

NCA Readiness

Scoping and Roadmap for Natural Capital Accounting (NCA)

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ACRONYMS

NCA	Natural Capital Accounting
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
SNA	System of National Accounts
SEEA	System of Environmental-Economic Accounts
ITTO	International Tropical Timber Organization
SDG	Sustainable Development Goals

Definition of Key Terms

Scoping in the context of Natural Capital Accounting (NCA) refers to the preliminary assessment of readiness and capacity of countries and regions that are seeking to embark on natural capital accounting approaches that are consistent with the System of Environmental Ecosystem Accounting (SEEA) guidelines and methods. Among other things, it assesses policy relevance and priorities, data availability, institutional framework and financial as well as technical resources required to implement NCA at an appropriate scale.

Natural Capital is defined as the stock of natural resources on earth, from which humans benefit through flows of goods and services on a perpetual basis. Examples of natural capital in the context of accounting include forests, water, air and soil among other things.

Ecosystem Services are benefits people derive from natural capital, in particular from ecosystems. They are broadly classified as provisioning services (e.g. Timber), regulating services (e.g. climate regulation) and cultural services (e.g. ecotourism).

Environmental-Economic Accounting is the measurement of stocks of natural capital and flows of benefits (i.e. ecosystem services) using structured and internationally agreed standards such as the SEEA-CF, the SEEA-Water.

Gross Domestic Product (GDP) is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

Environmental Economic Accounting: An Overview

Economies and societies need nature to thrive. However, many benefits directly sourced from nature are hidden from decision makers, as are many of the impacts on nature. As a result, the nature, and the natural capital we depend on, are being eroded at an alarming rate. These losses have real and measurable impacts on our bottom lines, and they can be measured in structured ways using standardized approaches in natural capital accounting (NCA).

The concept of environmental-economic accounting has been around since the 1970s. For environmentalists, these accounts were intended to demonstrate the value of benefits obtained from nature, or document harms caused to nature by economic activities. Economists, on the other hand, wanted these accounts to measure sustainable income. Much progress has occurred since then, which resulted in the development of the System of Environmental-Economic Accounts (SEEA) under the auspices of the United Nations. The SEEA is composed of three parts: *Central Framework (CF)*, *Applications and Extensions* and *Experimental Ecosystem Accounting (EEA)*.

The *Central Framework* was adopted as an international statistical standard. It provides a broad coverage of topics, including renewable and non-renewable goods provided by nature. An important focus of the CF is the change in stocks of individual environmental assets and their flows between economy and the environment. Essential elements include physical flow accounts (water, energy, emissions, and waste), environmental activity accounts (environmental taxes, environmental protection expenditure), natural resources accounting (minerals, timber, fish, water, soil) and land accounting (land use & cover). The *Applications and Extensions* is a companion document to the CF and allows for the users and accounts compilers to show how the information can be put into policy and decision-making.

First released in 2013, the SEEA EEA takes a systematic view with the economy operating within the broader environmental system. The EEA fills the gap in the current SEEA Central Framework by mapping and measuring the sources of ecosystem services and linking them to relevant parts of the economy. It focuses on assessments of ecosystem stocks/assets and supply/use of ecosystem services – ideally at national scale. The assessment, to be useful for accounting, is carried out both in biophysical and monetary terms. Essential elements of EEA include assessment of ecosystem extent, condition, ecosystem services supply and use, monetary assets values, and supply-use tables. Although not yet a statistical standard, EEA is currently being tested and piloted in several countries and regions around the world.

OBJECTIVES AND PURPOSE OF NCA SCOPING

The purpose of this document is to provide a first step towards understanding preparedness of countries and regions that want to embark on assessment and accounting for natural capital. It is intended for anyone interested in fostering environmental conservation and sustainable development through the incorporation of nature's values into the economy and subsequently influencing decision-making and policy. Potential users are policy-makers, including national and subnational government officials and representatives, the academia, NGOs, local stakeholders, and anyone involved in conservation and the development sector.

The main goal of the scoping exercise is to understand if and how NCA should be developed and implemented successfully in the specific context of each country/region. This is an important part of the path to the "NCA Readiness". There are multiple aspects to this. Understanding the enabling conditions such as political will and priorities of the governments is the most important prerequisite for the successful implementation of NCA. Providing that there is political will, the next important thing is gaining an understanding of relevant existing and future policies and international commitments made by the government. Each policy should be examined, and when possible, linked to NCA. The identified linkages provide important information on the synergies with NCA and provide a justification for the implementation of NCA. Equally important is the identification of gaps in existing policies guidelines where implementation of NCA can provide useful information.

Related to the policy aspect is understanding of the institutional framework. A comprehensive assessment of each institution's capacities, competencies, and collaboration opportunities will be key for successful implementation of NCA. Past, existing or planned work related to NCA should be identified and analyzed to prevent duplication of efforts. In addition, understanding the type of data needed, data quality and availability will determine the feasibility and usefulness of NCA.

This document can be useful in two different ways. First, it provides a concise decision-making tool for anyone who is interested in developing a new set of natural capital accounts at the national or subnational level. Based on our past and ongoing experiences with natural capital accounting, we outline a series of checklists and questions that we recommend be adopted at the very initial stages of thinking and planning. Second, this will help to identify what is known, where gaps exist, and which concrete actions are needed, if any, to begin a natural capital accounting project. In some cases, little or no new data collection or analysis will be needed, whereas in most cases, the scoping exercise will highlight the information gaps that needed attention.

GENERAL CONSIDERATIONS FOR IMPLEMENTING THE SCOPING

The Scoping requires the following four steps in the order they should be implemented:

- a) **Establish a core group:** Creating a core group of individuals representing different institutions as well as professional expertise, who will be responsible for conducting the Scoping is essential. At the scoping stage representing institutions in the “core group” may include government departments responsible for data management and decision-making, research organizations and NGOs. Representative expertise may include: statistician, policy analyst, economist, spatial analyst/GIS specialist, biodiversity specialist and hydrologist, among others. Partnership with academic institutions for expertise and assessments such as literature review may also be required.
- b) **Develop a strategy:** The core group will decide how to conduct the scoping assessment, who should implement this and how to collect data (e.g. policy priorities, information availability, past and current efforts) necessary to answer many of the questions in the “scoping worksheets”. This scoping assessment can be accomplished through a combination of systematic questionnaire survey among stakeholders, workshops and literature review.
- c) **Establish a timeline:** Ideally the Scoping should be completed in a shorter time-frame of 3-6 months period. However, this may change according to availability of resources and capacity. A “rapid assessment” can be done in a shorter period, but there will be tradeoffs in terms of the quality of the assessment. Activities and milestones within this timeline must be established to monitor progress.
- d) **Organize stakeholder workshop:** A stakeholder workshop needs to be organized at the completion of the scoping assessment to disseminate the results as well as to validate outcomes of the assessment.

SCOPING WORKSHEETS

Country Overview: Understanding historical trends as well as current state of the environment, demography, geography and economy is of utmost importance in understanding major environmental issues and drivers and their underlying conditions. The following questions answer those general trends and threats as well as the importance of natural capital in the economy.

Q. Identify key ecosystem services which are important to people's livelihoods and the economy.

Ecosystem services	Importance (High, Medium, Low)	Principal beneficiary
Timber provision		
Medicinal plants		
Firewood		
Bushmeat		
Pollination		
Fisheries resources		
Water provision		
Climate regulation		
Biodiversity		
Soil erosion control		
Others (specify)		

Q: What is the general trend of natural capital observed in the last 10 years?

H = high, M = medium, L = low

I = increasing, D = decreasing, S = steady

Natural capital	Contribution to livelihoods and income generation (H, M, L)	Contribution to national and regional economy (H, M, L)	Trend past 10 years (I, D, S)	List 2 greatest threats
Timber				
NTFPs				
Minerals				
Bushmeat				
Firewood				
Fisheries				
Water				
Carbon				
Biodiversity				
[add more as necessary]				

Q: Rank the importance of economic sectors in terms of how much they contribute to GDP

Economic sector	Rank	Describe natural capital dependency	Notes
Agriculture			
Forestry			
Fisheries			
[add more as necessary]			
[add more as necessary]			

Q. List 3 key environmental issues of concern to competing uses of natural ecosystems with economic activities in the country/region

Landuse and natural capital	Issues of concern (e.g. water quality, soil erosion etc.)
Water	
Land	
Ecosystems	
Biodiversity	
Energy	
Mangroves and marine	
Agriculture	
[add more as necessary]	
[add more as necessary]	

Q. What are the competing/conflicting land uses in the region?

Landuse	Land use conflicts
Agriculture	
Wetlands	
Protected areas	
Plantations	
Mangroves and marine	
[add more as necessary]	
[add more as necessary]	

Additional comments

The Policy Landscape: Understanding and assessing policies is important to identify which NCA accounts can contribute to the implementation of those policies. In a broader sense those policies include national and regional ecosystem conservation and management priorities, short- and long-term visions and strategies (e.g. 5-year plans) and international commitments (e.g. Aichi Targets).

Q. Identify the most relevant national policies and strategies (e.g. 5-year plans) that are relevant to natural capital. Give scores 1 to 3 (3 being high priority) in column 2.

Policies and strategies	Priority	Implementing agency	NCA account(s) that can contribute

Q. What are the national and sub-national commitments made by the government that are relevant to natural capital?

National/regional commitments	Status of implementation	Priority (score 1-3)	Implementing agency	NCA account(s) that can contribute
Biodiversity assessments/action plans				
Protected area establishment				
Ecological-economic zoning				
Land use planning				
Designing payments for ecosystem services				
Climate change mitigation and adaptation				
List any others relevant commitments				

Q. What are the international commitments made by the country relevant to natural capital?

International commitments	Status of implementation	Priority (H, M, L)	Leading agency	NCA account(s) that can contribute
CITES				
ITTO				
CBD/Aichi Targets				
SDG targets (specify NCA relevant indicators)				
List all others relevant commitments				

Additional comments

Statistical standards, existing accounts: The country or the region may already have developed or currently developing specific environmental-economic accounts. This section evaluates which accounts currently exist, what accounting standards were followed, and which accounts are immediately needed to address environmental challenges identified before and achieve policy goals.

Q. What statistical standard is currently being used in national and regional systems of national accounts?

- ☐ SNA 2008
- ☐ SNA 1993
- ☐ Others

Q. Which agencies are responsible for compilation of environmental statistics?

- -
- -
- -

Q. Provide information about environmental-economic accounts if they exist

Name of the account	Year	Physical accounts?	Monetary accounts?	Frequency	Partial/complete?	Which standard followed?	Scale
Agriculture							
Forestry/timber							
Carbon							
Ecosystem							
Fisheries							
Water							
Land							
Minerals							
Aquatic resources							
Environmental Activity Accounts							
[others]							

Q. Identify the CF and EEA accounts which are relevant and immediately useful for the region

Name of the account	Already exists	Immediately needed	Needed in the long-term
Agriculture			
Forestry/timber			
Carbon			
Ecosystem			
Fisheries			
Water			
Land			
Minerals			
Aquatic resources			
Environmental Activity Accounts			
[others]			

Q: Were any of the following standards or guidelines used? If used then which components they focused on (e.g. timber, water, fisheries etc.)?

Standards/documents	Followed/ partially followed/ not followed	NCA components addressed (e.g. timber, water, fisheries etc.)	Latest iteration (year)
SEEA Central Framework (SEEA CF)			
SEEA-Water			
Forest Accounting Sourcebook			
SEEA Experimental Ecosystem Accounts (SEEA EEA)			
SEEA Applications and Extensions			
Ecosystem Natural Capital Accounts Quick Start Package			
Any other? (specify)			
Other (please specify)			

Additional comments

NCA initiatives and projects to value natural capital: This section makes an inventory of the national and sub-national assessment studies, projects and initiatives and information to elucidate and include implementation status and key findings and what specific policies/goals they targeted. Examples of projects/initiatives include: WAVES projects, ecosystem services assessment, valuation studies etc.

Q: Provide information about ongoing and completed natural capital accounting efforts in the region.

[illegible]

Review of literature: The goal of literature review is to understand the state of the knowledge, highlight some of the past studies and assessments (e.g. TEEB studies) and to summarize important results and outcomes. Given that collection and review of literature require time commitment, it is advisable to partner with academic institutions and student interns in the process.

Q. Review relevant literature and provide information on the following aspects of natural capital and ecosystem services

[illegible]

Additional comments

Stakeholder assessment: “Stakeholders” for the purpose of this Scoping refers to persons and organizations that either contribute to the development of NCA or use the accounts for policy and decision-making. The general purpose of stakeholder assessment is to identify persons and entities to build collaboration during the Scoping process so that they can be contacted later on for data sharing, develop inter-agency cooperation and disseminate information. Stakeholders will also help assess policy priorities, identify additional data sources and validate analyses done.

Q: Identify relevant stakeholders and their potential role in natural capital accounting (e.g. data collection, policy making, research, outreach)

Institutions	Stakeholders	Division/unit	Role			Point of contact
			Data producer*	Policy maker	Accounts user	
Government ministries, agencies and divisions	Environment					
	Finance					
	Forest					
	Water resources					
	Statistics division					
Academia	University of [name]					
	University of [name]					
	University of [name]					
	University of [name]					
NGOs	[name]					
	[name]					
	[name]					
	[name]					
	[name]					

* Refers to institutions and entities which produce data on behalf of statistics department or data that are useful for generation of statistics and indicators

Additional comments

Data assessment: This section evaluates data availability on specific components of natural capital, overall data quality and data sources. Both spatial and non-spatial data are to be evaluated in this section particularly given that natural capital accounting, especially ecosystem accounting is spatially explicit in regard to sources and beneficiaries of natural capital.

Q. How easy or difficult is it to obtain data from different government organizations?

- ☐ Strict data protocol maintained
- ☐ It is fairly difficult to obtain data
- ☐ It is relatively easy to obtain data

Q. Unpublished and/or raw datasets available on request from agencies and organizations?

- ☐ They are made available
- ☐ They are not made available
- ☐ It depends on the agencies

Q: Provide information about spatial and non-spatial data availability for NCA. Rate “Availability” in terms of non-existent, partially exist, complete dataset exists

Natural capital	Statistical data			Spatial data		
	Availability	Data quality	Data source(s)	Availability	Data quality	Data source(s)
Timber						
NTFPs						
Minerals						
Bushmeat						
Firewood						
Fisheries						
Water						
Carbon						
Biodiversity						
[add more as necessary]						

Q: Do landcover and ecosystem maps exist? If yes, provide the following information:

Name of the map	Source (e.g., author(s)/producer, publisher, data holder)	Year of release	Scale (e.g., national, regional, local)	Production method (e.g., species analysis, modeling, earth observations)

Additional comments

Potential Challenges: Assessment of potential challenges and how to address them head on should be a major focus of the Scoping process. This ensures that the known issues are taken into consideration during design and implementation of NCA at different phases. Questions in this section will identify general challenges in project design and implementation as well as technical challenges associated with different components of analysis.

Q: List the general challenges existing in the region for project design and implementation

Known issues	Nature of the challenge	Notes
Lack of data		
Inter-agency coordination		
Lack of technical expertise		
Lack of institutional mandates		
Availability of resources (e.g. financial)		
Other (please specify)		

Q: List challenges specific to natural capital accounting

NCA components	The lack of -				
	Data	Expertise	Institutional mandates	Funding	Others
Timber					
NTFPs					
Minerals					
Bushmeat					
Firewood					
Fisheries					
Water					
Carbon					
Biodiversity					
[add more as necessary]					

Additional comments

A SHORT LIST OF RECOMMENDED READINGS AND RESOURCES

A. Technical guidelines

- System of National Accounts (SNA) 2008:
<https://unstats.un.org/unsd/nationalaccount/sna2008.asp>
- SEEA Central Framework 2013:
https://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf
- SEEA Experimental Ecosystem Accounting 2012:
https://unstats.un.org/unsd/envaccounting/seeaRev/eea_final_en.pdf
- Natural Capital Protocol:
- Forest Accounting Sourcebook:
https://www.wavespartnership.org/sites/waves/files/kc/forest_resourcesbook.pdf

B. Select peer-reviewed literature

- Obst, C., Hein, L. and Edens, B., 2016. National accounting and the valuation of ecosystem assets and their services. *Environmental and Resource Economics*, 64(1), pp.1-23.
- Hein, L., Bagstad, K., Edens, B., Obst, C., de Jong, R. and Lesschen, J.P., 2016. Defining ecosystem assets for natural capital accounting. *PloS One*, 11(11), p.e0164460.
- Remme, R.P., Edens, B., Schröter, M. and Hein, L., 2015. Monetary accounting of ecosystem services: A test case for Limburg province, the Netherlands. *Ecological Economics*, 112, pp.116-128.
- La Notte, A., D'Amato, D., Mäkinen, H., Paracchini, M.L., Liqueste, C., Egoh, B., Geneletti, D. and Crossman, N.D., 2017. Ecosystem services classification: A systems ecology perspective of the cascade framework. *Ecological Indicators*, 74, pp.392-402.
- Remme, R.P., Schröter, M. and Hein, L., 2014. Developing spatial biophysical accounting for multiple ecosystem services. *Ecosystem Services*, 10, pp.6-18.
- Hein, L., Obst, C., Edens, B. and Remme, R.P., 2015. Progress and challenges in the development of ecosystem accounting as a tool to analyse ecosystem capital. *Current Opinion in Environmental Sustainability*, 14, pp.86-92.
- Sumarga, E., Hein, L., Edens, B. and Suwarno, A., 2015. Mapping monetary values of ecosystem services in support of developing ecosystem accounts. *Ecosystem Services*, 12, pp.71-83.
- Schröter, M., Barton, D.N., Remme, R.P. and Hein, L., 2014. Accounting for capacity and flow of ecosystem services: A conceptual model and a case study for Telemark, Norway. *Ecological Indicators*, 36, pp.539-551.
- Barbier, E.B., 2007. Valuing ecosystem services as productive inputs. *Economic Policy*, 22(49), pp.178-229.

C. Select documentation on NCA projects

- Experimental Ecosystem Accounting Pilot in Peru: <https://tinyurl.com/yammce78>
- UK environmental accounts: 2017: <https://tinyurl.com/yc237rwc>
- Australia Land Accounts: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4609.0.55.003>
- Australian Environmental-Economic Accounts, 2017: <https://tinyurl.com/legzss2>
- Fisheries Accounts Guatemala: <https://tinyurl.com/yc5z9rf9>
- Experimental Ecosystem Accounts for Uganda: <https://tinyurl.com/y9wh5aca>
- 1st Report on the State of Natural Capital in Italy: <https://tinyurl.com/yaj8qknl>