Towards a definition of Natural Capital

Revised draft of 3 November 2014

The London Group at it 20th meeting on 15-17 October 2014 in New Delhi agreed to look into the issue of a statistical definition of natural capital, with the aim to establish a concordance table between the combined SEEA Central Framework (SEEA CF) and SEEA Experimental Ecosystem Accounting (SEEA EEA) scope of environmental assets and the notion of natural capital.

The Chair of the London Group launched a first exchange of views on 21 October based on an initial draft note provided by Eurostat. The present document is an updated version of that note. The update is based on the comments received from Mark Eigenraam, Sanaa Erdenesan, Rocky Harris, Carl Obst, Joe St. Lawrance, Michael Vardon and an unknown reviewer from Statistics Canada.

Key results of the first round of comments included:

- there is a need to clarify the match between broad categories of natural capital and the components of environmental assets listed in the SEEA CF and SEEA EEA.
- There was broad agreement that 'ecosystems' as part of natural capital should be understood in a wide sense, comprising also the SEEA CF environmental assets linked to ecosystems, in particular timber, fish and other biological resources.
- Regarding soil, views were somewhat divided on the need to show soil as a separate category versus including it in ecosystems as part of natural capital. On balance, taking into account the principal role of soil as a component for providing ecosystem services, soil is predominantly a part of ecosystems and can be included there.
- Water and land have several roles. However, broadly, both can be subsumed under ecosystems
- Regarding land, again views were divided. On the one hand land is an abiotic asset (space). Land is used as space e.g. for buildings and roads. On the other hand, much land is used for biomass production (agriculture, forestry) or for nature protection. As with soil, from an ecosystem perspective it makes little sense to separate the land from the soil and from the communities of species living on the land and in the soil.
- A strict and detailed matching of natural capital definitions with the environmental assets as defined in the SEEA CF and EEA would require much more work. For example, many components of natural capital (defined based on the SEEA CF and EEA) are economic capital recognised in the System of National Accounts. Furthermore, some of these components are in fact produced capital (e.g. cultivated biological resources) so that a strict separation of "natural" and "man-made" capital would require extra care.

Introduction

Following the publication of the SEEA CF and the SEEA EEA is has become apparent to the statistical community and others that clarity needs to be provided with respect to the link between the SEEA CF and SEEA EEA and the concept of natural capital. In order to clarify the link between terms in SEEA and natural capital there is a need to provide a statistical definition of natural capital. This in no way prevents others

from continuing to use the term as they have done in the past but it will provide a clear link to the SEEA and enable clearer communication.

The term natural capital has many somewhat different interpretations depending on the context in which it is used. Examples of definitions are:

- The UK Natural Capital Committee in a working paper defines natural capital as *the elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions.* The paper lists ten categories of natural assets: species, ecological communities, soils, freshwaters, land, coasts, oceans, atmosphere, minerals and sub-soil assets.

- International Institute for Sustainable Development: *natural capital is the land, air, water, living organisms and all formations of the Earth's biosphere that provide us with ecosystem goods and services imperative for survival and well-being. Furthermore, it is the basis for all human economic activity.* (http://www.iisd.org/natres/agriculture/capital.asp)

- Wikipedia: *natural capital is the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future* (http://en.wikipedia.org/wiki/Natural_capital).

- World Forum on Natural Capital: *natural capital can be defined as the world's stocks of natural assets which include geology, soil, air, water and all living things. It is from this Natural Capital that humans derive a wide range of services, often called ecosystem services, which make human life possible* (http://www.naturalcapitalforum.com/what-is-natural-capital).

- OECD statistical glossary: *natural capital are natural assets in their role of providing natural resource inputs and environmental services for economic production* (http://stats.oecd.org/glossary/detail.asp?ID=1730).

- The GLOBE natural capital initiative emphasises that *natural capital refers to those aspects of the natural environment that deliver socio-economic value through ecosystem services*. http://www.globeinternational.org/natural-capital-policy-home

Several concepts of capital exist. The term 'capital' is generally used in classical and neo-classical economics as one of the factors of production (along with land and labour). Wider economic meanings of the term are broadly associated to stocks of goods or stores of value. Many in the general public would interpret 'capital' as money or other (economic) assets. These capital concepts are however too 'narrow' to be useful for integrated information systems about the extent and condition of the *various components of nature*.

There are extensive worldwide discussions on accounting for natural capital but there is no agreed systematic approach to doing it. In an integrated environmental-economic accounting system, natural capital would be the extension of the economic notion of (produced) capital to the natural environment, i.e. the 'stock' of natural (eco-)systems that yields a flow of valuable (ecosystem) goods or services into the future. The definition we provide in this paper aims to explicitly link SEEA to natural capital and aims to have SEEA used as a standard approach for accounting for natural capital.

2. Defining natural capital from the perspective of the SEEA

Neither the international System of National Accounts 2008 nor the SEEA CF 2012 defines natural capital. The term is not defined in the SEEA EEA handbook completed in 2013 either.

However, the System of National Accounts 2008 does define assets. Accordingly, an asset is *'a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time.'* Subsequently the SEEA CF defines environmental assets. Environmental assets are the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.

In the SEEA CF, environmental assets are viewed in terms of the individual components that make up the environment, classified as follows:

1. **Mineral and energy resources (oil, gas, coal, metallic and non-metallic mineral resources)**
2. **Land**
3. **Soil resources**
4. **Timber resources (cultivated and natural)**
5. **Aquatic resources (cultivated and natural)**
6. **Biological resources other than timber and aquatic resources (livestock, orchards, crops and wild animals)**
7. **Water resources (surface, groundwater and soil water resources)**

Commonly, natural capital is used to refer to all types of environmental assets as defined in the SEEA CF, but also including ecosystem assets not covered by the components above. Often the term natural capital incorporates broad notions of a range of assets that supply a broad set of services, including ecosystem services. For example, a forest would be seen as an ecosystem that not only provides timber but also sequesters carbon (thus protecting the climate), cleans the air, filters water, mitigates water runoff (and thus provides flood protection), or provides recreation.

The SEEA EEA defines ecosystem assets as spatial areas containing a combination of biotic and abiotic components and other characteristics that function together. There is an overlap between the SEEA CF and the SEEA EEA. The SEEA CF singles out important provisioning functions of ecosystems (e.g. the provision of timber or fish) and important components of ecosystems (soil and water). Finally, 'planetary' systems (mainly the sea and the atmosphere) could be added.

These latter elements are outlined in the SEEA EEA handbook of 2013. Including these elements would add:

8. **Ecosystem assets (other functions)** - this category includes, in addition to the categories 3 to 7 already described in the SEEA CF, also the ecosystem functions that provide regulating and cultural services
9. **Planetary systems (climate and hydrological systems)**

There are two characteristics of the assets listed above which may be particularly relevant for the long-term temporal perspective that is at the heart of the idea of 'sustainable development'. The first is whether an asset is used up by using it ("non-renewable") or not ("renewable" or permanently able to deliver a level of service). Many important natural assets are of the second type (e.g. climate, water, soil). The second key feature is whether the resources are unlimited ("non-depletable", e.g. sun light or wind) or not ("depletable" e.g. fossil fuels).

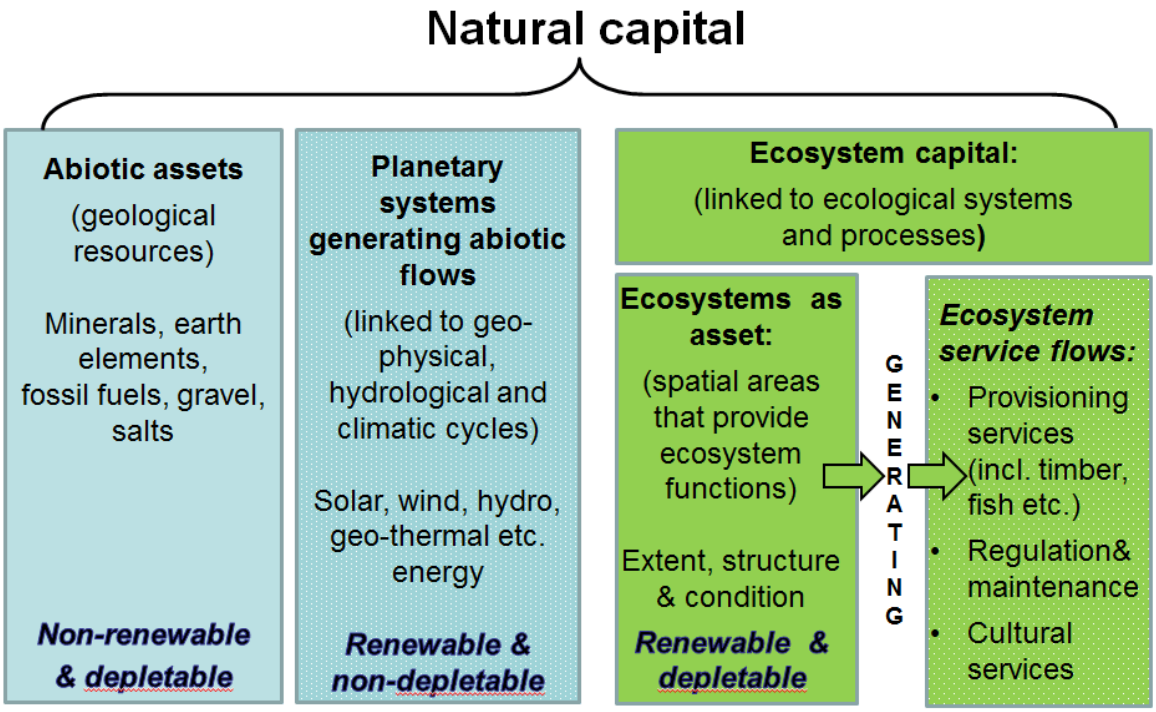
It is possible to approach a definition of natural capital putting together the types of environmental assets from the SEEA CF, extended by other types of assets like other ecosystem functions and planetary systems, and taking into account the distinctions renewable / non-renewable and depletable / non-depletable.

Prominence is given to ecosystems in most definitions of natural capital. In a broad sense, ecosystems incorporate all the environmental assets in a particular place that function together. Therefore, it is useful

to incorporate all the SEEA CFR and SEEA EEA environmental assets linked to ecosystems into the broad notion of ecosystem capital as part of natural capital. This includes biological resources, soil and water.

Land plays a special role. The SEEA CF defines land as a unique environmental asset that delineates the space in which economic activities and environmental processes take place and within which environmental assets and economic assets are located. The definition includes also areas covered by water (inland waters, coastal and sea areas). At the same time, ecosystems are defined as areas with certain characteristics. Therefore, ecosystems are understood to comprise also the space they occupy. Figure 1 illustrates one possible articulation of those ideas.

Figure 1



The table shows the match between SEEA CF and SEEA EEA assets and broad categories of natural capital.

SEEA CF and EEA categories	Broad categories of natural capital
1. Mineral and energy resources	Geological resources
9. Planetary systems (climate and hydrological systems)	Planetary systems
2. Land	Ecosystem capital
3. Soil resources	
4. Timber resources	
5. Aquatic resources	
6. Biological resources other than timber and aquatic resources	
7. Water resources (surface, groundwater and soil water resources)	
8. Ecosystem assets (other functions)	

3. Interim conclusion

A statistical definition of natural capital can be built based on the definitions of environmental assets of the SEEA Central Framework and the SEEA Experimental Ecosystem Accounting handbooks. This draft offers a matching of the SEEA CF and EEA categories with the broad notion of natural capital. More work would be required to define precisely each one of those elements.