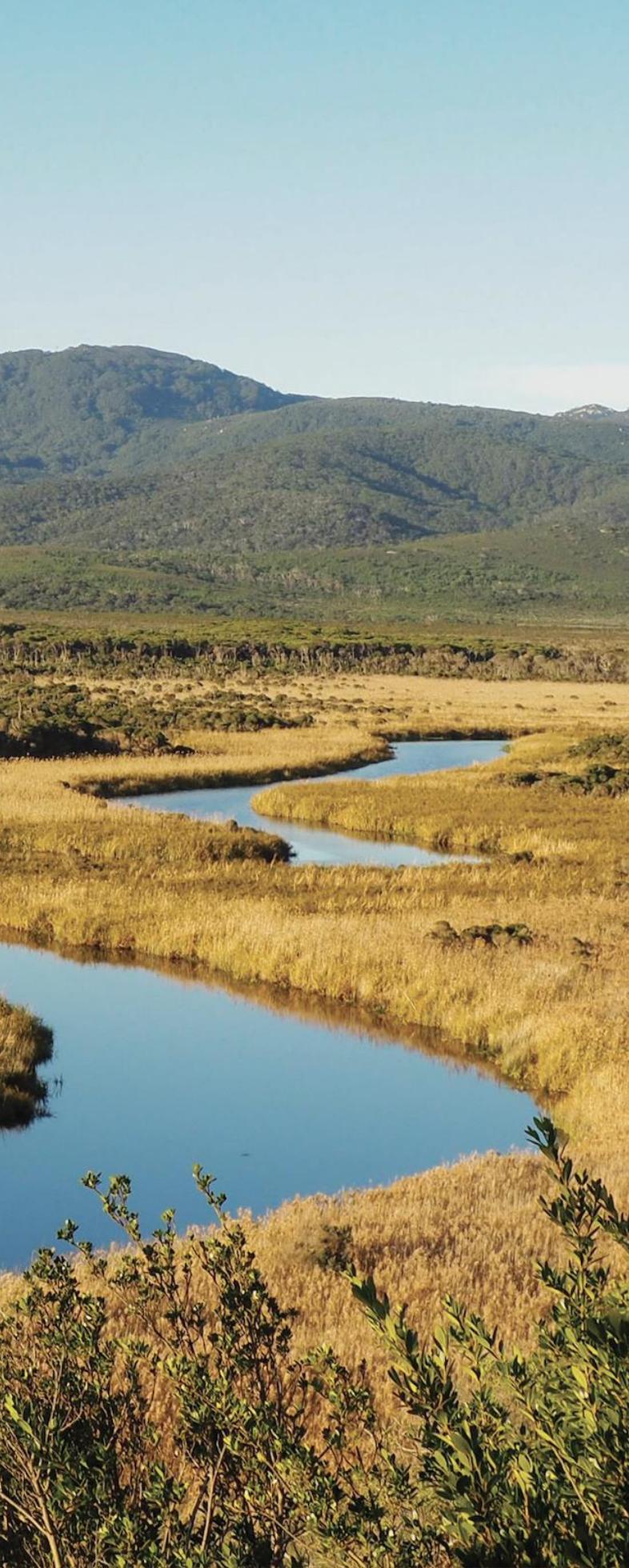**NRM REGIONS AUSTRALIA**

Natural capital accounting
Decluttering the natural capital space

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Introduction

As you start your natural capital accounting journey, a significant step you'll need to take is to work out how to blend the relevant definitions and concepts with your existing knowledge from fields of expertise like agricultural systems, finance, and ecology.

Taking this step is often made more challenging because, once you start looking, you'll find that there are dozens of frameworks, initiatives, projects, methods, tools, datasets and the like that all seem relevant. And annoyingly, each of these projects has its own acronym that, at first glance, means absolutely nothing.

Decluttering the natural capital space

The focus of this information sheet is to provide a quick guide through the most prominent natural capital related projects – the 'blizzard of acronyms' – and place them in context. In general, most are not competing with each other, and will play a distinct role in the natural capital accounting space.

To structure the discussion, four groups have been identified, each recognising a different role:

- **frameworks and standards** establish what should be measured

- **methods** present how the data should be collected and transformed to derive accounting outputs, such as a set of environmental accounts

- **tools and data platforms** allow data to be collated from multiple sources and for methods to be applied

- **initiatives and applications** provide the motivation for measurement and the link to decision making.
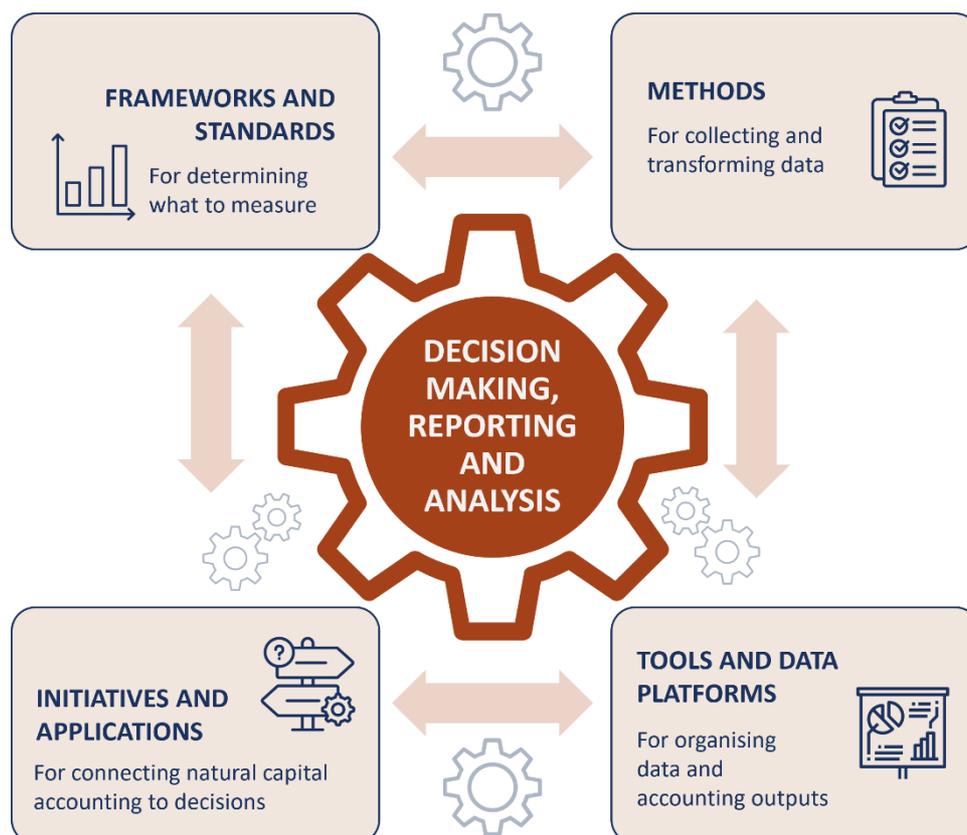
A key consideration in connecting accounts to decision making is fitness for purpose. Thus, when determining what is relevant in your context, you will need to balance the type of question you are wanting to answer, the scale at which you are thinking (farm, region, state), the level of resources available for data collection and account compilation.

In short, not every question will require the finest level of detailed data across every aspect of natural capital. In addition, by using an appropriate framework, it will be possible to progressively build richer and richer natural capital accounts that cater to answering a broader range of questions.

Frameworks and standards
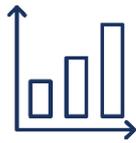
For determining what to measure

A key feature of natural capital accounting is the use of consistent concepts and definitions so that the results of measurement can be compared over time and across locations. With this aim in mind, a range of frameworks and standards have been developed across the private and public sectors. Some have been developed locally, others are global.

Different natural capital frameworks and standards have emerged because different groups of people are interested in answering related but different questions. For some the focus is on describing consistently the changes in natural capital, for others the focus is assessing risks and opportunities, for some the main question is the size of the impact that business activity has on nature, and others would like to present standard external measures of performance, for example, the indicators in the Global Reporting Initiative or the metrics of the Taskforce for Nature-Related Financial Disclosures (TNFD).

While the summary of frameworks and standards in the following paragraphs may appear quite daunting, it is not a requirement to understand all of them – that is the role of technical experts in natural capital accounting. Rather the task is to understand which natural capital question you are seeking to answer and then use the appropriate combination of frameworks and standards. At the current stage of development of natural capital, identifying the relevant question will often involve discussions with a range of experts until more experience is gained.

Further, while there is a range of relevant frameworks and standards each focused on a specific question, there are conceptual connections between them. Much effort is currently underway to understand and harmonise these connections, recognising that there will not be a single framework or standard that caters for all questions.

Underpinning all frameworks and standards is the need to describe natural capital and its systemic connection to people and business. In this context, the leading framework is the international statistical standard for natural capital accounting – the United Nations System of Environmental-Economic Accounting (SEEA). This standard has been adopted by all countries and can be applied from local to global scales. The SEEA is the focus of the implementation work of the Australian Government and other jurisdictions within Australia including through the 2018 National Strategy for the implementation of environmental-economic accounting. The SEEA provides both a comprehensive set of concepts and definitions and an accounting framework showing how they relate to each other. Recently, the Australian Government has announced an agreement with the United States on implementation of the SEEA.

Data organised following the SEEA can be used to support the implementation of other natural capital related frameworks, including the natural capital components of the Integrated Reporting (IR) Framework and the Wealth Accounting undertaken by the World Bank for 146 countries. The concepts of the SEEA are also inherent in the UK British Standards Institute – Natural Capital Accounting for Organisations. Also relevant in this discussion are the Ecological Balance Sheet (Ogilvy, 2015) framing developed in Australia, and the Biodiversity Protocol (Houdet, 2019) that has been applied in a number of countries.

Much activity is currently underway in the private sector concerning the development of standards for sustainability reporting, which incorporates natural capital, under the auspices of the International Financial Reporting Standards Foundation (IFRS). IFRS sets the world's standards for corporate financial reporting through its International Accounting Standards Board (IASB) which are applied in all countries through relevant agencies. In Australia, the relevant agency is the Australian Accounting Standards Board (AASB). Recently, a companion body to the IASB, the International Sustainability Standards Board (ISSB), has been established to work through the relevant steps to ensure natural capital and other sustainability topics are within the IFRS scope. Making the connection between the accounting work of the ISSB and SEEA is an important area of discussion.

The process for undertaking natural capital accounting and assessments can be guided by the Natural Capital Protocol (NCP) which outlines nine key steps. The NCP was developed by the Capitals Coalition, the leading global private sector organisation with hundreds of businesses and other members seeking to advance understanding and uptake of natural capital and sustainability issues. The NCP has played an important role in raising awareness of dependencies and impacts on natural capital but does not prescribe a framework or standards.

To support the implementation of frameworks and standards and to enable comparability of data, the use of consistent classifications is fundamental. There are a range of relevant natural capital classifications including the IUCN Global Ecosystem Typology, the Australian Land Use and Management (ALUM), the FAO Land Cover Classification System (LCCS) and the Common International Classification of Ecosystem Services (CICES). There are also State based classifications concerning natural capital. Depending on the context, including the scale and location at which natural capital accounting is undertaken, different classifications will be relevant.

Methods

For collecting and transforming data

To implement the concepts and definitions described in a framework or standard, it is necessary to collect and transform observed data, for example, data on water quality, livestock numbers and soil type, into estimates that can be entered into accounts. For this purpose, a wide range of methods will apply, depending on the specific natural capital component you are attempting to measure, such as ecosystem extent, ecosystem condition or ecosystem services.

The general message is that for natural capital accounting purposes a wide range of methods will be relevant but, significantly, no new methods are needed. That is, the available suite of existing methods, often established over the past 30 years in the academic literature and proven in many applications, is more than sufficient to underpin natural capital accounting. What is required is the greater application of these methods (for example, the measurement of soil carbon) in more locations; and in doing so engaging directly with the relevant specialists in each domain. No doubt improved methods will emerge, particularly through the use of technology, but it is not a lack of appropriate methods that is a barrier to progress.

For ecosystem assets both extent and condition need to be measured. For the measurement of ecosystem extent, methods are needed to convert satellite data to maps of ecosystem types taking variables into account such as vegetation cover, slope, elevation and climate. Methods are also used to verify the satellite data through ground surveys and use of transects.

For the measurement of ecosystem condition, methods are needed to organise various measures of ecosystems (e.g. soil carbon, species abundance, canopy cover, water quality, connectivity) into aggregate measures of condition. Many methods have been developed for this purpose and they vary by location and ecosystem type. Prominent ecosystem condition methods based on on-ground measurements are applied in Australia including Victoria's Habitat Hectares, NSW's Biodiversity Assessment Method, Accounting for Nature (AfN), Queensland's State-wide Indicators Framework (SWIF), and the Tasmanian Land Conservancy's WildTracker. CSIRO is investigating the use of state and transition models (AusEcoModels Framework) for assessment of condition and Farming for the Future has developed a structured approach to allow farmers to record condition relevant metrics.

For flows of services and benefits, measurement in physical and monetary terms is relevant. For the measurement in physical terms it is common to use biophysical models. For example, for water related ecosystem services such as water regulation, water purification, soil erosion control and flood mitigation, the Australian Water Balance model (AWBM), SWAT models, the modified RUSLE and the **CREAMS** water balance model are relevant. For carbon related services such as carbon sequestration and storage, FullCAM and BlueCAM can be applied. For provisioning services, the PERFECT crop model, the 3PG timber model and other production models on the growth of biomass can be used. In a farming context, many of these models have been drawn together in models such as CAT1D (Beverley, et al, 2009) and EPIC developed by Texas A&M.

For the measurement of ecosystem services and benefits in monetary terms it is generally necessary to apply well-established market and non-market valuation methods that have been developed in the field of environmental economics. These methods include **resource rent, replacement cost, hedonic pricing** and **production function** methods.

Tools and data platforms

For organising data and accounting outputs

Given the variety of components of natural capital accounting and the range of methods that can be applied, it is important that compilers of accounts use strong data management practices to ensure that coherent accounting data can be produced and that the transformation of observed data into accounting data can be tracked and audited.

There are a few tools and data platforms that are relevant in this discussion. In the first instance, natural capital accounting benefits greatly from the use of geospatial data and hence tools such as QGIS and ArcGIS will be relevant, noting that these have not been specifically developed for accounting. The FLINTpro tool (Mullion Group) embodies geospatial data transformation and also supports running biophysical models such as those listed above. The InVEST platform (Standford University) provides a tool to run a range of ecosystem services models.

There are two tools that have been specifically designed to support natural capital accounting, Data4Nature (D4N), developed by the Victorian Government and now operated by IDEEA Group, and ARIES for SEEA, developed and operated by the Basque Centre for Climate Change. Both of these systems support collation of data from a variety of sources, the application of multiple methods and the generation of outputs that are consistent with the chosen framework and standard.

Finally, there are a growing number of data platforms that are being established that store the observed data that can be used as inputs to the compilation of natural capital accounts. These include the NSW Government's SEED platform and the Queensland Government's GLOBE platform.

Initiatives and applications

For connecting accounts to decisions

To complete the picture of the natural capital accounting space, it is necessary to document a range of the well-known initiatives and applications. These present the questions and challenges that need to be resolved. As a result, most commonly these initiatives and applications are the entry point to discussions on accounting for natural capital and hence can be readily confused with the various frameworks, methods and tools. The distinctions presented in this information sheet are intended to reduce the confusion about the roles each initiative and application is playing in the natural capital accounting space.

Initiatives are those that are focused on developing and advancing natural capital based solutions and include Farming for the Future (FFTF), Accounting for Nature (AfN) and Climate Works' Natural Capital Investment Initiative and Measurement Catalogue. In many cases, such as FFTF and AfN, the initiative also embodies a method thus allowing practical work to be undertaken within the initiative to support implementation.

Applications relate to uses of natural capital accounting data to support decision making. These are many and varied and, in some ways the surface is only just being scratched on the range of ways that natural capital accounting data may be applied. Some leading examples at the moment are:

- Risk assessment such as through the Taskforce on Nature-related Financial Disclosure (TNFD)
- Advocacy for natural capital through TEEB (The Economics of Ecosystems and Biodiversity) and the International Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)
- Reporting such as through the Global Reporting Initiative, generic Environmental, Social, Governance (ESG) reporting and, in future reporting through the ISSB recommendations.
- Environmental markets such as Queensland's Land Restoration Fund and offset tools such as the NSW Biodiversity Offset Scheme

Natural capital accounting outputs can also be tailored for use in natural resource management, supply chain assessment, scenario analysis, land valuations, productivity assessments and economic modelling, among a range of applications.

For all of these applications, there is the potential to develop a single, coherent set of natural capital accounts the data from which can serve as a common input. Thus, for example, the same set of natural capital accounting data can underpin risk assessments, performance reporting and participation in environmental markets. This potential is taken for granted in the economic and financial analysis space – it is now within reach for environmental data.

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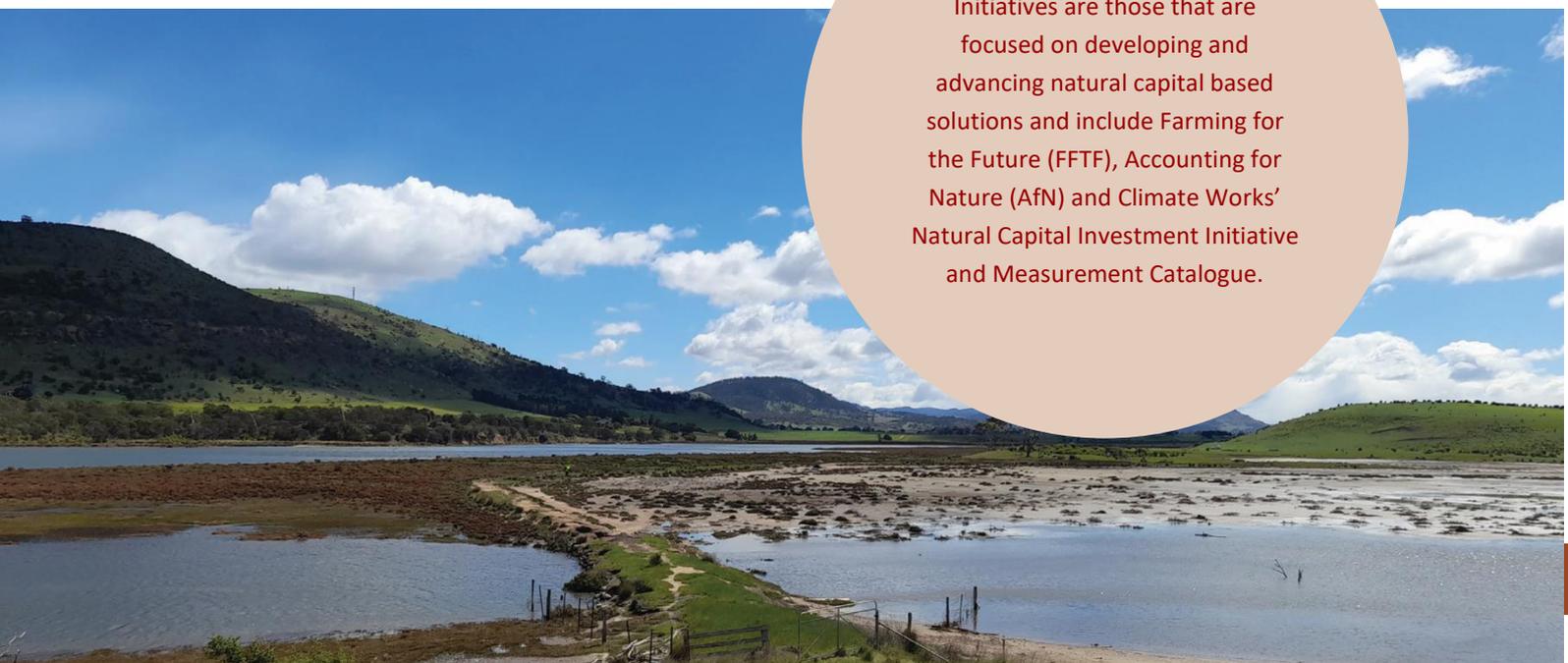
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Download our natural capital accounting overview information sheet.

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