Ministers on 25 November 2016, Commonwealth, state and territory Environment Ministers agreed that their governments would collaborate to work towards a common national approach to environmental-economic accounting.

Wetland on a cattle station near Charters Towers in northern Queensland

> Ministers agreed to work together to develop a common national approach to environmental accounts in 2017. This important work will ensure accurate and reliable information is available to governments, communities and business to better understand the condition of the environment and make better decisions. It will improve the ability to track outcomes in specific locations and across state and territory boundaries, and demonstrate the value of the environment to our standard of living. As a first step, the Australian Government will collaborate with a number of states in bringing together relevant stakeholders, Natural Resource Management organisations and academia to progress environmental accounts.
>
> Meeting of Environment Ministers – November 2016

> Environmental-economic accounting helps us understand the condition of the environment and its relationship with the economy. Ministers endorsed the objectives of a common national approach to environmental-economic accounting and the free and open sharing of environmental data between jurisdictions.
>
> Meeting of Environment Ministers – July 2017

This strategy sets out a roadmap to achieve a common national approach. This work will deliver accurate and reliable longitudinal information to governments, communities and business so that they can make well-informed decisions through understanding the value and condition of the environment and its contribution to our quality of life. It will build on previous work, including approaches to environmental condition accounting, such as those by the South Australian Government (**Box 3),** and the Wentworth Group of Concerned Scientists and NRM Regions Australia (**Box 4)**. It will also allow jurisdictions to better meet regulatory and reporting obligations such as State of the Environment reporting. **Box 5** illustrates the application of environmental-economic accounts to inform reporting on the state of the environment in the ACT. Further context and examples of environmental-economic accounts developed in Australia are included in **Appendix B**.

The anticipated long-term outcomes from a common national approach to environmental-economic accounts will be that:

**Outcome 1:** Public and private decision-making results in a balance between economic, social and environmental outcomes.

**Outcome 2:** Public policy and strategic planning take into account the benefits of a healthy environment.

**Outcome 3:** The environmental, economic and social return on investments in the environment are demonstrated.

**Outcome 4:** The condition of environmental assets and their contribution to prosperity and wellbeing is fully integrated with measures of social and economic activity.

The beneficiaries of a common national approach to environmental-economic accounting are:

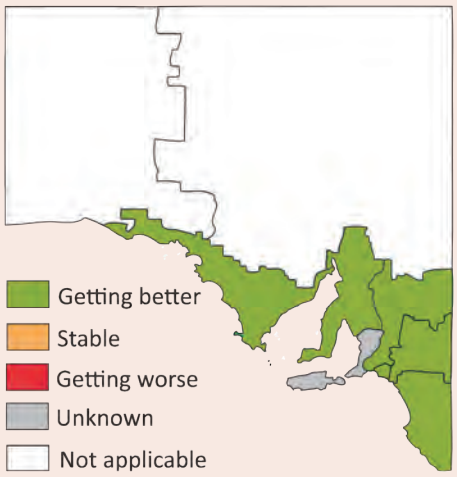
- The Australian community – through access to common, trusted sources of information about the environment and its interaction with economic activity.
- Traditional Owners – as a source of information that recognises Country and complements cultural knowledge to inform management decisions and improve outcomes for First Peoples.
- Land and other natural resource managers – to better inform their management decisions and improve economic and environmental outcomes from Australia's natural resource base.
- Business – through better identification of business risks and opportunities for improving the environment and creating economic opportunity.
- Technical specialists – through access to a common framework for the comparison of environmental and economic data across all states and territories, and increased capability for integrated reporting. Environmental-economic accounts often highlight the needs or gaps for research.
- Governments – through increased availability of information to improve policies, spending, regulation and management actions affecting the environment.

## BOX 3: SOUTH AUSTRALIAN NATURAL RESOURCE TREND AND CONDITION REPORT CARD

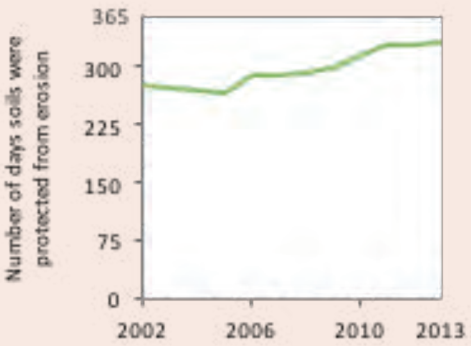
South Australia has published a complete set of state wide report cards on priority natural resources since 2014. These one page summary report cards classify environmental and natural resource assets, measure their condition, and present the findings in an easy to understand format. They are underpinned by data consistent with the asset and condition components of the SEEA framework.

These reports were used as an input to the *2016 National State of the Environment Report* and have informed other state policy, reporting and evaluation processes, and will form the basis of South Australia's 2018 State of the Environment Report.

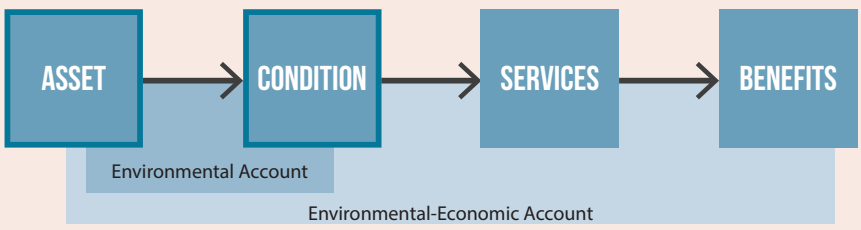
Elements from the Soil Erosion Condition and Trend Report Card 2013


Agricultural **soils** were **protected** from **erosion** for **332/365** days




The reports are available online and a summary of the project can be found at: https://data.environment.sa.gov.au/NRM-Report-Cards/Documents/Trend_Condition_Report_Cards_2017.pdf




This method focused on the asset and condition components of the SEEA framework.

This strategy will capitalise on current momentum for environmental-economic accounting including:

- Advances in technology for collecting, processing, sharing and analysing information.
- Strong demand from private and public sector organisations for methods to account for the contribution of the environment to our living standards.
- The maturity of internationally agreed frameworks for EEA.
- Learnings from earlier EEA, including environmental accounting and condition reporting work by state and territory governments, academia and non-government organisations.
- In-principle commitment by Environment Ministers to make environmental data publicly available and to the free and open sharing of data between jurisdictions.

This strategy has been developed as a collaboration between the Australian Department of the Environment and Energy, its state and territory counterparts and the Australian Bureau of Statistics. It draws on the outcomes of a national environmental-economic accounting workshop which brought together representatives from across government, environmental non-government organisations, natural resource management (NRM) organisations, the private sector and research institutions. To support the ongoing development and implementation of the strategy a Stakeholder Reference Group (SRG) will be formed to build on the outcomes of the national environmental-economic accounting workshop.

This strategy has been developed as a collaboration between the Australian Department of the Environment and Energy, its state and territory counterparts and the Australian Bureau of Statistics.

It is a long-term process to develop a system of environmental-economic accounts that is fully integrated into decision making, similar to the long-term evolution of the System of National Accounts we have today (see **Box 6**). Building practitioners and decision-makers' understanding of the uses and value of environmental-economic accounts is critical for success. Capacity building to support the application of accounts is a foundational activity of the strategy's implementation supported by communications, stakeholder engagement and knowledge exchange activities.

Western pygmy possum © Nick Rains

# BOX 4: THE AUSTRALIAN REGIONAL ENVIRONMENTAL ACCOUNTS TRIAL

Between 2010 and 2015, the Wentworth Group of Concerned Scientists and NRM Regions Australia produced environmental condition accounts for ten regions across the country using the *Accounting for Nature* model.

The *Accounting for Nature* model places scientific information about the condition of environmental assets into an accounting framework, using an index called *Econd*. An *Econd* describes the biophysical condition of an environmental asset as an index between 0 and 100, where 100 is a measure of the asset in its natural (reference) state. This model allows community members and policy makers to better understand complex scientific information, while also providing detailed data to underpin policy, inform investment decisions, and evaluate the impact of these investments over time.

*An Environmental 'condition' account for South East Queensland showing Econds and indicator scores for six different environmental assets from 2003 to 2011.*

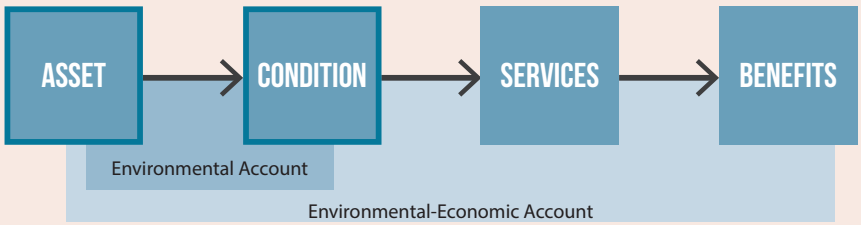

*Condition of soil across the Queensland Murray-Darling Basin in 2015, based on indicators of pH, soil erosion, salinity and soil carbon*

REGIONAL ASSET ACCOUNT
SEQ CATCHMENTS, QUEENSLAND

Summary Table

| Class | Asset | Econd & ICS | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LAND | Native Vegetation | Econd | | | | 29 | | | | | |
| | | Extent (Ha) | | | | 53 | | | | | |
| | | Composition (index) | | | | 51 | | | | | |
| | | Configuration (rank) | | | | | | | | | |
| FRESH-WATER | Rivers | Econd | 74 | | | | 70 | 76 | 78 | 79 | 81 |
| | | Physical/chemical index (%) | 82 | | | | 77 | 84 | 85 | 86 | 91 |
| | | Nutrient cycling index (%) | 64 | | | | 60 | 75 | 70 | 73 | 61 |
| | | Macroinvertebrates index (%) | 76 | | | | 69 | 74 | 79 | 82 | 88 |
| | | Fish index (%) | 62 | | | | 68 | 65 | 69 | 71 | 76 |
| | Wetlands | Econd | | | | 33 | | | | | |
| | | Extent (Ha) | | | | 82 | | | | | |
| | | Composition (index) | | | | 59 | | | | | |
| COASTAL | Estuaries | Econd | | 57 | | 55 | 42 | 44 | 39 | 41 | 41 |
| | | Physical/chemical index (%) | 51 | 57 | | 57 | 39 | 40 | 34 | 36 | 37 |
| | | Biological Health Rating (%) | | 58 | | 51 | 50 | 53 | 51 | 53 | 49 |
| | | Foreshore / riparian habitat extent (km) | | | | | 48 | 51 | 51 | 51 | 51 |
| | Moreton Bay | Econd | | 87 | 83 | 82 | 81 | 81 | 68 | 75 | 75 |
| | | Physical/chemical index (%) | | 90 | 85 | 84 | 83 | 82 | 69 | 78 | 77 |
| | | Biological Health Rating (%) | | 73 | 74 | 74 | 74 | 75 | 64 | 64 | 66 |
| MARINE | Dugong | Econd | | | 11 | | | | | | |
| | | Dugong population | | | 11 | | | | | | |

The trial included regions with diverse landscapes types (forests, savannahs, rangelands, woodlands and urban), a broad range of environmental pressures, and varying levels of resources and data. This demonstrated that it is possible to establish a robust and on-going national program to measure the condition of Australia's environmental assets. Further information on the Australian Regional Environmental Accounts Trial is available in the latest *Accounting for Nature* blueprint: http://wentworthgroup.org/programs/environmental-accounts/

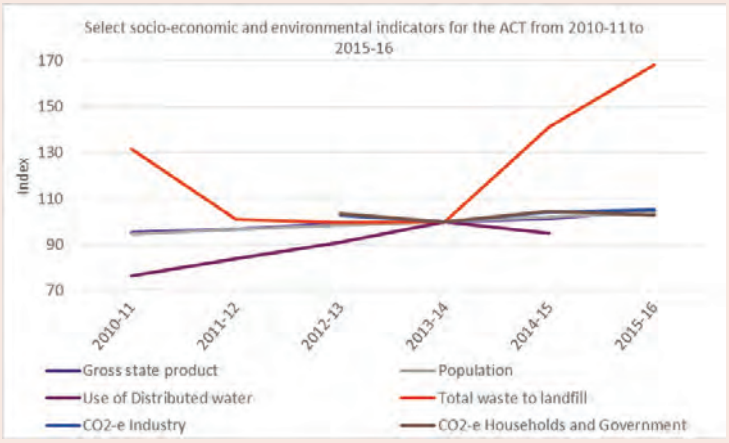



This method focused on the asset and condition components of the SEEA framework.

## BOX 5: ENVIRONMENTAL-ECONOMIC ACCOUNTING FOR THE ACT STATE OF THE ENVIRONMENT REPORT

In September 2017 the ACT Commissioner for Sustainability and the Environment released a suite of environmental-economic accounts produced using the SEEA framework. These accounts were developed in order to better understand the sustainability of economic growth and social wellbeing in the ACT, and reduce reliance on ad hoc studies for the Territory's *State of the Environment* reports.

*Selected indicators for the ACT*




The first iteration of accounts provides a proof of concept on how environmental-economic accounting can underpin future *State of the Environment* reporting and government decision making in the Territory. The proof of concept has revealed that an environmental-economic accounting approach has a key advantage over the widely used DPSIR (Drivers, Pressures, State, Impacts and Responses) model, as it is able to demonstrate relationships between biophysical and socioeconomic themes and indicators through integrating economic and environmental information. Accounts will be improved over time as methods are revised and new data sources are made available. This will ensure the accounts are of the highest quality, and can be produced consistently and repeatedly.

Accounts are accessible at: http://www.environmentcommissioner.act.gov.au/publications/environmental-economic-accounts

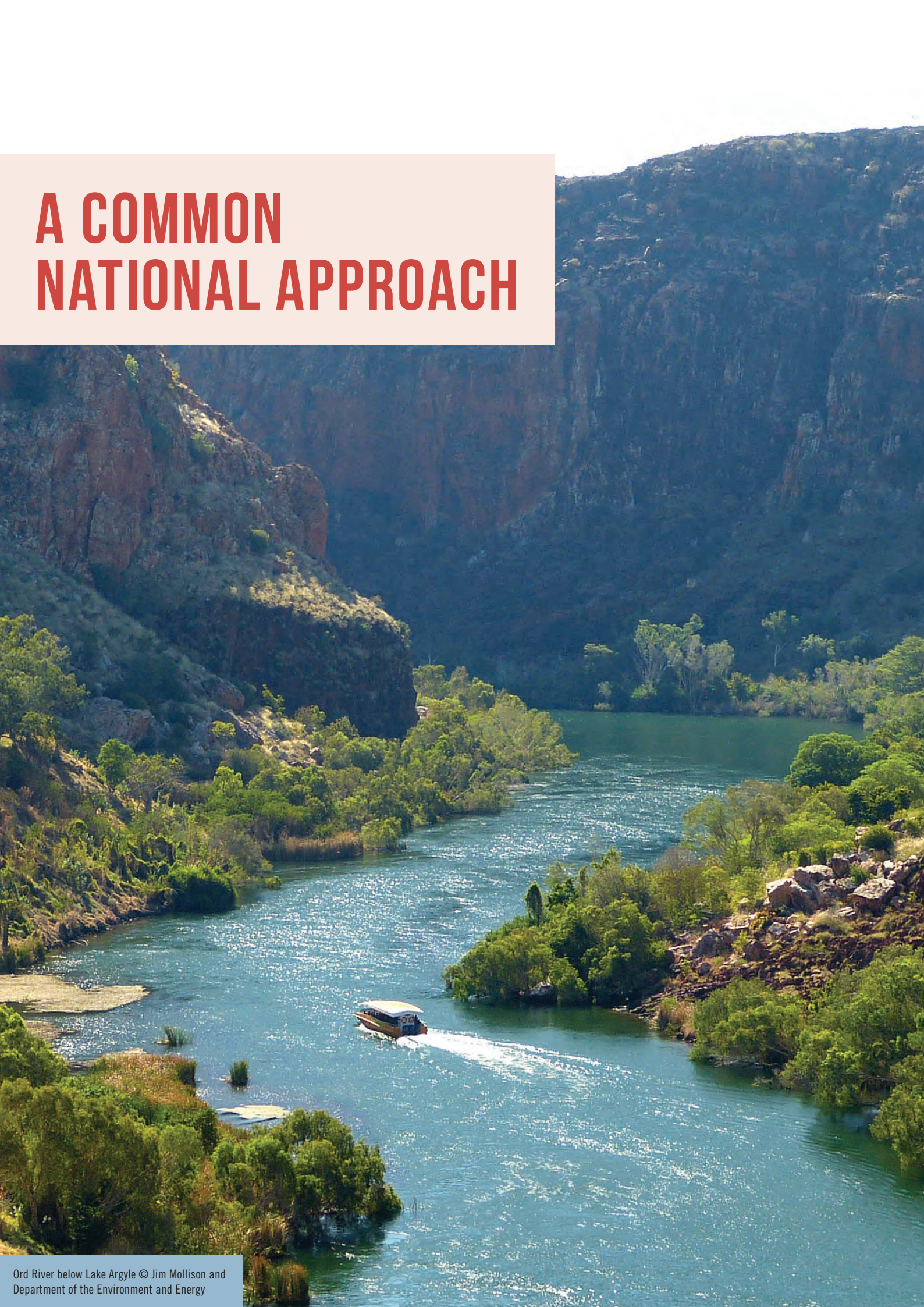
## BOX 6: LESSONS FROM NATIONAL ECONOMIC ACCOUNTING

The impetus for the development of the United Nations System of National Accounts arose from the policy requirements needed to reshape national economies after the Great Depression and to prepare for managing output in World War 2. In Australia, the first set of national income accounts were prepared in 1938 and official measurements of economic output commenced in 1945 by the then Commonwealth Bureau of Census and Statistics. It was another eight years before the United Nations Statistical Commission released the first set of internationally recognised national accounts. These proto accounts were much smaller than the National Accounts we are familiar with today. Standards evolved over the years and accounts were added and adapted to reflect changes in the economy.

The System of National Accounts took decades to develop but it is now well established in Australia and internationally. The accounts are widely used by policy makers and are well-integrated into decision making processes. By building accounts as standards were developed, Australia was able to maintain some of the best quality national accounts in the world and was at the forefront of developing new techniques.

In comparison to the SNA, the development of the United Nations SEEA to date has been relatively swift. Development began in earnest in the late 1980's with the first set of experimental accounts released in 1993. The international community agreed on a core set in 2012 and are likely to sign off on the extensions to ecosystems in 2020. Australia again was at the forefront of this activity, producing an energy account, minerals account, environment expenditure, and water accounts in the 1990s and developed the first set of land accounts in the late 2000's.

# A COMMON NATIONAL APPROACH



Ord River below Lake Argyle © Jim Mollison and Department of the Environment and Energy

## A common national approach to environmental-economic accounting is an agreement whereby the Commonwealth, state and territory governments, together with the broader community (including business, academia, NRM organisations and non-government organisations), collaborate to progress user-driven environmental-economic accounting.

It will consist of:

- Adopting the United Nations SEEA framework for environmental-economic accounting with a focus on a nationally consistent implementation of the framework. A common national approach will provide agreed common principles for doing this in Australia rather than setting out prescriptive requirements for account development.
- A core set of national environmental-economic accounts including fit-for-purpose land and ecosystem accounts (including extent and condition measures). National accounts will be established where information is required at a national level to meet particular decision-making needs, national consistency is required to allow comparability at multiple scales and across jurisdictional boundaries, or they are required to meet international reporting obligations or legislative requirements. These will build on existing national scale environmental accounts, including emissions and water accounts and the ABS experimental environmental-economic account products.

This is not intended to dictate a mandatory approach or specific data requirements, but rather advocate for consistency in the principles and methods used for development of EEA. State and territory governments will be able to participate in the implementation of the common national approach as their capacity and interests allow.

In practice, this approach will include:

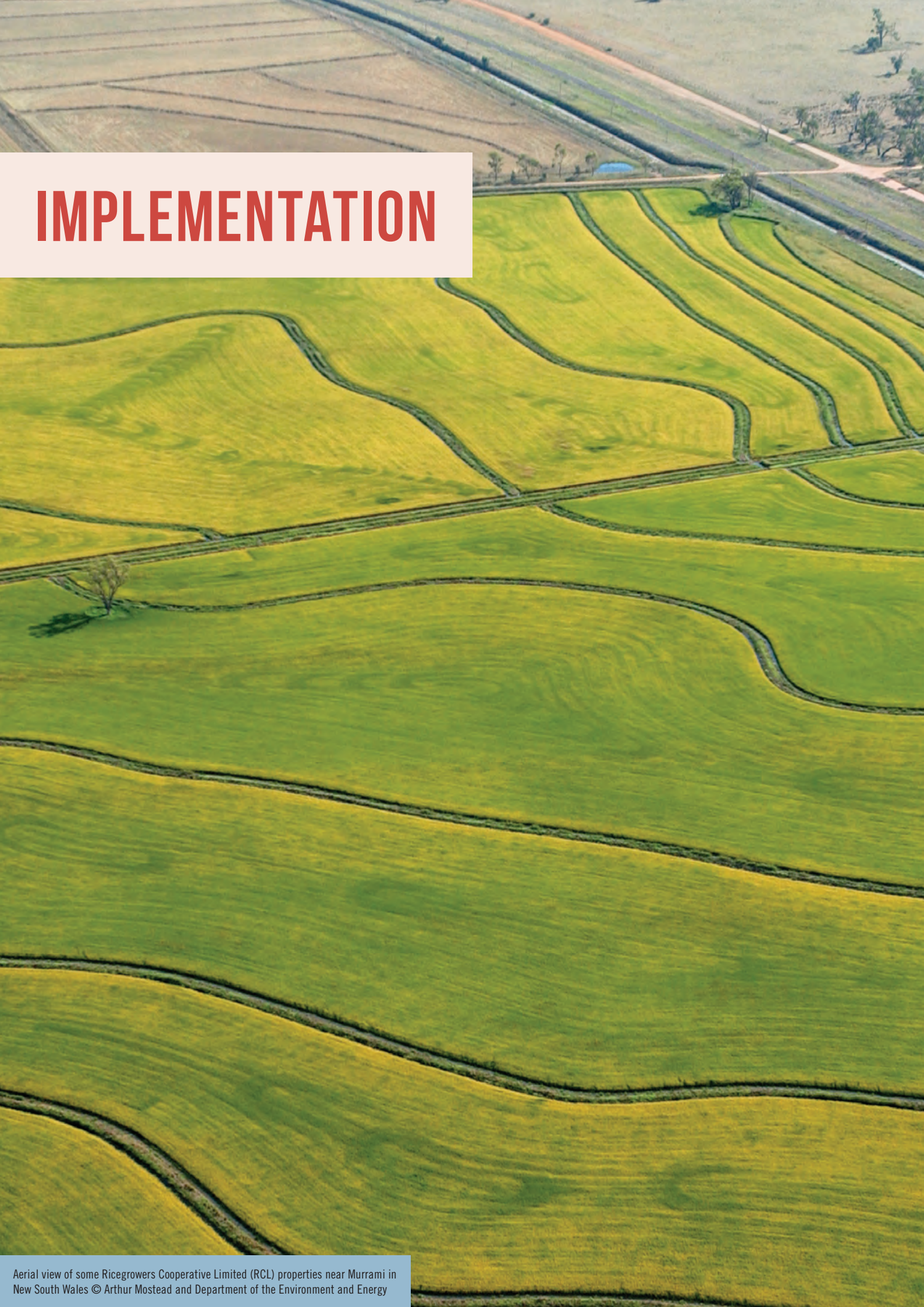
- Ensuring the development and application of accounts is driven by policy and decision-making needs across Australia.
- Agreement on national standards and methods for accounting, with the SEEA as the overarching framework.
- Arrangements to share and manage data as well as standards for design of accounts and associated collation of data.
- Production and use of mutually useful national core sets of data, accounts and statistics recognising that there may be additional information requirements that are unique to different jurisdictions and sectors.
- Collaboration and information sharing to leverage off each other's work, minimise duplication, and build capacity within all governments and the community to build, analyse and apply accounts.

**Figure 1** outlines how governments will work together to achieve these outputs and ultimately the outcomes and vision outlined above. **Appendix A** provides the action plan of the proposed work required.

The national approach will leverage efforts made to date across Australia and will be characterised by collaboration, capacity-building, learning-by-doing and a user-centred approach. We will bring together decision-makers to determine what key policy decisions and reporting needs need to be delivered in the coming years that could be supported by EEA. These could include State of the Environment reporting, where alignment with the SEEA is already being planned in some jurisdictions, and significant sustainable development decisions.

Accounts will increase in quality and consistency over time and expertise and capability will grow as the strategy is implemented. Simultaneous pilot projects to test methodologies, classifications and data compilation approaches will be integral to informing the national approach. Accounts develop their value over longer time frames; while short term gains will be made, a long view is essential. Principles for progressing a common national approach are further described in **Appendix C.**

# IMPLEMENTATION



Aerial view of some Ricegrowers Cooperative Limited (RCL) properties near Murrami in New South Wales © Arthur Mostead and Department of the Environment and Energy

In keeping with the principles for a common national approach outlined above and in **Appendix C**, implementation of this strategy will be coordinated by the Australian Government Department of the Environment and Energy, in close collaboration with other Commonwealth agencies, its state and territory counterparts, business, academia, NRM organisations and not-for-profit environment organisations.

The Australian Bureau of Statistics as the official provider of statistics to the Australian community will have a key role in producing, accrediting and releasing accounts where appropriate. Governance and stakeholder engagement arrangements are outlined in **Appendix D**.

This strategy will be implemented over time with the number and quality of accounts developing, similar to the process of development that has occurred for the national economic accounts. A 5-year action plan of activities, milestones and timeframes for the short (first three years) and medium term (three to five years) is included in **Appendix A**.

Achieving the strategy's vision will require more than publishing environmental-economic accounts. A multi-pronged approach is needed and the activities can be broadly categorised into the themes of principles, cultural change and capacity building, standards to drive consistency in language and approach, communication and engagement, governance and commitment by all parties.

This strategy and action plan will be regularly reviewed and updated to ensure its ongoing effectiveness. The first revision will take place following the first year of implementation to reflect the outcomes of early activities and further consultation.

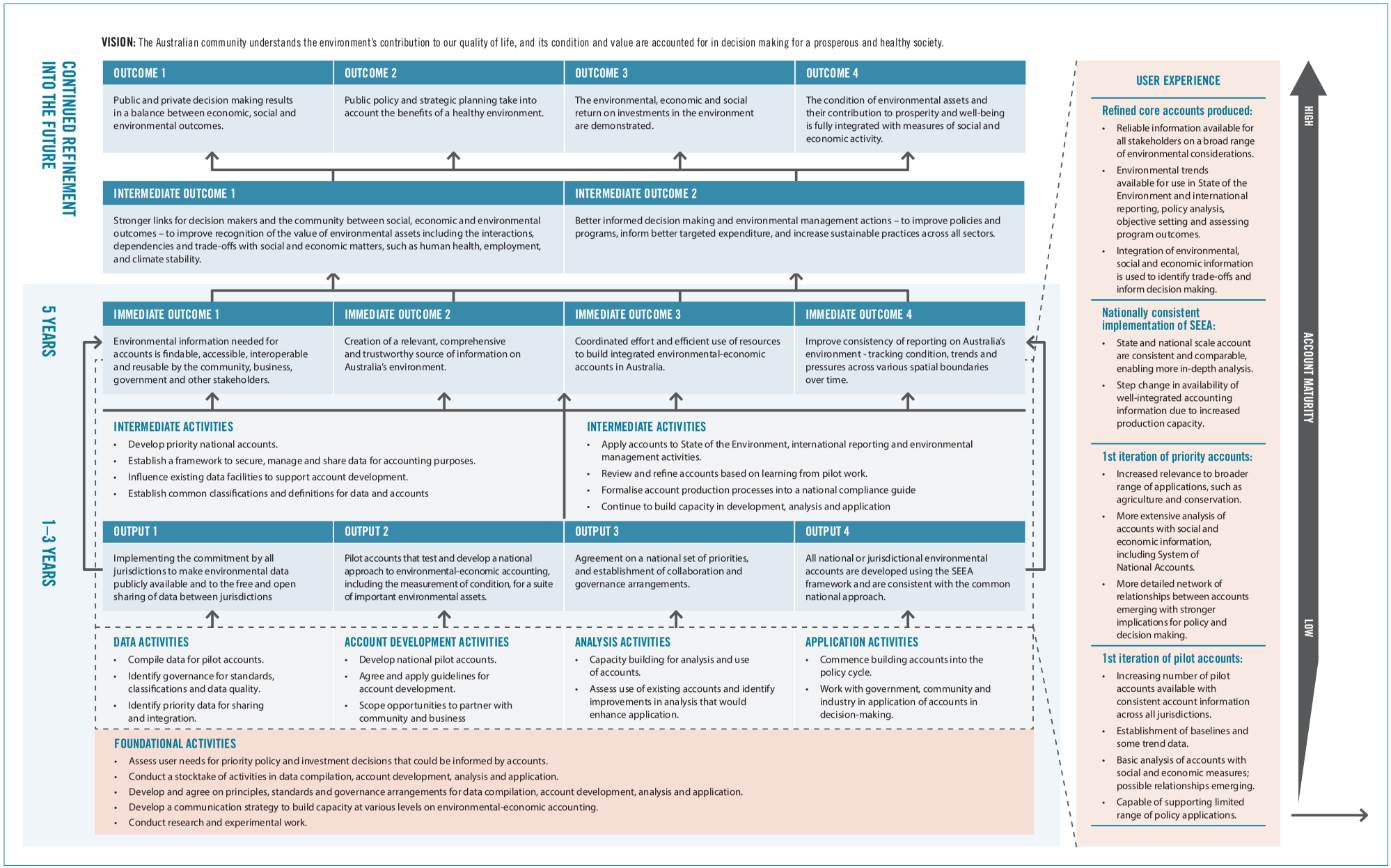
Within the first two years of implementation a series of foundational activities will commence to underpin the common national approach:

- A comprehensive assessment of the needs and uses of environmental-economic accounting across a range of stakeholders and jurisdictions. This will assist with more clearly identifying the priority policy and other questions that a national approach to environmental-economic accounting should be first applied and will help address, while recognising that further policy questions will be identified as accounts are developed into the future. In this way, development of the accounts will remain user-driven.
- Conducting a stocktake of activity in data compilation, account development, and application to build on existing work and expertise.
- Building capacity at various levels in government and the community through simple and clear information about environmental-economic accounting and its application in decision making.
- Conduct experimental work and ensuring the most up-to-date research in various fields informs account development.
- Agreeing, and developing when necessary, on standards, communication products and messaging, governance and principles for data collection and account development, analysis and application.

Within the first five years, key deliverables will include:

- From 2018: delivery of a set of pilot priority asset accounts, where condition is a fundamental and core part.
- From 2020: application of pilot accounts to inform policy and program design, investment priorities and reporting.
- From 2021: first release of priority national environmental-economic accounts collaboratively developed using a common national approach.

Figure 1. Roadmap for a common national approach to environmental-economic accounting



# APPENDIX A

## Action plan for implementation of a common national approach

This Action Plan outlines the activities that the Commonwealth, state and territory governments plan to undertake to develop a common national approach to environmental-economic accounting.

Activities have been grouped in three categories:

- Foundational activities: to be commenced in the first two years and evolve over time.
- Short term activities: to be delivered in the first three years.
- Medium term activities: building on the foundational and short term activities, these will be delivered from three to five years onwards.

Foundational and short-term activities will lead to the achievement of the outputs outlined in Figure 1. Medium term activities will lead to the achievement of immediate and intermediate outcomes. Achievement of long term outcomes and the Strategy's vision will require a longer time frame than the scope of this Strategy and Action Plan. The intention is that the common national approach to environmental-economic accounting will be enduring. An evaluation plan will be developed in the first year of implementation which sets out how this strategy and action plan will be reviewed and updated to ensure its ongoing effectiveness. The first revision will take place following the first year of implementation (by March 2019) to reflect the outcomes of early activities and incorporate input from consultation with a broader group of stakeholders. A summary table of all activities is provided at the back of this Appendix.

## Foundational activities

Foundational activities will commence in 2018, although some of these have commenced in 2017 as part of the preparation of this strategy. These activities will inform short term activities that focus on four interrelated areas: data collection, account development, analysis and application of accounts. Foundational activities will continue to evolve with the process.

A range of input from a broad group of stakeholders (including government, academia, research institutions, environmental non-government organisations, NRM organisations and the private sector) will be needed to complete the foundational activities.

**Foundational Activity 1.** User needs assessment for priority policy and investment decisions that could be informed by accounts.

This assessment will bring together policy and decision makers to identify key policy and investment decisions that could be informed by accounts. This will focus the efforts of subsequent activities, including the stocktake and pilot work.

| Timeframe | Action | Status |
|---|---|---|
| Year 1 | Convene workshops with policy and decision makers to identify key policy and investment decisions over next three years. | Commenced |
| | Produce report on priority areas of focus for activities in action plan. | To be commenced |

**Foundational Activity 2.** Conduct a stocktake of activities in data compilation, account development, analysis and application.

This stocktake will build on information already gathered through the National Environmental-Economic Accounting workshop held in August 2017 and discussions amongst jurisdictions to date. It will also be focused on priority areas of work identified in Foundational Activity 1.

| Timeframe | Action | Status |
|---|---|---|
| Year 1 | Identify the environmental, economic and social data required for accounts and the relevant holders and managers of that data. | Commenced |
| | Identify people and/or organisations that may build accounts. | Commenced |
| | Identify people and organisations analysing information from accounts. | Commenced |
| | Identify current and potential policy and other users applying accounts to decision making and management activities. | Commenced |
| | Assess the international environmental-economic accounts to support international comparability and collaboration for the national approach. | To be commenced |
| | Determine information and feedback loops between the different identified groups. | To be commenced |
| | Determine what is working, what is not. Identify opportunities and constraints in all four categories (data compilation, accounts development, analysis and application). | To be commenced |

**Foundational Activity 3.** Develop and agree on principles, standards and governance arrangements for account development, data compilation, analysis and application.

To develop this strategy, two groups were formed in 2017: a high-level policy group and a technical working group. It is expected that these two groups will continue to operate and inform the development of the common national approach during implementation. A Scientific Advisory Panel will also to be formed in 2018 to provide expert advice on matters including measuring environmental condition.

| Timeframe | Action | Status |
|---|---|---|
| Year 0 | Convene an Interjurisdictional Steering Committee to develop and agree on communications, governance arrangements and guiding principles. | Complete |
| | Convene a Technical Working Group who can develop and agree on standards and definitions for accounts. | Commenced |
| Year 1 | Convene a Scientific Advisory Panel to provide expert advice to the Steering Committee and Technical Working Group on the development of elements of environmental-economic accounts, including measuring environmental condition. This may include the Wentworth Group, experts associated with development of the international SEEA and leading academics from universities and/or research agencies (such as CSIRO). | To be commenced |
| | Initiate the definition of a set of principles, standards and governance arrangements for data collection, account development, analysis and application, where necessary to support the common national approach. | To be commenced |
| | Investigate international experiences in applying the SEEA framework to domestic context, specifically, Canada, the United Kingdom and the Netherlands. | To be commenced |
| Year 2 | Initiate the development of environmental-economic accounting principles and methods relevant to Aboriginal and Torres Strait Islanders, including relevance to their economic, social, environmental, cultural and spiritual goals. | To be commenced |
| | Establish a business-government dialogue to incorporate lessons learnt from natural capital accounting into the principles, standards and governance arrangements for the common national approach. | To be commenced |

**Foundational Activity 4.** Develop a communication strategy to build capacity at various levels on environmental-economic accounting.

Experiences and information gathered through activities in the first year of implementation such as an assessment of policy and broader decision-making needs (Foundational Activity 1) the stocktake of activity (Foundational Activity 2), and through pilot accounting work will inform the approach to developing a communication strategy.

| Timeframe | Action | Status |
|---|---|---|
| Year 1 | Determine target stakeholder groups for communication strategy. | To be commenced |
| Year 1-2 | Assess the current capacity/understanding/policy drive of the production and use of environmental-economic accounting in government and in the business sector. | To be commenced |
| | Develop methods to increase capacity and capability at all levels for environmental-economic accounting. | To be commenced |

**Foundational Activity 5.** Conduct research and experimental work.

The Technical Working Group with assistance from the Scientific Advisory Panel and Community of Practice (a group of core users of accounts) will develop a research plan and identify opportunities for partnerships.

| Timeframe | Action | Status |
|---|---|---|
| Year 0 - 3 | Take lessons learnt from accounts already developed and apply them to new research and pilot work through the development of a research plan. | Ongoing |
| | Identify partnerships between business, academia and government to foster new research and pilot work. | Ongoing |

# Outputs (0 – 3 years)

Outputs are underpinned by the foundational activities and a suite of short term activities that can be divided into four categories; data activities, account development activities, analysis activities and application activities.

The outputs in turn underpin the immediate and intermediate outcomes. Achievement of the outputs will shape the nation's attitude and approach to the future developments of environmental-economic accounts.

**Output 1.** Implementing the commitment by all jurisdictions to make environmental data publicly available and to the free and open sharing of data between jurisdictions, for a suite of important environmental assets.

**Output 2.** Pilot accounts that test and develop a national approach to environmental-economic accounting, including the measurement of condition.

**Output 3.** Agreement on a national set of priorities, and establishment of collaboration and governance arrangements.

**Output 4.** All national or jurisdictional environmental accounts are developed using the SEEA framework and are consistent with the common national approach.

## **Output 1.** Implementing the commitment by all jurisdictions to make environmental data publicly available and to the free and open sharing of data between jurisdictions.

Government agencies and organisations across all jurisdictions are holders of large amounts of environmental data. The sharing of this data will support the development of the common national approach to environmental-economic accounts.

On July 2017, Environment Ministers committed to the free and open sharing of environmental data between jurisdictions. Jurisdictions will need to work together to define the scope and the necessary arrangements to deliver this commitment.

Over the longer term it will help with establishing a starting point for consistent management and documentation of environmental data, collaboration and information sharing for all organisations who collect or manage environmental datasets. Links to Immediate Outcome 1.

| Timeframe | Action | Category |
|---|---|---|
| Year 1 | Identify governance and authorising institutions for standards, classifications and quality of data and account development. | Data and account development |
| | Identify opportunities to influence existing data facilities to support environmental-economic accounting. | Data |
| Year 2 | Identify priority sets of data for sharing arrangements and integration opportunities (see Output 3 below). | Data |
| | Identify sets of data needed for accounts that can/should be made interoperable. | Data |

## **Output 2.** Pilot accounts that test and develop a national approach to environmental-economic accounting, including the measurement of condition, for a suite of important environmental assets.

Pilot accounts will be identified based on the user needs assessment conducted in Foundational Activity 1, and in accordance with the principles and standards developed in Foundational Activity 3. Determining a robust method for accounting for environmental condition will be a core part of this pilot work. A communication plan educating and informing the Australian public on the benefits and use of environmental-economic accounts is vital to environmental-economic accounts being recognised as a trustworthy source of environmental information.

In the long term, it is envisaged environmental-economic accounts will be used to inform environmental investment and management, planning and development, and influence business, government and individuals' behaviour through valuing benefits provided by environmental assets and services. Links to Immediate Outcome 3.

| Timeframe | Action | Category |
|---|---|---|
| Years 1-2 | Compile data for pilot accounts. | Data |
| | Develop pilot accounts. | Account development |
| | Document the conceptual model that meets the purpose of the account application. | Account development |
| | Capacity and capability building in strategic thinking for application of pilot accounts. | Analysis |
| Years 2-3 | Application of pilot accounts. Working directly with policy makers, stakeholders and researchers to have environmental-economic accounting incorporated into decision making processes around environmental issues. | Application |

## **Output 3.** Agreement on a national set of priorities, and establishment of collaboration and governance arrangements.

An agreed set of priorities for account development and application, based on the user needs assessment in Foundational Activity 1, and establishing interjurisdictional arrangements for collaboration will result in coordinated effort and efficient use of resources to build integrated environmental-economic accounts in Australia.

It will assist with minimising duplication of effort, encouraging collaboration, leveraging off existing work and ensuring consistency in methodologies that allows for the aggregation and disaggregation of data at multiple scales. Links to Immediate Outcome 2.

| Timeframe | Action | Category |
|---|---|---|
| Year 1 | Agree and apply guidelines for environmental-economic account development. | Account development |
| Years 1-3 | Understand the data needs, gaps and opportunities. | Data |
| | Develop a framework for prioritising environmental-economic accounts for development. | Account development |
| | Develop a framework for compiling specific environmental-economic accounts. | Account development |
| | Assess use of existing environmental-economic accounts and identify improvements that would enhance application. | Analysis |

## **Output 4**. All national or jurisdictional environmental accounts are developed using the SEEA framework and are consistent with the common national approach.

The SEEA framework is an internationally recognised standard. The use of a consistent framework assists with scalability and integration across different spatial scales.

Organisations will more easily be able to compare, analyse and report on environmental and socio-economic metrics consistently regardless of the geographic scale of the asset the organisation is managing.

Organisations which would benefit from this output include governments of all scales, Natural Resource Management organisations and environmental non-government organisations, business and academia. Links to Immediate Outcome 4.

| Timeframe | Action | Category |
|---|---|---|
| Year 1 | Develop a concordance of terms to allow comparisons across jurisdictions. | Data |
| | Scope opportunities to partner with community and industry to develop environmental-economic accounts. | Account development |
| | Improve understanding of how existing environmental-economic accounts are being applied and determine if they can be improved to enhance application. | Analysis |
| Years 2 -3 | Increase capability building on environmental-economic accounts development and sharing knowledge across jurisdictions and organisations. | Account development |
| | Capacity building in applying environmental-economic accounts across jurisdictions and organisations. | Application |
| | Test application of developed accounts to specific reporting obligations such as State of the Environment reporting and international commitments. | Application |
| | Identify opportunities to apply environmental-economic accounts for evaluating effectiveness and efficiency of environmental management activities. | Application |
| | Work with community and industry in application of environmental-economic accounts. | Application |
| | Commence building environmental-economic accounts into the policy cycle. | Application |
| Year 3 | Use available account information to report on relevant 2020 targets under the United Nations Sustainable Development Goals agenda. | Application |
| | Use available account information to report on relevant Aichi biodiversity targets under the United Nations Convention on Biological Diversity (CBD). | Application |
| | Use available accounts to inform investment priorities and objective setting for natural resource management activities and environmental programs. | Application |

# Immediate Outcomes (3-5 years)

**Immediate outcome 1.** Environmental information needed for accounts is findable, accessible, interoperable and reusable by the community, business, government and other stakeholders.

**Immediate outcome 2.** Creation of a relevant, comprehensive and trustworthy source of information on Australia's environment.

**Immediate outcome 3.** Coordinated effort and efficient use of resources to build integrated environmental economic accounts in Australia.

**Immediate outcome 4.** Improve consistency of reporting on Australia's environment – tracking condition, trends and pressures across various spatial boundaries over time.

**Immediate outcome 1**. Environmental information needed for accounts is findable, accessible, interoperable and reusable by the community, business, government and other stakeholders.

Through the achievement of Output 1, arrangements will be established to improve access to environmental information across governments and for the public. The next step is to work through the legal, physical and other requirements to facilitate the access and sharing of environmental information by governments and the community; and the systems to make this data interoperable, focusing on the information needed for accounts. Access to larger amounts of more advanced and versatile information, will in the longer term, improve policies and programs, inform better targeted expenditure, and increase sustainable practices across all sectors. Links to Intermediate Outcome 2.

| Timeframe | Action | Category |
|---|---|---|
| Year 3 | Establish a framework to secure, manage and share data for accounting purposes. This includes integrating further national and local data where possible through pilot accounts. | Data |
| | Influence existing data facilities to support accounts development. | Data |
| | Set timeframes for transition to standard classification system where identified as necessary. | Data |
| Years 3-4 | Develop national classification systems for use across all jurisdictions, ensuring alignment with classifications of ecosystems types and services as a result of the revision of the SEEA-EEA to be completed by the end of 2020. | Data |
| Years 4-5 | Develop communication products and promotional campaign to disseminate national classification systems. | Data |

Little Egret fishing at the Mt Coot-tha Botanic Gardens in Brisbane © Michael Snedic

**Immediate outcome 2**. Creation of a relevant, comprehensive and trustworthy source of information on Australia's environment.

The development of pilot and priority national accounts will contribute to creating a relevant, comprehensive and trustworthy source of environmental information by strengthening the quality of the information, filling gaps and improving policy and decision-making relevance.

| Timeframe | Action | Category |
|---|---|---|
| Year 3 | Identify data and resource needs for priority accounts. | Analysis |
| | Review of pilot accounts within governments for policy suitability, and to identify the strengths and weaknesses within the account information. | Application / Analysis |
| | Seek feedback on pilot accounts from selected non-government stakeholders. | Analysis and Application |
| | Based on government and non-government feedback, develop report on pilot accounts which discusses identified issues around their suitability for making key policy decisions and proposed strategies to address these in subsequent iterations of accounts. | Analysis and Application |
| | Commence development of priority national accounts | Analysis |
| Year 4 | Implement pilot accounts report. | Analysis and Application |
| | Agree to the production cycle of accounts, and institutionalise account development procedures, such as data collection and integration, into organisational processes to ensure longevity of accounts. | Account development |
| Year 5 | Building on the improved procedures and arrangements established through activities in previous years, develop and release second iteration of pilot accounts. | Account development |
| | Review of first iteration of priority national accounts within governments for policy making suitability, and to identify the strengths and weaknesses within the account information. | Application / Analysis |
| | Seek feedback on first iteration of priority national accounts from selected non-government stakeholders. | Analysis and Application |
| | Based on government and non-government feedback, develop report on first iteration of priority national accounts which discusses identified issues and the proposed strategies to address them in subsequent iterations of accounts. | Analysis and application |

**Immediate outcome 3**. Coordinated effort and efficient use of resources to build integrated environmental-economic accounts in Australia.

Agreement on a national set of priorities for account development and co-production of environmental-economic accounts will facilitate the sharing of knowledge across jurisdictions, minimise duplication of effort and increase efficiencies in the use of public resources through the reduction of transaction costs in account production. It will take at least three years of pilot work and collaborative work amongst jurisdictions to set the arrangements for a more systematic production of accounts across Australia. From year 4, account development will be institutionalised. Periodic review of the strategy's implementation will ensure the institutional arrangements remain effective.

| Timeframe | Action | Category |
|---|---|---|
| Year 3 | Based on progress to date, update action plan to the *Strategy for a Common National Approach to Environmental-Economic Accounting* to include any new tasks or emerging priorities. | Analysis |
| | Start development of the first iteration of priority accounts identified in Output 3. | Account development |
| | Develop review process for accounts and integrate into national governance arrangements to ensure the continuous improvement of accounts over time. | Account development |
| Years 4-5 | Formalise account production processes into a national compliance guide through the collaborative interjurisdictional arrangements established through Output 3. The national compliance guide to include detailed instructions on data sources, classification standards, and processes for accounts development. The national compliance guide will be updated to include the outcomes of other actions and account review processes. | Account development |

**Immediate outcome 4**. Improved consistency of reporting on Australia's environment – tracking condition, trends and pressures across various spatial boundaries over time.

The use of consistent standards in environmental-economic accounts production and the increasing use of accounts to meet diverse environmental reporting obligations across jurisdictions (Output 4) should result in increased consistency in reporting. This is because jurisdictions would refer to environmental assets, services, condition, trends and pressures using the same language and metrics (standardised as part of the account development process) and potentially drawing from the same sets of data.

| Timeframe | Action | Category |
|---|---|---|
| Year 3 | Continue to build capacity in environmental-economic accounting at all levels of government and in local and regional organisations. | Analysis |
| Years 4-5 | Integrate national environmental-economic accounts into 2021 *State of the Environment* Report. | Application |
| | Nationally consistent environmental-economic accounts are used in further iterations of state and territory *State of the Environment* reports. | Application |

# Intermediate Outcomes and Long-Term Outcomes

**Intermediate outcome 1.** Stronger links for decision makers and the community between social, economic and environmental outcomes – to improve recognition of the value of environmental assets including the interactions, dependencies and trade-offs with social and economic matters, such as human health, employment, and climate stability.

**Intermediate outcome 2.** Better informed decision making and environmental management actions – to improve policies and programs, inform better targeted expenditure, and increase sustainable practices across all sectors.

**[Long term] Outcome 1.** Public and private decision making results in a balance between economic, social and environmental outcomes.

**[Long term] Outcome 2.** Public policy and strategic planning take into account the benefits of a healthy environment.

**[Long term] Outcome 3.** The environmental, economic and social return on investment in the environment are demonstrated.

**[Long term] Outcome 4.** The condition of environmental assets and their contribution to prosperity and well-being is fully integrated with measures of social and economic activity.

# Summary Table of action items

| | **Output 1.** Implementing the commitment by all jurisdictions to make environmental data publicly available and to the free and open sharing of data between jurisdictions. | **Output 2.** Pilot accounts that test and develop a national approach to environmental-economic accounting, including the measurement of condition, for a suite of important environmental assets. | **Output 3.** Agreement on a national set of priorities, and establishment of collaboration and governance arrangements. | **Output 4.** All national or jurisdictional environmental accounts are developed using the SEEA framework and are consistent with the common national approach. |
|---|---|---|---|---|
| < Year 0 | **Foundational Activity (FA) 3.** Convene an Interjurisdictional Steering Committee to develop and agree on communications, governance arrangements and guiding principles. | | | |
| | **FA3.** Convene a Technical Group of experts in environmental-economic accounts who can develop and agree on standards and definitions for accounts. | | | |
| Year 1 | **FA1.** Convene workshops with policy and decision makers to identify key policy and investment decisions over next three years. | | | |
| | **FA1.** Produce report on priority areas of focus for activities in action plan. | | | |
| | **FA2.** Identify the environmental, economic and social data required for accounts and the relevant holders and managers of that data. | | | |
| | **FA2.** Identify people and/or organisations that may build accounts. | | | |
| | **FA2.** Identify people and organisations analysing information from accounts. | | | |
| | **FA2.** Identify current and potential policy and other users applying accounts to decision making and management activities. | | | |
| | **FA2.** Assess the international environmental-economic accounts to support international comparability and collaboration for the national approach. | | | |
| | **FA2.** Determine information and feedback loops between the different identified groups. | | | |
| | **FA2.** Determine what is working, what is not. Identify opportunities and constraints in all four categories (data compilation, accounts development, analysis and application). | | | |
| | **FA3.** Convene a Scientific Advisory Panel to provide expert advice to the Steering Committee and Technical working Group on the development of elements of environmental-economic accounts, including measuring environmental condition. This may include the Wentworth Group, experts associated with development of the international SEEA and leading academics from universities and/or national research agencies (such as CSIRO). | | | |
| | **FA3.** Initiate the definition of a set of principles, standards and governance arrangements for data collection, account development, analysis and application, where necessary to support the common national approach. | | | |
| | **FA3.** Investigate international experiences in applying the SEEA framework to domestic context, specifically, Canada, the United Kingdom and the Netherlands. | | | |
| | **FA4.** Determine target stakeholder groups for communication strategy. | | | |
| | Identify governance and authorising institutions for standards, classifications and quality of data and account development. | | Agree and apply general guidelines for environmental-economic account development. | Develop a concordance of terms to allow comparisons across jurisdictions. |
| | | | | Scope opportunities to partner with community and industry to develop environmental-economic accounts. |
| | Identify opportunities to influence existing data facilities to support environmental-economic accounting. | | | Improve understanding of how existing environmental-economic accounts are being applied and determine if they can be improved to enhance application. |

| | | | | |
|---|---|---|---|---|
| Year 2 | **FA3.** Initiate the development of environmental-economic accounting principles and methods relevant to Aboriginals and Torres Strait Islanders, including relevance to their economic, social, environmental, cultural and spiritual goals. | | | |
| | **FA3.** Establish a business-government dialogue to incorporate lessons learnt from natural capital accounting into the principles, standards and governance arrangements for the common national approach. | | | |
| | **FA4.** Assess the current capacity/understanding/policy drive of the production and use of environmental-economic accounting in government and in the business sector. | | | |
| | **FA4.** Develop methods to increase capacity and capability at all levels for environmental-economic accounting. | | | |
| | Identify priority sets of data for sharing arrangements and integration opportunities. | Compile data for pilot accounts.<br>Develop pilot account. | | |
| | Identify sets of data needed for accounts that can/should be made interoperable. | Document the conceptual model that meets the purpose of the account application.<br>Capacity and capability building in strategic thinking for application of pilot accounts. | | |
| Year 3 | **FA5.** Take lessons learnt from accounts already developed and apply them to new research and pilot work through the development of a research plan. | | | |
| | **FA5.** Identify partnerships between business, academia and government to foster new research and pilot work. | | | |
| | | Application of pilot accounts. | Understand the data needs, gaps and opportunities. | Increase capability building on environmental-economic accounts development and sharing knowledge across jurisdictions and organisations. |
| | | | | Capacity building in applying environmental-economic accounts across jurisdictions and organisations. |
| | | Application of pilot accounts. | Develop a framework for prioritising environmental-economic accounts for development. | Test application of developed accounts to specific reporting obligations such as State of the Environment reporting and international commitments. |
| | | | | Identify opportunities to apply environmental-economic accounts for evaluating effectiveness and efficiency of environmental management activities. |
| | | | Develop a framework for compiling specific environmental-economic accounts. | Work with community and industry in application of environmental-economic accounts. |
| | | | | Commence building environmental-economic accounts into the policy cycle. |
| | | Start implementation of the communication strategy through identified stakeholders and key products relevant to the pilot accounts. Working directly with policy makers, stakeholders and researchers to have environmental-economic accounting work directly influencing decision making around environmental issues. | Assess use of existing environmental-economic accounts and identify improvements that would enhance application. | Use available account information to report on relevant 2020 targets under the United Nations Sustainable Development Goals agenda. |
| | | | | Use available account information to report on relevant Aichi biodiversity targets under the United Nations Convention on Biological Diversity (CBD). |
| | | | | Use available accounts to inform investment priorities and objective setting for natural resource management activities and environmental programs. |

| | **Immediate outcome 1**. Environmental information is findable, accessible, interoperable and reusable by the community, business, government and other stakeholders. | **Immediate outcome 2.** Creation of a relevant, comprehensive and trustworthy source of information on Australia's environment. | **Immediate outcome 3.** Coordinated effort and efficient use of resources to build integrated environmental-economic accounts in Australia. | **Immediate outcome 4.** Improved consistency of reporting on Australia's environment – tracking condition, trends and pressures across various spatial boundaries over time. |
|---|---|---|---|---|
| **Year 3** | Establish a framework to secure, manage and share data for accounting purposes. This includes integrating further national and local data where possible through pilot accounts. | Identify data and resource needs for priority accounts. | Based on progress to date, update action plan to the *Strategy for a Common National Approach to Environmental-Economic Accounting* to include any new tasks or emerging priorities. | Continue to build capacity in environmental-economic accounting at all levels of government and in local and regional organisations. |
| | | Review of pilot accounts within governments for policy suitability, and to identify the strengths and weaknesses within the account information. | Start development of the first iteration of priority accounts identified in Output 3. | |
| | Influence existing data facilities to support accounts development. | Seek feedback on pilot accounts from selected non-government stakeholders. | | |
| | Set timeframes for transition to standard classification system where identified as necessary. | Based on government and non-government feedback, develop report on pilot accounts which discusses identified issues around their suitability for making key policy decisions and proposed strategies to address these in subsequent iterations of accounts. | Develop review process for accounts and integrate into national governance arrangements to ensure the continuous improvement of accounts over time. | |
| | | Commence development of priority national accounts. | | |
| **Year 4** | Develop national classification systems for use across all jurisdictions, ensuring alignment with classifications of ecosystems types and services as a result of the revision of the SEEA-EEA to be completed by the end of 2020. | Implement pilot accounts report. | | |
| | | Agree to the production cycle of accounts, and institutionalise account development procedures, such as data collection and integration, into organisational processes to ensure longevity of accounts. | | |
| **Year 5** | Develop communication products and promotional campaign to disseminate national classification systems. | Building on the improved procedures and arrangements established through activities in previous years, develop and release second iteration of pilot accounts. | Formalise account production processes into a national compliance guide through the collaborative interjurisdictional arrangements established through Output 3. The national compliance guide to include detailed instructions on data sources, classification standards, and processes for accounts development. The national compliance guide will be updated to include the outcomes of other actions and account review processes. | Integrate national environmental-economic accounts into 2021 Commonwealth's State of the Environment Report. |
| | | Review of first iteration of priority national accounts within governments for policy making suitability, and to identify the strengths and weaknesses within the account information. | | |
| | | Seek feedback on first iteration of priority national accounts from selected non-government stakeholders. | | Nationally consistent environmental-economic accounts are used in further iterations of state and territory SoE. |
| | | Based on government and non-government feedback, develop report on first iteration of priority national which discusses identified issues and the proposed strategies to address them in subsequent iterations of accounts. | | |

# APPENDIX B
## Background

### Commitment by Environment Ministers

At the Meeting of Environment Ministers on 25 November 2016, Commonwealth, state and territory environment ministers agreed that their governments would collaboratively work towards a common national approach to environmental-economic accounting.

This important work will ensure accurate and reliable information is available to governments, communities and business to better understand the condition of the environment and make better decisions. It will improve the ability to track outcomes in specific locations and across state and territory boundaries, and demonstrate the value of the environment to our standard of living.

This strategy and action plan has been developed through a collaboration between:

- Australian Government Department of the Environment and Energy
- Australian Bureau of Statistics
- Victorian Government Department of Environment, Land, Water and Planning;
- New South Wales Office of Environment and Heritage
- South Australia Department of Environment, Water, and Natural Resources;
- Queensland Department of Environment and Heritage Protection
- Tasmanian Department of Primary Industries, Parks, Water and Environment;
- Northern Territory Department of Environment and Natural Resources
- Western Australia Department of Environment Regulation; and Department of Biodiversity, Conservation and Attractions
- Australian Capital Territory Office of the Commissioner for Sustainability and the Environment; and Environment, Planning and Sustainable Development Directorate.

It has also been informed by consultation with the Bureau of Meteorology, Geoscience Australia, and a range of EEA experts, business, academia, natural resource management organisations and the not-for-profit sector.

### What is environmental-economic accounting?

The natural environment provides many benefits to our social and economic wellbeing. Environmental assets such as land, soil, minerals, rivers, oceans and biodiversity are used to support economic growth and improve our living standards. There is growing evidence that the health of our economic and social wellbeing is directly related to the health of our environment. Yet environmental benefits are not adequately captured with traditional measures of progress such as the gross domestic product (GDP).

Environmental-economic accounting (EEA) is a framework for capturing and organising information on the environment, its contribution to economic activity and the impact of that activity on the state of the environment in a consistent and comparable manner.

Understanding the extent and condition of environmental assets can help assess which assets are being depleted or lost, which assets are declining in condition, how to make best use of these assets and to appropriately manage the risk of environmental degradation and the impact of climate change. Recent applications have demonstrated that this information is valuable and relevant for policy-making and investment decisions. It can also be used to monitor and evaluate the effectiveness and/or compliance with existing environmental policies and regulations. Of particular interest to policy-makers is that environmental-economic accounts can capture information at industry, local or regional level and combine it with socio-economic data to help assess the broader impact of policies. This information can then be used to answer questions like which parts of the economy are becoming more or less dependent

on the environment and how does economic activity affect the health of our environment.

Figure 1 depicts the process of EEA; from measurement of stocks of biophysical assets, to the condition of the assets relative to a point in time or to a particular use or objective, to the flows of goods and services that environmental assets provide in various landscapes or regions and finally, the estimated value of such assets and services to the community, government and businesses through market-based transactions or utilising non-market valuation techniques.

## The System of Environmental Economic Accounts (SEEA)

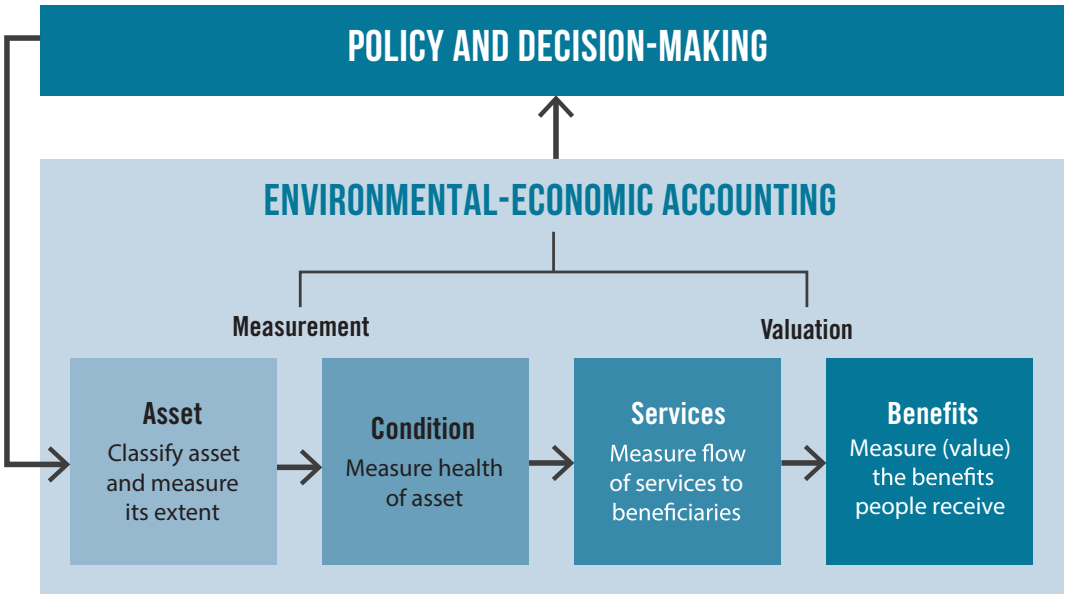
In 2012 the United Nations Statistical Commission adopted the SEEA as an international statistical standard for EEA. The SEEA is an extension of the System of National Accounts (SNA) framework and considers the interaction between the economy and the environment. The SEEA provides a set of established accounting principles including definitions, standards, approaches and classifications to account for natural assets both in monetary and non-monetary (physical) terms. The SEEA consists of three parts - the Central Framework, Experimental Ecosystem Accounting, and Extensions and Applications.

The SEEA has the advantage of integrating environmental activity with the economy through the SNA, as well as the ability to bring well-accepted national accounting concepts and methods to the field of environmental accounting.

The conceptual approach adopted in the SEEA Central Framework has a strong economic perspective that characterises the environment as either a source of natural inputs or a sink for residual (waste) as illustrated in Figure 2. Natural inputs are flows into the economy (such as minerals, energy, water and timber), products are flows within the economy and residuals are flows from the economy to the environment (e.g. solid and liquid waste, air pollution).

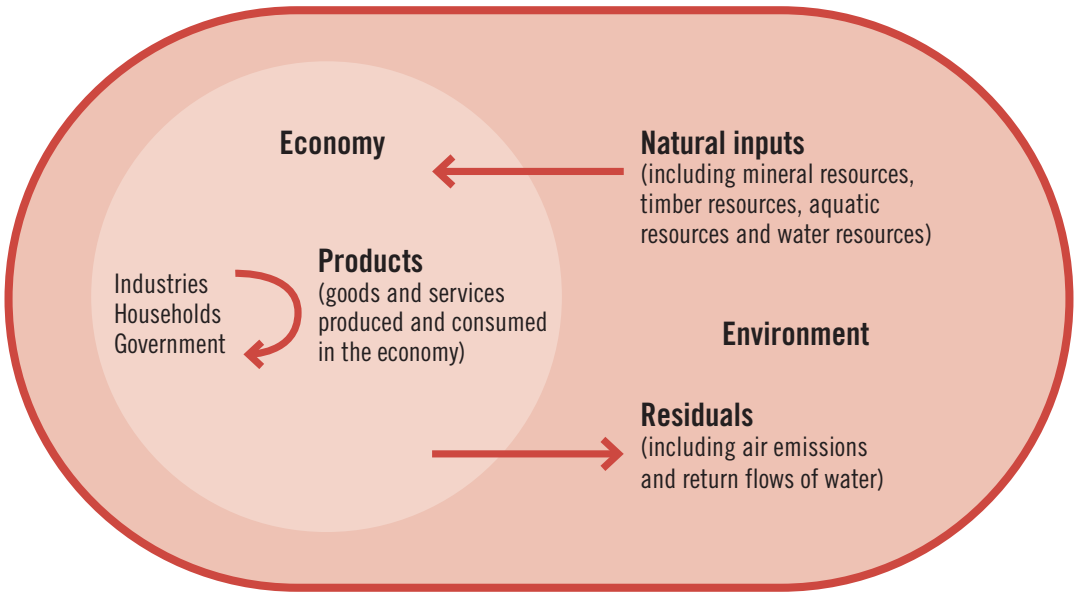
The approach in the SEEA Experimental Ecosystem Accounting Framework expands these perspectives to include the biophysical, tracking changes in ecosystem assets and measuring ecosystem services. The framework allows for linking ecosystems to economic and other human activity.

**Figure 1:** Integrating the measurement of environmental assets and valuation of their benefits. This representation of EEA does not include economic measures to protect the environment.




Source: Adapted from DELWP 2015, Valuing and accounting for Victoria's environment: Strategic Plan 2015-2020, p 1.

**Figure 2:** Overview of the SEEA Central Framework




Source: United Nations 2014, System of Environmental-Economic Accounting 2012 - Central Framework, p 13.

# International and domestic experience

## International EEA experience

Since the adoption of the System of Environmental-Economic Accounting 2012 – Central Framework (SEEA Central Framework) by the United Nations Statistical Commission in March 2012, national implementation of EEA has steadily increased. At least 70 countries have implemented, or are planning to implement, national SEEA based environmental-economic accounting programs. Additionally, of the countries with established SEEA programs, the overwhelming majority have stated their intention to expand their implementation of SEEA by broadening the coverage of accounts produced.

This growth in the use of SEEA is occurring across all geographic regions, where accounts are being used to inform policies for sustainable development, model fiscal and monetary policy impacts, and evaluate impacts and dependencies on environmental assets from different sectors of the economy. In the European Union, SEEA accounts for six priority areas have been institutionalised in their legislative framework to ensure harmonised collection of comparable data across member states. Included are accounts for air emissions, economy-wide material flows, physical energy flow accounts, environmental taxes, the environmental goods and services sector, and environmental protection expenditure accounts. Additional accounts are also in development for forests and environmental subsidies, and plans for the development for ecosystem accounts and water accounts are underway. As these accounts are continuously developed, they will become increasingly important to the management of environmental policy priorities and for measuring progress towards the EU's environmental and economic objectives.

Further to this, the World Bank's Wealth Accounting and the Valuation of Ecosystem Services (WAVES) partnership have helped pioneer environmental-economic accounting in developing nations, such as Botswana, Guatemala, Colombia and the Philippines. Environmental-economic accounts provide information critical to the sustainable development of these nations by allowing for natural resources such as timber, water, minerals and ecosystems to be integrated into national development plans and factored alongside economic considerations.

With increasing use of the SEEA framework across the international community, the value of SEEA accounts as tools for domestic and international policy issues continues to rise. By progressing with national implementation of the SEEA, Australia has an opportunity to join the forefront of this emerging practice as it becomes a mainstream policy analysis tool.

## Domestic EEA experience

In Australia, a number of organisations and researchers have used the SEEA framework to develop environmental-economic accounts for different purposes across different regions at different scales and timeframes. Some of these have been experimental while others have had a direct policy use. Key initiatives in Australia include the Australian Bureau of Statistics (ABS) Australian Environmental Economics Accounts (AEEA), the ABS experimental ecosystem accounts for the Great Barrier Reef Region and the Victorian Government's ecosystem accounts. Non-government organisations have also worked on developing methodologies that can complement accounting efforts such as methods to assess environmental condition. An example is the development of the 'Accounting for nature' model developed by the Wentworth Group and tested in ten Natural Resource Management (NRM) regions of Australia. However, efforts in Australia in the EEA space have been dispersed.

### Australian Bureau of Statistics (ABS)

Since 1996, the ABS has applied the SEEA framework to produce the Australian Environmental Economic Accounts which is comprised of a suite of accounts including water, energy, waste, greenhouse gas emissions, carbon, environmental taxes, environmental expenditures and land.

#### *Water Account Australia*

The Water Account Australia is produced annually and it presents information on the supply and use of fresh (or inland) water within the Australian economy at the state and national level, and also for the Murray-Darling Basin, in both physical and monetary terms. The physical water supply and use tables present aggregate physical data available (megalitres) within the Australian economy in a financial year. The water resource that is accounted for is the volume of water extracted from the environment for consumption and production, and the discharge of water returned to the environment or water discharged to sewerage treatments. The accounts also describe who uses the water (e.g. state, industries), how much was used and for what purpose.

#### *Energy Account Australia*

The Energy Account Australia presents estimates of energy assets and physical and monetary supply and use of energy products in Australia. The aim of this account is to integrate data from different sources into a consolidated information set, enabling physical data on energy and economic data to be linked. The account is produced annually and covers supply and use across different industries. The account is now a key input into the Australian System of National Accounts.

#### *Land Account Australia, Experimental Estimates*

Using the SEEA framework, the ABS has produced five experimental land accounts for different regions of Australia —Queensland 2011-2016, South Australia 2006-2011, the Great Barrier Reef Region 2011, Victoria 2012, Queensland 2017 and the Great Barrier Reef Region 2014. The accounts present tables and maps on land use, land cover and land value. The accounts have been developed by integrating data from a range of sources including directly collected data, administrative by-product and satellite imagery.

#### *Waste Account Australia, Experimental Estimates (WAAEE) 2013*

In 2013, the ABS developed WAAEE as a pilot project based on the SEEA framework. It contains physical and monetary supply and use of waste generated by industry, government and households. The WAAEE integrates data from different sources into a consolidated framework making it possible to link physical data on waste to economic data. This account is no longer in production.

> In Australia, a number of organisations and researchers have used the SEEA framework to develop environmental-economic accounts for different purposes across different regions at different scales and timeframes.

***ABS Experimental Ecosystem Accounts for the Great Barrier Reef Region 2017***

In 2017, the ABS produced a set of experimental ecosystem accounts for the Great Barrier Reef Region. The accounts cover both marine and terrestrial environments of the region and include information on biodiversity, land cover, water pollution and a selection of ecosystem services and natural capital. The accounts are based both on the SEEA - Central Framework and SEEA - Experimental Ecosystem Accounting. The SEEA - Experimental Ecosystem Accounting 2013 defines ecosystem accounting as:

> 'Ecosystem accounting goes beyond other approaches to ecosystem analysis and assessment through the explicit linking of ecosystems to economic and other human activity. The links are seen both in terms of the services provided by ecosystems and also in the impacts that economic and other human activity may have on ecosystems and their future capacity. While ecosystem accounting does consider ecosystems and the economy to be different systems, they are analysed jointly reflecting the fundamental connections between them. The use of an accounting framework enables the stock of ecosystems – ecosystem assets – and flows from ecosystems – ecosystem services – to be defined in relation to each other and also in relation to a range of other environmental, economic and social information'.

## Victoria

The Victorian Government has been a leader in the development of environmental-economic accounts. Over the past few years it has developed experimental ecosystem accounts and through its strategy, Valuing and Accounting for Victoria's Environment (2015), is integrating environmental-economic accounting into government reporting, program evaluation and decision-making.

In terms of reporting, the independent Victorian Commissioner for Environmental Sustainability is required to prepare a five-yearly *State of Environment* (SoE) report in accordance with a framework for environmental reporting. The current framework, *State and Benefit*, was tabled in the Victorian Parliament in December 2015 and provides the authorising environment for the 2018 SoE report. *State and Benefit* proposes significant reform of environmental reporting in Victoria including: (i) addressing the limitations of the conventional Drivers-Pressures-State-Impact-Responses (DPSIR) model of reporting, (ii) alignment with internationally accepted SEEA standards, and (iii) the inclusion of relevant indicators from the Sustainable Development Goals.

***Marine and Coastal Ecosystem Accounting: Port Phillip Bay 2016***

The Marine and Coastal Ecosystem Accounting: Port Phillip Bay is the first study with marine and coastal environmental-economic accounting to be conducted in Australia. The study builds on previous works to assess the link between the bay and economic and social wellbeing in Victoria. The study has used available data to produce a set of environmental-economic accounts for the bay, which was used to inform the 2016 Victorian *State of the Bays* report (issued by the Commissioner for Environmental Sustainability).

***Valuing Victoria's Parks 2015***

In 2015 Department of Environment, Land, Water and Planning (DELWP) in collaboration with Parks Victoria applied the SEEA framework to assess the benefits that parks ecosystems provide to the Victorian community and the economy. The parks ecosystems contribution to society was assessed in a three-staged approach:

- Reporting on the stock and condition of environmental assets.
- Quantification of the goods and services from park ecosystems that benefit the community (ecosystem services).
- Valuation of the benefits from the provision of ecosystem services from parks.

Valuing Victoria's Parks assessed a wide range of benefits that Victoria's parks provide to the community including water filtration, pollination, carbon sequestration, coastal protection and recreation. For instance, the study found that park tourism generates visitor expenditure of $1.4 billion per year across different sectors of the economy, which supports 14,000 jobs in Victoria.

***Victorian Experimental Ecosystem Accounts 2013***

The 2013 Victorian Experimental Ecosystem Accounts demonstrated that it is possible to provide information on ecosystems and their changing condition through time in an accounting format that is consistent with the SEEA. The accounts were designed to present information that is comparable over time and across regions, enabling users and policy-makers to objectively review the outcomes of natural resource management decisions with focus on the terrestrial context.

## Commissioner for Sustainability and the Environment (ACT Government)

The Office of the Commissioner for Sustainability and Environments released a pilot set of environmental-economic accounts for the ACT based on the SEEA framework. The accounts cover solid waste, water (supply, use and water asset), environmental expenditure, air emissions, land, and environmental condition. The accounts were released in September 2017. The Commissioner's Office is working on further iterations of accounts to inform the next ACT State of the Environment report (due December 2019).

## New South Wales and Queensland

The New South Wales (NSW) and Queensland Governments are committed to support the development of environmental-economic accounts in their jurisdictions. The NSW Government has started a dialogue with the ABS, to explore partnership opportunities whereby a system of integrated environmental and economic accounts can be tested for smaller regions of NSW, or state-wide accounts developed for specific values or issues such as land or waste management.

## Experimental Ecosystem Account for the Central Highlands of Victoria

In 2016 researchers from the Australian National University's Fenner School produced a set of experimental ecosystem accounts for the Central Highlands of Victoria under the National Environmental Science Programme. The study assesses the use and economic contribution of ecosystem assets from the region and discusses alternative implications for alternative activities. The work highlights how different ecosystem services can be valued and integrated to provide a more complete picture of a landscape's contribution to economic and human activity. The accounts prepared were for land, water, carbon, timber and the production and use of ecosystem services.

## Other environmental accounting

There are some environmental accounting initiatives in Australia that usefully complement this strategy.

***Australian Regional Environmental Accounts Trial (Wentworth Group)***

In 2008, the Wentworth Group of Concerned Scientists developed the *Accounting for Nature* model. The model places scientific information about the condition of the environment into an accounting framework, using a common unit of measure termed 'Econd' to quantify the condition of environmental assets. In cooperation with regional NRM organisations and accounting experts, they conducted a four-year trial for ten NRM regions across Australia to test the practical application of the model. Trial accounts were developed for assets within land, freshwater, coastal and marine environments. In 2016 the Wentworth Group produced a revised version of its *Accounting for Nature* model taking into account the experience from the regional environmental accounts trial and the development of the SEEA framework. See box on page 33 on the application of this model to land management and conservation activities.

***South Australia***

The South Australian Government identify priority natural assets and their condition and report on them annually[3].

*Natural Resource Management State and Condition Reporting Framework 2012*

South Australia's Natural Resource Management State and Condition Reporting Framework (2012) has adapted the Accounting for Nature model proposed by the Wentworth Group in 2008. Reporting on natural resources and trends in their status is required at regional, state-wide and national scales. Implementation of the framework provides a common set of guidelines for how indicators are defined and integrated where necessary, for social, economic and environmental reporting.

3 https://data.environment.sa.gov.au/NRM-Report-Cards/Pages/Home.aspx

*Trend and Condition Report Cards*

The South Australian Government Trend and Condition Report cards report on natural assets and their management. The report cards are published online annually. For the first time, this aligns all state environmental reporting including regional, state-wide and national scales. The 2018 *State of the Environment* report will be based on these trend and condition report cards.

***National Water Account***

The National Water Account, produced by the Bureau of Meteorology aims to report on total water resources. It complements the Water Account Australia produced by the ABS by reporting on water availability whereas the latter reports on water use within the economy. The National Water Account takes a General-Purpose Accounting approach, for example, the use of accrual accounting, which is more aligned to financial accounting methods rather than environmental-economic accounting. The National Water Account was piloted in 2010, with the first set being released in 2011, and is produced annually.

***National Greenhouse Accounts***

The National Greenhouse Accounts, produced by the Australian Government Department of the Environment and Energy, track emissions estimated at a national, state and industry level from 1990 onwards. The data is used to meet Australia's reporting commitments under the United Nations Framework Convention on Climate Change, track progress against Australia's emission reduction commitments, and inform policy makers and the public.

> The Department has recently extended its carbon accounting capabilities to include the production of regional biocarbon accounts to support the National and State Greenhouse Accounts, and to support comprehensive environmental-economic accounting.

The Department has recently extended its carbon accounting capabilities to include the production of regional biocarbon accounts to support the National and State Greenhouse Accounts, and to support comprehensive environmental-economic accounting.

The first set of experimental biocarbon accounts, covering the Great Barrier Reef region, is outlined in the Department's latest 'Quarterly Update of Australia's National Greenhouse Gas Inventory: March 2017'[4]. These accounts form part of the ABS experimental ecosystem account for the Great Barrier Reef region.

***Natural Capital Coalition***

The Natural Capital Finance Alliance (NCFA) is an international initiative managed by the Natural Capital Coalition (NCC). The NCFA provides a platform for businesses to identify, measure and value their impacts and dependencies on natural capital with guidance provided in the Natural Capital Protocol (released by NCC in July 2016). The Protocol provides a standardised framework for organisations to identify, measure and value their direct and indirect impacts and dependencies on natural capital. Whilst the SEEA framework focuses on national level accounting, this Protocol is focused at a business decision-making level and can be implemented across boundaries. The NCC is a global multi-stakeholder collaboration that brings together leading global initiatives and organisations to harmonise approach to natural capital. It evolved into its current name in 2014 from The Economics of Ecosystems and Biodiversity (TEEB) for Business and launched in 2012 in Singapore. The Australian Business and Biodiversity Initiative (ABBI) actively collaborates with the NCC through supporting the development of supplements to implement the Protocol. Many ABBI members are also NCC members with VicSuper and NAB also being signatories to the NCFA.

4 http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/publications/quarterly-update-australias-national-greenhouse-gas-inventory-mar-2017

# CONDITION ACCOUNTS TO INFORM LAND MANAGEMENT ACTIVITIES

The Tasmanian Land Conservancy (TLC) is a not-for-profit, a-political, science and community based organisation that partners with others and uses business principles to protect over 60,000 hectares of Tasmania's private land. This includes a network of 17 permanently protected conservation reserves which TLC owns and manages.

In 2015 TLC adopted the Wentworth Group's 'Accounting for Nature' methodology as a way of recording, presenting and interpreting its monitoring data in a consistent way. Using this model, it has developed condition accounts for its largest reserve (~ 11,100ha) and it now has Econds for key assets to show relative change over time. This information can now be visually presented and interpreted in a more meaningful way for scientists and supporters alike.

Environmental accounting allows for comparing condition across reserves using a valid reference point. This information enables land managers like TLC to track the effectiveness of their management actions and to identify and prioritise which locations or assets need more attention.

TLC will be adopting this methodology for monitoring data collected from other private protected lands in Tasmania as it can be up-scaled to provide regional environmental accounts for consistent and comparable state-wide reporting frameworks.

ENVIRONMENTAL ASSET ACCOUNT
FIVE RIVERS RESERVE, TASMANIA

**Summary Table**

| Class | Asset | Sub-asset | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|
| [redacted] | Vegetation | **Econd** | **94** | | **94** | |
| | | Highland Forests | 93 | | 92 | |
| | | Highland Marshes | 99 | | 99 | |
| | | Riparian Zone | 99 | | 99 | |
| | Mammals | **Econd** | **84** | **88** | **88** | **88** |
| | | Carnivores | 67 | 72 | 71 | 72 |
| | | Herbivores | 100 | 100 | 100 | 100 |
| | | Omnivores | 85 | 91 | 94 | 93 |
| FRESHWATER | Rivers & Wetlands | **Econd** | | **78** | | |
| | | Clarence Headwaters | | 78 | | |
| | | Kenneth Lagoon | | 78 | | |
| | | Nive River | | 83 | | |
| | | Pine River | | 69 | | |
| | | Serpentine Rivulet | | 83 | | |

*draft subject to peer review © TLC 2017*

<www.tasland.org.au>

The tables below summarise some of the applications of environmental-economic accounting in Australia.

**Table 1:** Examples of environmental-economic accounting using the SEEA.

| Account | Agency | Account Subject | Scale | Measurement units | Frequency |
|---|---|---|---|---|---|
| Water Account | ABS | Water supply and use within the economy | National, state/ territory | Megalitres, dollars | Annual |
| Land Account | ABS | Land use, land cover & value | Regional, state | Area (ha), dollars | Experimental |
| Energy Account | ABS | Energy supply and use within the economy | National | Petajoules, dollars | Annual |
| Experimental Ecosystem Accounts for the Great Barrier Reef Region | ABS | Ecosystem, ecosystem goods and services | Regional | Area, dollars | Experimental |
| Victorian Experimental Ecosystem Accounts | DELWP | Ecosystem extent and services indicator | State, regional | Combined spatial and temporal (e.g. ha/year) | Experimental |
| Valuing Victoria's Parks | DELWP and Parks Victoria | Ecosystem extent, condition and services | State, regional | Area, dollars | Experimental |
| Marine and Coastal Ecosystem Accounting: Port Phillip Bay | DELWP | Ecosystem extent, condition and services | State, regional | Area, tonnes, quality index, dollars | Experimental |
| Experimental Ecosystem Account for the Central Highlands of Victoria | ANU Fenner School | Ecosystem services | State, regional | Megalitres, area, dollars | Experimental |
| ACT Experimental Environmental-Economic Accounting for State of the Environment reporting | Commissioner for Sustainability and the Environment (ACT) | Water supply, use and asset<br>Land<br>Air Emissions<br>Environmental Condition<br>Environmental Expenditure<br>Waste | Territory | Megalitres, Kilotonnes, dollars, area(ha), environmental condition scores, tonnes, economic indicators (incl. GSP) | Experimental. Frequency of further iterations and accounts to be confirmed. |

**Table 2:** Other examples of examples of environmental accounts.

| Account | Agency | Account Subject | Scale | Measurement units | Frequency |
|---|---|---|---|---|---|
| Regional Environmental Accounts Trials | Wentworth Group | Environmental asset condition | Regional | Econd | Experimental |
| National Greenhouse Accounts | Department of the Environment and Energy | Greenhouse gas emissions | National, state, industry | Tonnes of carbon equivalent | Annual |
| National Water Account | Bureau of Meteorology | Available water resources | National, regional | Megalitres | Annual |
| Natural Capital Finance Alliance | Natural Capital Coalition | Business dependencies on natural capital | Business | Varies | Varies |

# The relationship of environmental-economic accounts to domestic and international policy agendas

EEA has the potential to support a number of domestic and international policy agendas through the provision of information to inform responses and monitor and report on progress.

## United Nations Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) are a set of universal goals, targets and indicators that UN member states have agreed to collectively pursue by the year 2030. The SDGs provide a comprehensive agenda which encompass social, environmental and economic objectives. In order to effectively measure national and global progress towards the SDGs, an integrated system of information is required which is able to compare and contrast information on these components of sustainability.

The capacity of the SEEA framework to integrate with the economic information which comprises the System of National Accounts (SNA) makes it an integral part of the solution.

Through the use of standard definitions, classifications and methodologies for measuring environmental water, energy, air emissions, land, forestry, agriculture, and other environmental aspects, the SEEA frameworks will enable for several of the sustainable goals and targets to be measured using robust common indicators. In conjunction with the SNA, SEEA accounts have substantial potential to directly support reporting on at least seven of the seventeen SDGs:

| SDGs | Targets |
|---|---|
| **Goal 2:** End hunger, achieve food security and improved nutrition and promote sustainable agriculture | **Target 2.4:** Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality. |
| **Goal 6:** Ensure access to water and sanitation for all | **Target 6.4:** Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. |
| **Goal 8:** Promote inclusive and sustainable economic growth, employment and decent work for all | **Target 8.4:** Improve progressively, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead. |
| **Goal 11:** Make cities inclusive, safe, resilient and sustainable | **Target 11.4:** Strengthen efforts to protect and safeguard the world's cultural and natural heritage.<br>**Target 11.6:** Reduce the adverse per capita environmental impacts of cities, including by paying special attention to air quality and municipal and other waste management. |
| **Goal 12:** Ensure sustainable consumption and production patterns | **Target 12.2:** Achieve the sustainable management and efficient use of national resources.<br>**Target 12.3:** Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.<br>**Target 12.5:** Substantially reduce waste generation through prevention, reduction, recycling and reuse. |
| **Goal 15:** Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss | **Target 15.1:** Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.<br>**Target 15.2:** Promote the sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.<br>**Target 15.3:** Combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.<br>**Target 15.9:** Integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts. |
| **Goal 17:** Strengthen the means of implementation and revitalize the global partnership for sustainable development | **Target 17.18**: By 2020, enhance capacity-building support to developing countries including for least developed countries and Small Island Developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts. |

## United Nations Convention on Biological Diversity Aichi Biodiversity Targets

At the October 2010 Conference of the Parties to the United Nations Convention on Biological Diversity (CBD), a revised Strategic Plan for Biodiversity was adopted. The Strategic Plan contained 20 targets for CBD member nations. These targets, known as the Aichi biodiversity targets, aim to advance the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from genetic resources.

Under the CBD, national reports are required from each Party (member country) to outline the measures they have taken to implement the CBD, and their effectiveness in meeting the CBD's strategic objectives. Parties are obliged to submit national reports at regular intervals as determined by Parties to the Convention. This has roughly resulted in national report at four yearly intervals, with the sixth national reports due by 31 December 2018.

Environmental-economic accounts have the potential to provide robust measures of progress against several of the targets. Specifically, Aichi biodiversity target 2 requires that "biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems." Integration of environmental and economic information through the SEEA and SNA will be required for the achievement of this target.

## State of the Environment

Every five years, the Australian Government produces a comprehensive review of the Australian environment through the national *State of the Environment* (SoE) report. Included in the SoE are assessments of pressures, condition and trends, risks and resilience, and future projections across a number of environmental themes, such as land, biodiversity and the marine environment. The latest iteration of the report, SoE 2016, was released in March 2017.

The SEEA framework has a number of potential applications in future iterations of the SoE, including by providing standardised and quantifiable time series data on several reporting themes and topics for use in measuring status and trends. SoE 2016 contained the following key findings for which there is a clear role for environmental-economic accounting:

- "Providing for a sustainable environment both now and in the future, is a national issue requiring leadership and action across all levels of government, business and the community. The first step is recognising the importance and value of ecosystem services to our economy and society."
- "Effective management of the Australian environment in the future also requires efficient, collaborative and complementary planning and decision-making processes, with clear lines of accountability; improved support for decision-making; a more strategic focus on planning for a sustainable future; and new reliable sources of funding."
- "With the right choices, policies, management and technologies, Australia has the capacity to ensure economic prosperity and meet people's health, education, social and cultural needs, while protecting the environment for future generations."

## The Natural Capital Protocol

The Natural Capital Protocol is a decision support tool designed to assist businesses to better manage their interactions with the environment using reliable, practical and interpretable information. The Natural Capital Protocol recognises that, to varying degrees, all businesses both impact and depend on natural capital for their operations. By understanding their relationship with natural capital, businesses are able to more effectively manage associated risks and potential opportunities. In doing so, the Natural Capital Protocol provides value to businesses while also engendering momentum towards more sustainable business practices and efficient use of resources.

Through providing integrated environmental and economic information, environmental-economic accounts will support the application of the Natural Capital Protocol across the business sector. Using EEA, businesses will be able to more easily identify where dependencies exist, as well as changes to the strength of these relationships over time. Furthermore, the information provided by regularly produced accounts will enable businesses to be more responsive to changes in natural capital.

# APPENDIX C
## Principles

The principles guiding the development and implementation of the common national approach to environmental-economic accounting will build on the ten 'living principles' from the Wealth Accounting and the Valuation of Ecosystem Services[5] and others that reflect the specific Australian context for this strategy such as varying degrees of expertise and resourcing across jurisdictions.

| | |
|---|---|
| **Comprehensive** | |
| **1. Inclusive** | Acknowledging the diverse stakeholders concerned with decisions affecting natural capital, responding to their information demands, respecting different notions of value, and using appropriate means of engagement. |
| **2. Collaborative** | Linking the producers of EEA, the users of EEA for policy analysis, and the policy makers using the EEA results; and building their mutual understanding, trust and ability to work together. |
| **3. Holistic** | Adopting a comprehensive, multi/interdisciplinary approach to the economic and environmental dimensions of natural capital and to their complex links with policy and practice. |
| **Purposeful** | |
| **4. Decision-centred** | Providing relevant and timely information for indicator development and policy analysis to improve and implement decisions with implications for natural capital. |
| **5. Demand-led** | Providing information actually demanded or needed by decision-makers at specific levels. |
| **Trustworthy** | |
| **6. Transparent and open** | Enabling and encouraging public access and use of EEA, with clear communication of the results and their interpretation including limitations of the data sources, methods and/or coverage. |
| **7. Credible** | Compiling, assessing and streamlining data from all available sources; deploying objective and consistent science and methodologies. |
| **8. Consistent with internationally agreed standards and best practice** | Account development will be consistent with the UN SEEA framework and will consider best available knowledge/practice for the specific domain and/or purpose of the account. |
| **Mainstreamed** | |
| **9. Enduring** | With adequate, predictable resourcing over time; continuous application and availability; and building increasingly rich time series data. |
| **10. Continuously improving** | Learning-focused, networked across practitioners and users, trialling new approaches, and evolving data integration platforms and systems to better manage uncertainty, embracing innovation and taking advantage of emerging opportunities. |
| **11. Embedded** | EEA production and use becoming the 'machinery' of government and business, building capacity, improving institutional integration for sustainable development and incorporating EEA use in procedures and decision-support mechanisms. |

5 WAVES is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

| Context-based and adaptable | |
|---|---|
| **12. Flexible implementation** | Jurisdictions have agreed to work towards a common national approach but will have the option to opt-in to pilot and other work in accordance with their resourcing and interest, and will be able to implement the approach in a manner appropriate to their jurisdictional circumstances and priorities. |
| **13. Fit for purpose** | A common national approach does not mean developing a comprehensive set of national scale environmental-economic accounts which encompass all domains and locations. The scale of each account will be appropriate for its content and intended purpose. Often this will be at the sub-national, state, regional or ecosystem level. A common national approach will ensure that where like accounts are developed, they are done so in a consistent and comparable manner. National scale accounts will only be developed where a genuine policy need has been identified by all governments. |
| **14. Opportunistic** | A common national approach opportunistically progresses collective interest. Work which is in line with current political, environmental, economic and social priorities will be given preference. |
| **Pragmatic** | |
| **15. Builds on existing knowledge** | Pilot and other work informing the development and implementation of a common national approach will build on existing knowledge, materials, and expertise where possible. |
| **16. Realistic** | Recognising that data collection, account development, analysis and application won't be perfect initially but will evolve. Gaps and mistakes will occur and are part of the process. |

Yarrunga Valley, Morton National Park © Jenny Tomkins and Department of the Environment and Energy

# APPENDIX D

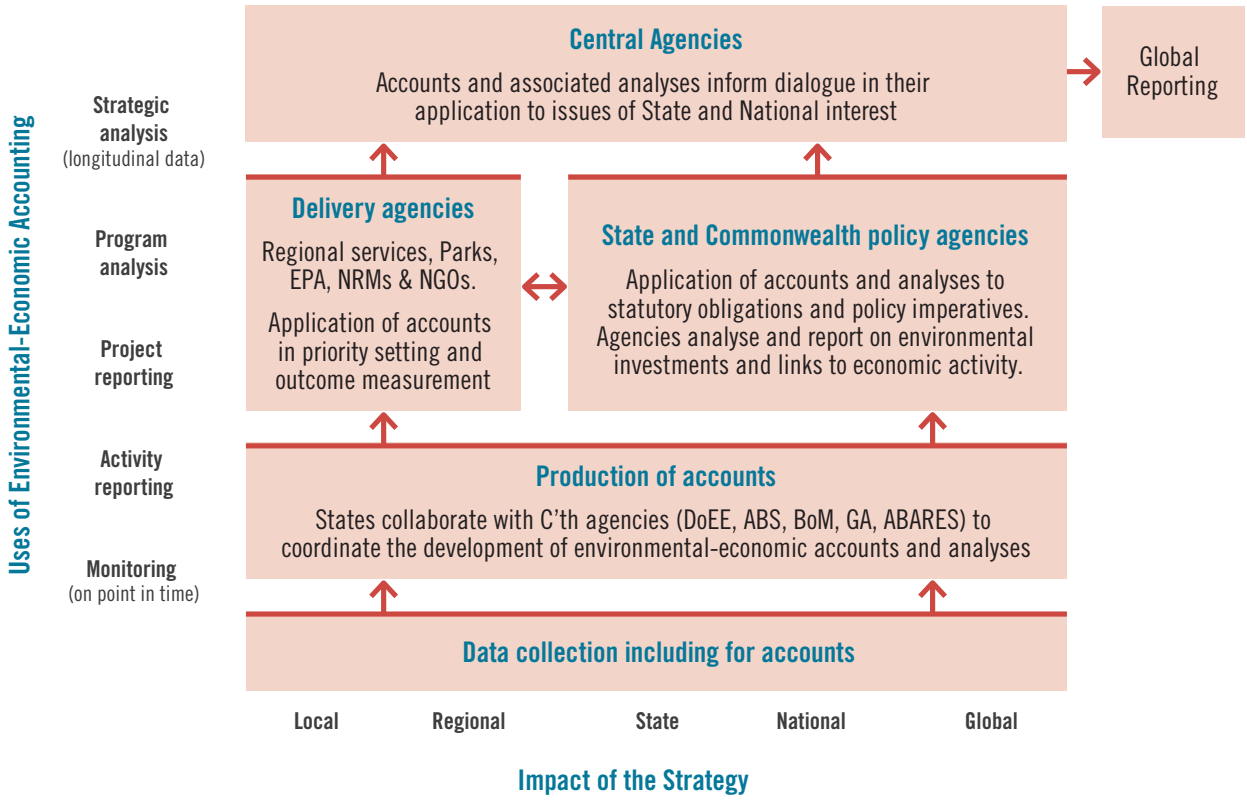
## Governance and stakeholder engagement

The ongoing development and testing of accounts requires drawing information from many different organisations and databases. Governance arrangements are being put in place to leverage current capabilities and align research and development opportunities. The governance arrangements take into consideration the institutional linkages between local, regional, state and federal agencies and the different uses of accounting including monitoring, reporting and analysis (see Figure 1 below).

Governance arrangements have been established to support the coherent delivery of a common national approach to environmental-economic accounts (see Figure 2 below):

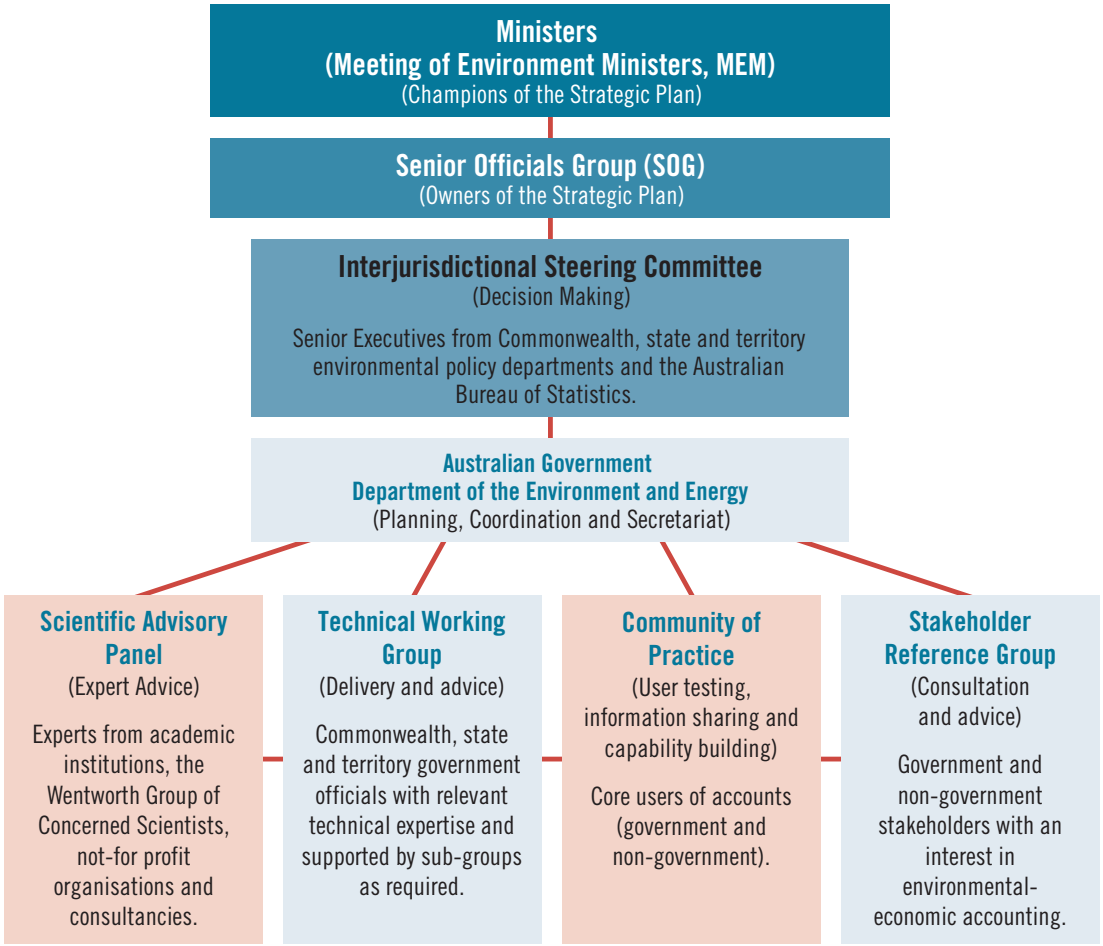
- An Interjurisdictional Steering Committee made up of Commonwealth and state and territory government representatives. The Steering Committee will provide strategic oversight of the development of the common national approach, and negotiate and agree on the appropriate scale for different account types. Membership is comprised of Deputy Secretary/First Assistant Secretary level representatives (or equivalent) of the relevant policy portfolios of all governments.
- The Australian Government Department of the Environment and Energy will coordinate the implementation of the strategy, working closely with their counterparts in state and territory environment agencies and other collaborators.

**Figure 1:** Linking agencies to the uses of environmental-economic accounting[6]




6 Adapted from DELWP 2015, Valuing and accounting for Victoria's environment: Strategic Plan 2015-2020.

Figure 2: National Strategic Plan Governance Arrangements




- Under the guidance of the Interjurisdictional Steering Committee, the Department will:
  - Lead and coordinate implementation of the strategy and action plan.
  - Undertake administrative and logistics work related to the project.
  - Manage and coordinate pilot work and input from the subordinate groups listed in Figure 2.
  - Coordinate reporting on progress and briefing for the Interjurisdictional Steering Committee, Senior Officials Group and the Meeting of Environment Ministers.
- A Technical Working Group has been established to support the development of pilot accounts, including the promotion of standardisation and scalability between local, state and national levels, and methodological trials. The Technical Working Group comprises jurisdictional representatives with technical expertise relevant to environmental-economic accounting.

Implementation of this strategy will be led by State, Territory and Commonwealth environment agencies, but as shown in Figure 1, there are a range of government agencies that will need to be involved in the development and/or application of accounts to realise this strategy's long-term vision including:

- government environment agencies including environmental policy agencies, Environment Protection Authorities, and State of the Environment reporting agencies where they are separate to environment policy agencies
- Treasury and finance agencies that have responsibility for overall economic policy and management

» government agencies that have responsibility for sectors reliant on environmental assets and services such as fisheries, forestry, energy, agriculture and tourism.

Experts in environmental-economic accounting including the Australian Bureau of Statistics, the United National Statistical Division and others from the research sector will be engaged to ensure that account development and application is robust and is guided by international best practice.

This governance structure and the delivery of the strategy and action plan will be supported by:

» A Scientific Advisory Panel to provide expert advice to the Steering Committee and Technical Working Group on the development of elements of environmental-economic accounts, including measuring environmental condition. This may include the Wentworth Group, experts associated with development of the international SEEA and leading academics from universities and/or national research agencies (such as CSIRO).

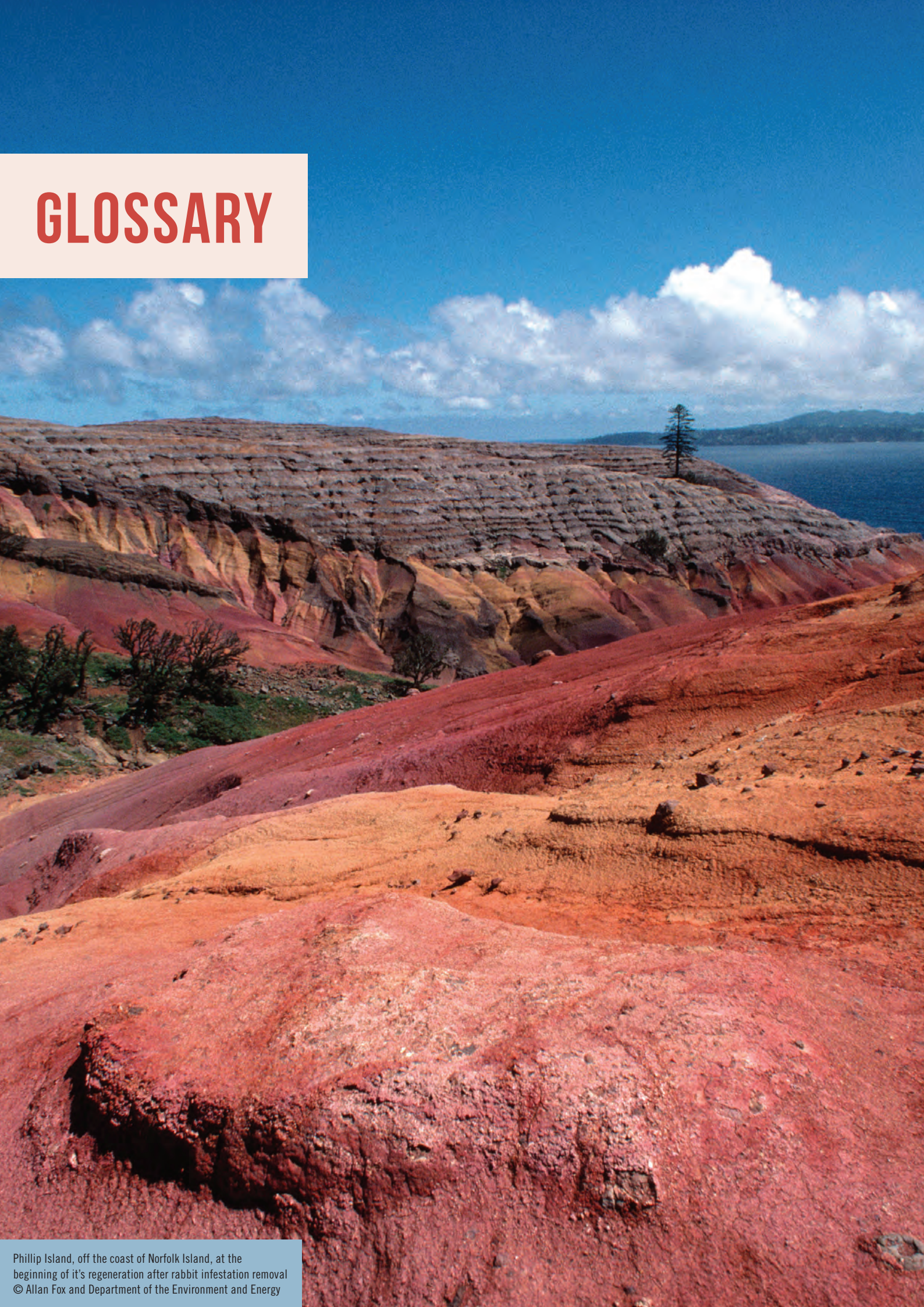
» A Community of Practice comprising core users of accounts. This group will be used for user testing of products, information sharing and capability building to support the ongoing development of environmental-economic accounts.

» A Stakeholder Reference Group that provides support to the Steering Committee and Technical Working Group. This may include representatives from the private sector, research institutions, and those involved in the management of natural resources and the protection of environmental assets including local government, natural resource management organisations (e.g. NRM Regions Australia and Landcare groups), government contractors or parties involved in the delivery of environmental programs, non-government environmental organisations and private landholders. These groups also have a role to play and a stake in how accounts are developed and applied. The foundational activities commencing on the first year of implementation will guide ongoing engagement with these groups.

Experts in environmental-economic accounting including the Australian Bureau of Statistics, the United National Statistical Division and others from the research sector will be engaged to ensure that account development and application is robust and is guided by international best practice.

Tower structures near completion at the Capital Wind Farm near Bungendore
© Michelle McAulay and Department of the Environment and Energy

# GLOSSARY



Phillip Island, off the coast of Norfolk Island, at the beginning of it's regeneration after rabbit infestation removal

**Australian Business and Biodiversity Initiative**
An alliance of organisations and individuals from business, government, academia and civil society committed to exploring and promoting the integration of biodiversity and ecosystem service conservation and sustainability into business policies and practices in Australia (Convention on Biological Diversity, n.d.).

**Biodiversity (biological diversity)**
Biodiversity is the variability among living organisms from all sources (including terrestrial, aquatic marine and other ecosystems and the ecological complexes of which they are part), at all levels of organisation, including genetic diversity, species diversity and ecosystem diversity (Convention on Biological Diversity, n.d.).

**Convention on Biological Diversity**
An international legally-binding treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. (United Nations, n.d.).

**Degradation**
Considers changes in the capacity if environmental assets to deliver a broad range of ecosystem services and the extent to which this capacity may be reduced through the action of economic units, including households (United Nations, 2014).

**Depletion**
The decrease in the quantity of the stock of natural resources over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration (United Nations, 2014).

**Economic activity**
Comprises the activity of production, consumption and accumulation (United Nations, 2014).

**Ecosystem**
An ecosystem is a dynamic combination of plant, animal and micro-organism communities and their non-living environment (e.g. soil, water and the climate regime) interacting as a functional unit (Convention on Biological Diversity, n.d.).

**Ecosystem accounts**
An assessment of the environment through measurement of the flows of services from ecosystems into economic and other human activity (United Nations, 2014).

**Ecosystem services**
The contributions of ecosystems to benefits used in economic and other human activity (United Nations, 2014).

**Environment**
Includes ecosystems and their constituent parts, including people and communities; natural physical resources; the qualities and characteristics of locations, places and areas; Heritage values of places; and their social, economic and cultural aspects (Australian Government, 1999).

**Environmental assets**
The naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefit to humanity (United Nations, 2014).

**Gross domestic product**
An aggregate measure of gross value added for all resident institutional units (United Nations, 2014).

**Land accounts**
An account which describes the area of land and changes in the area of land over an accounting period. A range of different physical land features many be included, such as land use, land cover and land tenure.

**Land cover**
The observed physical and biological cover of the Earth's surface and includes natural vegetation, abiotic (non-living) surfaces and inland water bodies, such as rivers, lakes and reservoirs (United Nations, 2014).

**Land use**
Reflects both (a) the activities undertaken and (b) the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions (United Nations, 2014).

**Landscape**
All the natural features of land or territory encompassed in a single view (e.g. fields, hills, forests and water), which distinguishes one part of the Earth's surface from another (Natural Resource Management Ministerial Council, 2010).

**Natural Capital**
The stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people (Natural Capital Coalition, n.d.).

**Natural resources**
All natural biological resources (including timber and aquatic resources), minerals and energy resources, soil resources and water resources (United Nations, 2014).

**System of Environmental-Economic Accounting**
A multipurpose conceptual framework that describes the interactions between the economy and the environment, and the stocks and changes in stocks of environmental asset (United Nations, 2014).

**System of National Accounts**
A statistical framework that provides a comprehensive, consistent and flexible set of macroeconomic accounts for policymaking, analysis and research purposes. It is the internationally agreed standard set of recommendations on how to compile measures of economic activity in accordance with strict accounting conventions based on economic principles. (United Nations, 2009)

**Sustainable Development Goals**
A set of 17 global goals under the United Nations 2030 Agenda for Sustainable Development.

**State of the environment reporting**
In Australia, regular state of the environment occurs at both the national and state/territory level. Some regional-scale reporting also occurs in many areas throughout Australia. These reports provide a scientific assessment of environmental conditions, focusing on the effects of human activities, their significance for the environment and societal responses to identified trends (Natural Resource Management Ministerial Council, 2010).

Pink Anemonefish on the Ribbon Reefs off Cairns in the Great Barrier Reef © Nigel Marsh

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