**Background document to the expert workshop**

**on key issues in Natural Capital Accounting**

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This document for the workshop on Natural Accounting (NCA) consists of the following sections.

* Discussion questions to the NCA reference document (for the afternoon session)
* An overview of the various definitions given and terms used in relation to NCA.

# Discussion Questions

1. ***Where do you see the highest added value of an EU reference document on NCA?***

Several international guidance documents already exist on NCA. Based on a review of the existing documents, we aimed to compile the EU reference document as a kind of synthesis and overview. Does this add value? If not, what would add value?

1. ***The annexes with practical guidance are still not as developed as foreseen***

Should we invest further here? And can you recommend practical material to use?

1. ***Do you agree on the use of the term “natural capital” and which components it refers to?***

Natural capital is the term used most in international initiatives, while some refer to environmental capital (see table 1). The term natural capital however may lead to confusion due to linguistic associations. While the current MAES definition of “natural capital” refers to both abiotic and biotic capital, many non-specialists associate the term “natural” with biodiversity alone. Such a nature-focused interpretation is also evident in the use of the term ‘natural capital’ in the 7th EAP. Two options exist here:

* We keep the term natural capital, but explain better what it is composed off
* We use the term environmental capital as the overarching term (biotic and abiotic), and natural capital for the biotic component

1. ***Chapter 4: Is this section appropriate to cover the opportunities & limitations for NCA as a policy tool? Can you provide concrete examples of the actual use of NCA in policy debates and/or decisions?***

One key reason for work on natural capital accounting is its potential input to policy debates and policy decisions that support a better management of our natural capital (in all its dimensions). This is mainly reviewed in chapter 4 of the draft reference document.

1. ***Chapter 5: Can you recommend newer or additional material to update chapter 5 or to illustrate other chapters?***

The review of country activities in chapter 5 relies on a 2013 survey, so is not up-to-date.

1. ***Chapter 6*** of the revised draft reference document sets out a number of conclusions and next steps. ***Do you agree with these? If not which ones should be deleted or changed? Should additional issues be listed?***

# Overview of definitions and terminology on natural capital accounting in various international initiatives

Under the various international initiatives, different definitions and terminology have been used on natural or environmental accounting. In this annex, an overview is given on the various definitions.

**Table 1: Overview of definitions on Natural capital accounting**

|  |  |  |
| --- | --- | --- |
| **Document** | **Definition** | Source |
| 7th Environmental Action Programme (7EAP), EU | **Natural capital** refers to the biodiversity that provides goods and services we rely on, from fertile soil and productive land and seas to fresh water and clean air. It includes vital services such as pollination of plants, natural protection against flooding, and the regulation of our climate. | <http://ec.europa.eu/environment/newprg/proposal.htm> |
| Convention on Biological Diversity (CBD) | In general terms, ‘capital’ is defined as the stock of materials or information that exists within a system at any given time (Costanza et al., 1997). Some common forms of capital are financial capital, man-made capital and social capital. The important concept within all forms of capital, however, is that when put to use they yield a flow of goods and/or services (Costanza and Daly, 1992); much as an investor will use financial capital to generate profits, a stock of trees or population or fish will provide a future flow of timber or food. A final distinction to draw is the difference between **living natural capital** and **dead natural capital**. Living natural capital is sustained by solar energy, and includes all ecosystems. It can be harvested for goods and also yield ecosystem services when properly maintained. Living natural capital is sustained by solar energy, and includes all ecosystems. It can be harvested for goods and also yield ecosystem services when properly maintained. Dead natural capital includes minerals and fossil fuels that do not provide any services other than their use, i.e. burning of fossil fuels for energy. For the  purpose of this publication, natural capital will refer only to the  stock of the earth’s *living* ecosystems.  \*Ecosystem services are defined separately but noted as a component of natural capital. | [A guide to proactive investment in natural *capital* (PINC)](http://www.google.be/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCwQFjAA&url=http%3A%2F%2Fwww.cbd.int%2Fdatabase%2Fattachment%2F%3Fid%3D1334&ei=IrF7U5jDHqTZ4QSD14Fo&usg=AFQjCNGUcmpOSDdKM275v0Q84pONIKEEnQ&bvm=bv.67229260,d.bGE)  lbfd\_en.pdf |
| Natural Capital Declaration, Rio+20 (NCD) | The NCD defines natural capital as the stock of ecosystems that yields a renewable flow of goods and services that underpin the economy and provide inputs and direct and indirect benefits to businesses and society. Natural capital is a subset of environmental, social and governance (ESG) factors that can be material to financial institutions, mainly through their allocations of capital to companies through loans and investments or premiums as part of insurance contracts. | <http://www.naturalcapitaldeclaration.org/about-the-natural-capital-declaration/> |
| Natural Capital Committee, UK | Natural capital is our ‘stock’ of waters, land, air, species, minerals and oceans. This stock underpins our economy by producing value for people, both directly and indirectly. Goods provided by natural capital include clean air and water, food, energy, wildlife, recreation and protection from hazards.  The term ‘natural capital’ is increasingly used to describe the parts of the natural environment that produce value to people. Natural capital underpins all other types of capital - manufactured, human and social - and is the foundation on which our economy, society and prosperity is built. | <http://www.naturalcapitalcommittee.org/natural-capital.html> |
| Natural Capital Initiative, UK | ‘Natural capital’ is an increasingly popular metaphor for the features of the natural environment that underpin society, the economy and wellbeing. The concept of natural capital is attractive to business and government alike. It puts the natural environment on an equal footing to financial, manufactured, human and social capital.  ‘Natural capital’ is different to another frequently-used term, ‘ecosystem services’, in that natural capital is the stock (living and non-living components in the environment), while ‘ecosystem services’ are the flows of benefits that are derived from this stock. The difference is, therefore, between assets and the goods and services that are produced from those assets, as in all other forms of capital e.g. manufactured capital (such as factories and machines that produce clothes, gadgets or infrastructure), human capital (such as knowledge and skills that produce information or products) and social capital (such as the quality of relationships like trust and connectedness that produce wellbeing or social cohesion). By looking after and managing our natural capital well, we can ensure the benefits, or ecosystem services, received from that natural capital are sustained. | <http://www.naturalcapitalinitiative.org.uk/about> |
| OECD | Natural capital are natural assets in their role of providing natural resource inputs and environmental services for economic production.  Natural capital is generally considered to comprise three principal categories: natural resource stocks, land and ecosystems. All are considered essential to the long-term sustainability of development for their provision of “functions” to the economy, as well as to mankind outside the economy and other living beings. | <http://stats.oecd.org/glossary/detail.asp?ID=1730> |
| System of Integrated Environmental and Economic Accounting (SEEA) | **SEEA Handbook** (2000)  The SEEA uses 'environmental accounting' as the short form of integrated environmental and economic accounting. The proposed environmental accounts include environmental assets, that is to say, ecosystems, as well as emission accounts in physical and monetary terms linked to the production accounts. There is no mention of natural capital in this handbook.  The central framework document **(SEEA-CF)** (2012) refers to environmental accounting (without giving a definition) and does not refer to natural capital. The term used is "environmental assets" and consequently "environmental asset accounts". Environmental assets cover both natural resources and ecosystems.  In the SEEA-CF, a distinction has been made between an approach to the measurement of environmental assets that is based on the measurement of individual natural resources, cultivated biological resources, and land, and one based on to the measurement of ecosystems. Table 5.1 of SEEA-CF shows an overview of the environmental assets that are covered. Figure 5.1 shows the relationship between environmental and economic assets  The document on experimental ecosystem accounting **(SEEA-EEA)** (2013) has a glossary and gives some definitions. A definition is given for "ecosystem assets" , "environmental assets", "Ecosystem Accounting Unit". Definitions are not explicitly given for Natural Capital, Ecosystem accounting and environmental accounting.  *"Ecosystem assets"* are spatial areas containing a combination of biotic and abiotic components and other characteristics that function together [...].  The term “ecosystem assets” has been adopted rather than “ecosystem capital” as the word “assets” is more aligned with the terminology employed by the SNA and also conveys better the intention for ecosystem accounting to encompass measurement in both monetary and physical terms. In general however, the terms “ecosystem assets” and “*ecosystem capital*”  may be considered synonymous.  "*Environmental assets*" are the naturally occurring living and non-living components of the Earth, together constituting the bio-physical environment, which may provide benefits to humanity. [...] The scope of environmental assets is not the same as ecosystem assets as it includes mineral and energy resources which are excluded from the scope of ecosystem assets. Also, the scope of environmental assets is broader than natural resources as it includes produced assets such as cultivated crops and plants (including timber, orchards), livestock and fish in aquaculture facilities.  The term "*natural capital*" is not defined in SEEA Experimental Ecosystem Accounting. Commonly, natural capital is used to refer to all types of environmental assets as defined in the SEEA Central Framework. Used in this way natural capital has a broader scope than ecosystem assets as defined in SEEA Experimental Ecosystem Accounting since it includes  mineral and energy resources.  "*Natural resources*" include all natural biological resources (including timber and aquatic resources), mineral and energy resources, soil resources, and water resources . In the SEEA, unlike the SNA, natural resources exclude land which is considered a distinct type of environmental asset. [...]A distinction is thus made between “natural” and “cultivated” environmental assets. | Handbook of National Accounting: Integrated environmental and economic accounting: an operational manual. United Nations, 2000.  SEEA-CF (2012)  http://unstats.un.org/unsd/envaccounting/pubs.asp  SEEA-EEA (2013)  http://unstats.un.org/unsd/envaccounting/eea\_white\_cover.pdf |
| TEEB | Natural capital is defined as the stock of natural assets that provide society with renewable and non-renewable resources and a flow of ecosystem services, the latter being the benefits that ecosystems provide to people. It includes abiotic assets (e.g. fossil fuels, minerals, metals) and biotic assets (ecosystems that provide a flow of ecosystem services). The biotic component of natural capital is defined as ecosystem capital (European Commission, 2013).  \*TEEB refer to the MAES process definition  Ecosystem accounts measure the biotic component of natural capital, i.e. the extent and condition of ecosystems and the flows of ecosystem services. They cover information on the ecosystem services that benefit society and the economy, including water purification. Since water quality plays a key role in ensuring healthy ecosystems and ecosystem services, ecosystem accounts can give useful information on water quality. | <http://www.teebweb.org/wp-content/uploads/2014/01/TEEB_-NaturalCapitalAccounting-andwaterQualityBriefingnote_20131.pdf> |
| UK Parliamentary Office of Science and Technology | Natural capital is environmental assets, such as soils, from which beneficial services flow supplying resources to the economy, for example, agricultural crops, and disposing of its wastes, such as treated sewage effluent.  The term ‘capital’ is used to describe a stock or resource from which revenue or yield can be extracted. Human wellbeing arises from the use of a combination of types of capital: social capital, human capital and built capital; but these are all based on natural capital. Four basic categories of natural capital are generally recognised: air, water (fresh, groundwater and marine), land (including soil, space and landscape) and habitats (including the ecosystems, flora and fauna which they both comprise and support). | <http://www.parliament.uk/documents/post/postpn_376-natural-capital-accounting.pdf> |
| WAVES (World Bank) | Natural capital includes, first of all, the resources that we easily recognize and measure such as minerals and energy, forest timber, agricultural land, fisheries and water. It also includes ecosystems producing services that are often ‘invisible’ to most people such as air and water filtration, flood protection, carbon storage, pollination for crops, and habitat for fisheries and wildlife. These values are not readily captured in markets, so we don’t really know how much they contribute to the economy and livelihoods. We often take these services for granted and don’t know what it would cost if we lose them. | <https://www.wavespartnership.org/en/frequently-asked-questions-natural-capital-accounting-nca> |
| UNEP report on ecosystem assets | Natural capital comprises both ecosystem assets (such as fresh water) and natural resources (such as fossil fuel deposits). | <http://www.unep-wcmc.org/news/towards-a-global-map-of-natural-capital> |
| Report for GLOBE by University College London (UCL) | Natural capital includes renewable components such as ecosystems and solar energy, and non-renewable components such as mineral deposits and fossil fuels. | <http://www.globeinternational.org/studies/legislation/natural-capital-new> |

**Table 2: Comparative table of inclusion of different types of Natural Capital (from MAES report 2013) in other approach / definitions of other initiatives / guidance**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | sub-soil assets | Abiotic flows | ecosystem as asset | ecosystem service flows |
| MAES | x | x | x | x |
| 7EAP | x |  | x | x |
| CBD |  |  | x |  |
| Natural Capital Declaration (Rio+20) |  |  | x | x |
| UK Natural Capital Committee and Initiative | x |  | x |  |
| UK Natural Capital Initiative | x |  | x |  |
| OECD | x |  | x |  |
| SEEA | x | x | x | x |
| TEEB | x | x | x | x |
| WAVES | x |  | (x) | x |
| UNEP report on ecosystem assets |  | x | x |  |
| UCL report for GLOBE | x | x | x |  |

**Table 3: Often used terminology in relation to natural capital accounting (developed for discussion at the workshop)**

|  |  |
| --- | --- |
| **Document** | **Definition** |
| Natural Capital | The combination of biotic and abiotic structures, ecological processes and functions (capacities) that produce, through their existence and/or some combination of their functions over time, a positive economic or social value. |
| Natural Capital Stock | The tangible biotic and abiotic structures that make up the natural world and which support processes and functions that can contribute to human well-being. Stocks can be represented in various ways, but are more often measured in terms of the areas, volumes or numbers. Stocks can be either renewable or non-renewable. |
| Natural Asset | A term sometimes used synonymously with natural capital, but more usefully employed to refer to a particular tangible component of natural capital such as a ‘forest’ which has particular properties that produce value via a service (e.g. carbon sequestration); hence the notion of ‘the stock of a natural asset’. |
| Ecosystem Services | The contributions that ecosystems (whether natural or semi-natural) make to human well-being; their fundamental characteristic is that they retain the link to underlying ecosystem functions, processes and structures. These contributions are often represented as a ‘flow’ of some material or information, or process that arises from a natural capital stock. As such services are often measured in units which include time. Use of service may lead to the depletion of the underlying natural capital stock if it is not renewable or if the rate of use exceeds the capabilities of the underlying system to renew itself. |
| Ecosystem Benefits | The direct and indirect outputs from ecosystems that have been turned into products (**goods**) or experiences that are no longer functionally connected to the systems from which they were derived. Benefits are things that can be valued either in monetary or social terms. |
| Ecosystem Good | This term is problematic in that some commentators use it in conjunction with the idea of a service (hence ecosystem ‘goods and services’, as in the MA, goods being material outputs from ecosystems); others use it in conjunction with the notion of benefits as things that can be valued (hence ecosystem goods and benefits, as in the UK NEA). This guidance uses the term in the second way. |

**Table 4: Comparative table of the terms used in the prevailing definitions of natural capital**

| **Source** | **Natural capital** | **Natural asset** | **[Natural capital] Stock** | **[Ecosystem service] Flow** | **Ecosystem good** | **Ecosystem benefit** |
| --- | --- | --- | --- | --- | --- | --- |
| 7th Environmental Action Programme (7EAP), EU | Stock and flows that provide benefits to people | Not defined explicitly | Not defined explicitly | Goods and services as benefits – following MA | | |
| Convention on Biological Diversity (CBD) | Stock of the earth’s living ecosystems that exists within a system at any given time. | Uses environmental assets to refer to things that can be valued | Stocks are seen as components of natural capital | Ecosystem services are flows of services such as watershed protection or climate regulation that can be derived from natural capital. | Ecosystem goods are portions of the natural capital - such as timber or fish - that are harvested from ecosystems. | Implies that services and goods are different to benefits |
| Natural Capital Declaration, Rio+20 | Stock of ecosystems that yields a renewable flow of goods and services | Assets are seen as components of natural capital | The components of natural capital that provide benefits to people | | | Implies that services and goods are different to benefits. |
| Natural Capital Committee, UK | Stock of ecosystems that yields a renewable flow of goods and services that underpin the economy and provide inputs and direct and indirect benefits to businesses and society | Assets are seen as components of natural capital | The components of natural capital that provide benefits to people | | The things that services provide that can be valued | |
| Natural Capital Initiative, UK | Natural capital is the stock (living and non-living components in the environment) | Assets are seen as components of natural capital | Stocks are seen as components of natural capital | Ecosystem services are the flows of benefits that are derived from natural capital stock | Unclear about relationship between service, goods and benefits, but seems to follow the Natural Capital Committee. | |
| OECD | Natural capital is seen as comprising three principal categories: natural resource stocks, land and ecosystems | Assets are seen as components of natural capital | Not defined explicitly | Ecosystem services cover the provision of ecosystem inputs, the assimilative capacity of the environment and the provision of biodiversity | Not defined explicitly | Not defined explicitly |
| System of Integrated Environmental and Economic Accounting (SEEA) | Term not used, but ecosystem capital is synonymous with ecosystem asset | Ecosystem asset, is defined as a spatial area containing a combination of biotic and abiotic components and other characteristics that function together. | Stocks are represented by spatial areas each comprising an ecosystem asset | Two types of flows of ecosystem services: 1) flows of inputs from the environment to the economy (e.g. timber) or flows of pollution from economic and other human activity. | The term “goods” is not used to avoid confusion with the use of the same term in economic statistics. | Two types of benefits: 1) goods and services included in the System of National Accounts (SNA); 2) Non-SNA benefits are not generated as a result of economic production processes. |
| TEEB | An economic metaphor for the limited stocks of physical and biological resources found on earth. | Economic resources | A component of natural capital | The direct and indirect contributions of ecosystems to human wellbeing. The concept ‘‘ecosystem goods and services’’ is synonymous with ecosystem services. | Synonymous with ecosystem services. | A positive change in wellbeing from the fulfilment of needs and wants. |
| UK Parliamentary Office of Science and Technology | A stock or resource from which revenue or yield can be extracted. | A component of natural capital | A component of natural capital | Concept to help understanding the transformations that link humans to natural capital by making a distinction between the natural capital assets that give rise to a flow of benefits and a particular aspect of human well-being | Synonymous with ecosystem services? | A positive change in wellbeing |
| Waves | Natural capital includes natural resources (minerals and energy, forest timber, agricultural land, fisheries and water, ...) and the more 'invisible' services produced by ecosystems | Not defined explicitly | Not defined explicitly | Not defined explicitly | Not defined explicitly | Not defined explicitly |
| UNEP report on ecosystem assets | Natural capital comprises both ecosystem assets (such as fresh water) and natural resources (such as fossil fuel deposits) | Assets are seen as components of natural capital; ecosystem assets are the stocks that enable the flow of ecosystem services. | Stocks are seen as components of natural capital. | Services yield ecosystem benefits, often with the help of other capital inputs, such as human, manufactured and social capital | Not defined explicitly | Not defined explicitly |
| UCL report for GLOBE | includes renewable components such as ecosystems and solar energy, and non-renewable components such as mineral deposits and fossil fuels. | something that should be managed, valued and accounted for, and in respect of which damage to the asset may affect its ability to provide goods and services in the future. | A component of natural capital. Divided into *Ecosystem capital* and Geophysical capital. | The benefits obtained by people from ecosystems | Products of ecosystem structure & function | Not defined explicitly |