# NATURAL CAPITAL ACCOUNTING FOR BETTER POLICY

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# Natural Capital Accounting for State of the Environment Reporting in the Australian Capital Territory (ACT)


Becky Smith[1], Kate Auty[1], Peter Burnett[2] and Michael Vardon[3]

[1]Office of the Commissioner for Sustainability and the Environment
[2]Australian National University, College of Law
[3]Australian National University, Fenner School of Environment and Society


COMMISSIONER FOR SUSTAINABILITY AND THE ENVIRONMENT

Australian National University

## Introduction

The Office of the Commissioner for Sustainability and the Environment (OCSE) and the Australian National University (ANU), in collaboration with a range of other academic and government institutions, are developing a set of environmental and ecosystem accounts for state of the environment reporting in the Australian Capital Territory (ACT). The ACT is similar to Luxemburg, although a little smaller in terms of area and population.

It is notable that Australian government departments, at the national and sub-national level, and academic institutions have been creating environmental accounts, in some form, for two decades. The Australian Bureau of Statistics (ABS) has been producing environmental asset accounts as part of the national balance sheet since 1996; advancing this to producing the Australian Environmental-Economic Accounts annually since 2012[1]. Since 2013 A number of environmental and experimental ecosystem accounts[2,3,4] based on internationally standards of the System of Environmental-Economic Accounting (SEEA)[5]

This paper describes the development of the OCSE / ANU collaboration and the activities being undertaken to complete and use the accounts for state of the environment reporting.

## Why natural capital accounts for state of the environment reporting?

Canberra's population is expected to reach 500 000 by 2034[6] and 600 000 by the 2040s.[7] It is crucial that the state of the environment report is able to inform the policy decisions needed to support the environmental and socio-economic sustainability of such population growth.

In the state of the environment report the Commissioner may make recommendations that must be responded to by government. As such the Commissioner has to evaluate both the State of the Environment as well as the effectiveness of environment management, the factors driving change and understand the possible intervention options. It is envisaged that the accounts will provide a key tool for "evaluating the adequacy and effectiveness of environmental management" (s19(2)(b) in the ACT; thereby providing the basis for the Commissioner's policy based recommendations.

For state of the environment reporting the accounts have several significant advantages over other environmental information frameworks, including the well-used DPSIR (Driving-forces, Pressures, State, Impact, Response) model:

1. Consistency of data, by conforming to an international standard (the SEEA)
2. Continuity and therefore the capacity to generate reports at any desired interval (e.g. annual)

[1] http://www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/4655.0Main%20Features22014?opendocument&tabname=Summary&prodno=4655.0&issue=2014&num=&view=
[2] http://parkweb.vic.gov.au/about-us/news/valuing-victorias-parks
[3] http://unstats.un.org/unsd/envaccounting/londongroup/meeting19/LG19_16_5.pdf
[4] http://fennerschool-associated.anu.edu.au/documents/Ecosystem_Accounts_full_report_v1.pdf
[5] http://unstats.un.org/unsd/envaccounting/default.asp
[6] http://www.smh.com.au/comment/canberras-population-growth-should-be-steady-20140213-32ngl.html accessed 28 June 2016
[7] http://www.andrewbarr.com.au/my_address_to_the_property_council_of_australia accessed 28 June 2016

3. Scalability with the opportunity to examine impacts at different scales (local through to global)
4. Comprehensiveness: by recording transactions, accounts reveal not only the use and replenishment of environmental resources (flows), but also the classes of those using and replenishing; they also reveal the corresponding draw-down or replenishment of environmental stocks.

## DPSIR limitations

Contemporary State of the Environment Reporting is required to rigorously address a range of complex interactions with a view to producing analysis that assists in developing policy.
The Drivers-Pressures-State-Implications-Response (DPSIR) reporting model (recalibrated from the P-S-R model) arguably struggles to address the changing dynamics of systems. It has also been suggested that the DPSIR model may actually produce non-neutral reporting outcomes as a function of promoting linear causal chains for inherently complex systems[8].

Critiques of the application of the model have been growing in the development discourse where the DPSIR downplays 'social diversity and local responses' making it difficult to examine aggregated impacts.[91011]The complexity of interactions in sustainability studies also resists the linear characterisations which underpin the DPSIR model. The 'simplicity' of the model may be unhelpful[1213] and it might be more useful if subjected to an 'update'[14], noting that it nonetheless may be "useful in some circumstances"[15].

A range of 'environmental' reporting now recognises the need for the reconfiguration of the reporting model to address this level of complexity.

## The Accounts: Development and Use

Sharing an interest in environmental accounting, the OCSE and the ANU, have entered into a collaborative arrangement, through an exchange of letters, to develop and present a set of environmental and ecosystem accounts.

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[8] Carr ER., 2007, 'Applying DPSIR to sustainable development' in International Journal of Sustainable Development and World Ecology 14: 543-555

[9] Ibid

[10] Carr ER., 2010, 'The place of stories in development: Creating spaces for participation through narrative analysis' in *Development in Practice* 20(2): 219-226

11 Ness B., et al, 2010, 'Structuring problems in sustainability science: the multi-level DPSIR framework', in Geoform 41, 479-488.

[12] Maxim, L., Spangenberg, JH., and M. O'Connor, 2009, 'Analysis of risks for biodiversity under the DPSIR Framework, in Ecological Economics, 2009, 69: 12-23.

[13] Svarstad, H., Petersen, LK., Rothman, D., Siepel, H., and F Watzold, 2007, 'Discursive biases of the environmental research framework DPSIR', in Land Use Policy 2007 doi:10.1016/j.landusepol.2007.03.005

[14] Gari, SR., Newton, A., and JD. Icely, 2015, 'A review of the application and evolution of the DPSIR framework with an emphasis on coastal socio-ecological systems' in Ocean and Coastal Management 103: 63-77

[15] Tscherning, K., Helming, K., Krippner, B., Sieber, S., and SG y Paloma, 2012, 'Does research applying the DPSIR framework support decision making?' in Land Use Policy 2012, 29: 1: 102-110

It is intended that the accounts will form the basis of the ACT's state of the environment reporting (SoER) requirements. These requirements are set out in the *Commissioner for Sustainability and the Environment Act 1993* (the Act). They prescribe that the state of the environment report must include:

1. an assessment of the condition of the environment, including an assessment of any of the following matters that the commissioner considers necessary:
   i. the components of the earth, including soil, the atmosphere and water;
   ii. any organic or inorganic matter and any living organism;
   iii. human made or modified structures and areas;
   iv. ecosystems and their constituent parts, including people and communities;
   v. the qualities and characteristics of places and areas that contribute to their biological diversity and ecological integrity, scientific value and amenity;
   vi. the interactions and interdependencies within and between the things mentioned in subparagraphs (i) to (v);
   vii. the social, aesthetic, cultural and economic conditions that affect, or are affected by, the things mentioned in subparagraphs (i) to (v);
2. an evaluation of the adequacy and effectiveness of environmental management, including an assessment about the degree of compliance with national environment protection measures made by the National Environment Protection Council.

For the ANU participation in the design and implementation of accounts for use in government, and the opportunity to publish academic works concerning this project will enhance the capabilities of the university staff and students, while contributing to knowledge more generally in this important emerging field.

*Project development*

The accounting project developed over the period of around 12 months. A key step was the OCSE State of the Environment Manager attending the 2015 Introduction to Environmental Accounting course run by the ANU and the Australian Bureau of Statistics (ABS). This course is designed to assist with the implementation of the System of Environmental-Economic Accounting (SEEA) as well as the World Bank's program of Wealth Accounting and Valuation of Ecosystem Services (WAVES). A component of the course includes developing a "pitch" to Executive government about the benefits of using accounts, how they can provide solutions to identified problems and the alternatives if accounts are not used.

This pitch developed at the course was successful and the OCSE and the ANU established a Steering Committee to progress the project and a draft plan developed for comment by a group of experts comprising Australia's leading academics, researchers and policy makers working in the field of environmental and ecosystem accounting.

These experts attend a (first) workshop (26 August 2016) the purpose of which is to guide the choice of accounts, the link between indicators and accounts, and the application of accounts to state of the environment reporting and decision-making. Following this workshop an accounts working group was established. This group mapped the existing state of the environment indicators against relevant accounts (Attachment One shows the first draft of this mapping exercise). This will form the basis for the first set of accounts.

The Generic Statistical Business Process Model[16] (GSBPM) will be used to guide the account production process. E.g. data identification, data access and retrieval, account compilation, data quality assessment, data management and dissemination processes).

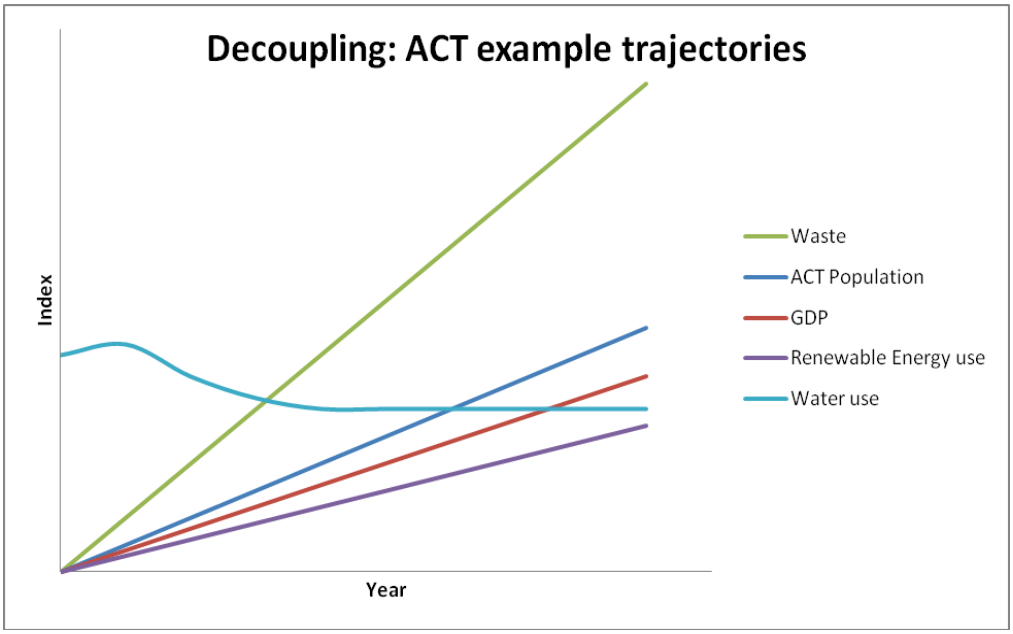
Key challenges are around the selection of metrics and indicators for measuring the condition of ecological communities – which in turn provides one of a number of biodiversity measures. Noting there is no definitive measure of ecological condition in the ACT, rather there are a range of possibilities including habitat hectares[17], econds[18] and biobanking measures.[19]

In parallel with the account production process the working group is establishing the commonalities and links between the accounts and ACT's key policy documents, such as the Nature Conservation Strategy, the Planning Strategy and the Waste Management Strategy. These policies guide the management decisions relating to the areas covered by the ACT State of the Environment Report: waste, transport, air quality, climate change, heritage, land, biodiversity and water.

This exercise is critical to establishing the relationship and use of the accounts for policy and decision making. For instance through this process the working group can begin to identify:

1. areas which can be decoupled (ref example graph);
2. areas where difficult trade-off decisions are made such urban planning and the development of greenfields as opposed to in-fill[20].
3. "hotspots" such as potential conflicts between the attainment of greenhouse gas emission reduction targets[21] which are amongst the most progressive in the world; our significant waste production and our very large ecological footprint[22].

[16] General Statistical Business Process Model Version 5.0 December 2013 United Nations Economic Commission for Europe (UNECE)
[17] http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations/biodiversity-information-tools/vegetation-quality-assessment-manual
[18] http://wentworthgroup.org/wp-content/uploads/2013/12/Quick-Guide-for-Constructing-Regional-Scale-Environmental-Asset-Condition-Accounts.pdf
[19] http://www.environment.nsw.gov.au/resources/biobanking/140661BBAM.pdf
[20] http://www.environmentcommissioner.act.gov.au/__data/assets/pdf_file/0010/590842/Urban-Development-Factsheet.pdf
[21] http://www.environment.act.gov.au/__data/assets/pdf_file/0006/581136/AP2_Sept12_PRINT_NO_CROPS_SML.pdf
[22] http://www.environmentcommissioner.act.gov.au/__data/assets/pdf_file/0007/825406/2011-12-Ecological-Footprint-ACT-for-2015-ACT-SoER.pdf




### *Communications Strategy*

A communications strategy is currently in development and forms a separate, but concurrent, part of the project. This strategy is crucial to the success of the project as it aims to ensure that:

4. Stakeholders understand the accounts and the process by which they are developed.
5. Government can see the benefits of using accounts for rigorous and transparent decision making; as well as the disadvantages of not using accounts.
6. Data holders are supportive of and contribute to the design of the accounts.
7. State of the environment report users understand the accounts do not displace current indicators – accounts depict the same or similar indicators but show data more clearly.
8. Accounts clearly show where data gaps exist and can therefore be used to make decisions about monitoring and the use of resources for data collection.

The communications strategy will include the use of all media including leading-edge science communication techniques and social media.

### *Developing natural capital accounts for state of the environment reporting – A Manual for NCA developers and state of the environment report managers.*

In designing this project it quickly became apparent that, while there are a number of applicable frameworks and guidelines such as the SEEA Central Framework and the GSBPM to guide account construction and data management, there was no definitive instructional manual – for state of the environment reporting - that could be consulted to inform the:

1. choice of accounts;
2. the scope of the accounts; or
3. the use of the accounts for policy / decision making.

Many of the decisions pertaining to the issues above are being, and will continue to be, resolved as this project develops. To this end the OCSE has committed to developing and publishing a (sort of subsidiary) manual for developing natural capital accounts for state of the environment reporting.

## Just doing it!

The ACT has adopted the approach of learning by doing and has committed to producing an Exposure Draft of the accounts in August 2017. The application of the accounting framework to State of the Environment Reporting and related recommendations is new and a range of expertise and knowledge within and outside of ACT government is needed. The production of the accounts gives the impetus to liaise with a wide variety of data suppliers and users and to progressively make the case for an accounting approach to State of the Environment reporting and sustainable development more generally.

Processes have been established for producing the accounts as well as engaging with the relevant stakeholders in government, community, business and academia. These include reviewing the technical components of the accounts through small sector specific workshops attended by metadata collectors and users as well as distributing the first iteration of the full set of accounts to the (second) expert workshop and, following, meeting with this group to refine the accounts, for the public release as an Expose Draft. This process will provide for the accounts to be revised during 2018 and finalised as the basis for the State of the Environment report due for submission to government at the end of 2019.