BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: T17

From assessment to accounting: how countries experience the development of NCA. Insights from applications

Hosts:

	Name	Organisation	E-mail
Host:	Alessandra La Notte	EC JRC	alessandra.la-notte@ec.europa.eu
	Ioanna Grammatikopoulou	EC JRC	ioanna.grammatikopoulou@ec.europa.eu
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Abstract:

Natural Capital Accounts (NCA) are meant to complement the System of National Accounts (SNA), which represents the main source of information to assess the wealth of a country. To make NCA operational within and together with SNA, accounting mechanisms and rules have to be consistently applied. An evolution is foreseen from pure ecosystem and ecosystem services assessment to their structured accounting. After the System of integrated Environmental and Economic Accounts -Ecosystem Accounting (SEEA-EA) was proposed in 2012 by the United Nations Statistical Division (UNSD) and recently adopted as a standard, there is a wide application of these accounting modules throughout the world. NCA is part of the wider SEEA accounting toolkit and is now the focus of considerable political commitment at Global, EU, national and regional scales. However, there is quite some uncertainty as to which accounts, which metrics can support which policy areas. Among the current initiatives, the Integrated system for Natural Capital Accounts (INCA) project is a partnership among the European Commission Directorate General (DG) Joint Research Centre, DG Environment, DG Research and Development, Eurostat and the European Environment Agency. INCA started in 2015 with the objective to develop ecosystem accounts for the EU, following the SEEA-EEA. Another close initiative, Mapping and Assessment for Integrated ecosystem Accounting (MAIA) project starts in 2018 and has 18 partners in 10 countries. MAIA project aims to mainstream natural capital and ecosystem accounting (NCA) in EU Member States through the assessment of policy priorities for accounting NCA tests and pilots in EU MS and the development of

innovative approaches for NCA in the European context. With a broad range of application experiences (geographic, account types, policy priorities etc.), it is possible to enhance understanding of the relationship between the technical construction of the accounts and their actual usage in decision making by end users

Goals and objectives of the session:

The goal of this session is to present a number of applications of Ecosystem Accounting. The presentation of accounting modules should ideally offer a series of insights to discussion on: what natural capital accounts can and cannot do now, in terms of opportunities, risks, and development needs. The session will also help identify the way forward – on accounts development, their use in policy areas, and how to interpret the results so that NCA can realize its potential.

Planned output / Deliverables:

A special issue on One Ecosystem will collect the contributions to the session.

Related to ESP Working Group/National Network:

Thematic working group: TWG 17 – ES Accounting & Greening the economy

II. SESSION PROGRAM

Date of session: Thursday, 10 June 2021

Time of session: 9:30 – 15:15

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
9:30 9:45	Sylvie	Campagne	CNRS	Ecosystem Accounting: Where are we in Europe?
9:45 10:00	Bruno	Smet	VITO	INCA 2021-2023, advance the implementation of ecosystem accounts in the EU
10:00 10:15	Lieven	De Smet	INBO	A criteria-based framework for evaluating ecosystem accounts
10:15 10:30	Clément	Surun	CIRED	Environmental accounting: a hesitant walk between strong and weak sustainability. An illustration with the history of monetary valuation in the SEEA between 1993 and 2020

Time	First name	Surname	Organization	Title of presentation
11:00 11:15	Adrien	Compte	AgroParisTech	Ecosystem accounting: past scientific developments and future challenges
11:15 11:30	Kaia	Oras	Statistics Estonia	Lessons learned on accounting for ecosystem services: bridging the values of services and measures taken
11:30 11:45	Catherine	Farrell	Trinity College Dublin	Natural capital accounting at catchment scale in Ireland: scaling down to scale up
11:45 12:00	Alessandra	La Notte	EC JRC	Ecosystem Services accounts INCA applications in EU27
12:00 12:15	Alessandra	Alfieri	UNSD	Presentation on the System of Environmental–Economic Accounting—Ecosystem Accounting (SEEA EA)
12:15 12:30	Alessandra Ioanna	La Notte Grammatokopoulou	EC JRC	Presentation of OE initiatives
13:30 13:45	Marta	Sylla	Wrocław University of Environmental and Life Sciences	Methodological and empirical challenges of SEEA EEA in developing contexts: towards ecosystem service accounts in the Kyrgyz Republic
13:45 14:00	Stoyan	Nedkov	NIGGG	Flood regulation accounting in mountain watersheds in Bulgaria
14:00 14:15	Alice	Fitch	UKCEH	Under the influence of Nature: the contribution of Natural Capital to tourism spend
14:15 14:30	Wouter	van Reeth	INBO	Ecosystem Extent Accounting and Reporting in Flanders: Lessons learned
14:30 14:45	Eva	Horváthová	Czech Globe	The SEEA EEA Water Filtration Account for the Czech Republic
14:45 15:00	Ioannis	Kokkoris	University of Patras	Integrating biodiversity data into Mapping and Assessment

Time	First name	Surname	Organization	Title of presentation
				of Ecosystem and Their Services (MAES) implementation in Greece: The Flora pilot

III. ABSTRACTS

Abstracts are ordered based on the session program. The first author is the presenting author unless indicated otherwise.

1. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Ecosystem Accounting: Where are we in Europe?

First authors: Sylvie Campagne
Other author(s): Adrien Comte, Fernando Santos Martin, Benjamin Burkhard
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The continuous degradation of biodiversity urged the need to assess ecosystems and the services they provide and to consider them in national and supra-national (e.g. EU) environmental-economic accounting systems. In the last decades, ecosystem accounting (EA) has been further developed by the United Nations with the System of Environmental Economic Accounting – Experimental Ecosystem Accounting (SEEA-EEA). In the European Biodiversity Strategies 2020 and 2030, ecosystem and natural capital accounting are pushed to be considered in European Union member states. In Europe, EA has progressed, which will be highlighted here. First, based on a scientific and grey literature review, we analysed the state of EA conducted in European countries following the SEEA-EEA core and thematic accounts. Second, we analysed in more depth the progress and the implementation of EA in 10 countries based on recently created country fact sheets of the EU Horizon2020 MAIA (Mapping and Assessment for Integrated ecosystem Accounting) project. The review results reveal that 18 countries in Europe have at least one core or thematic account published, with the extent accounts at national scale the most commonly found. The United Kingdom, the Netherlands and Italy showed the highest number of EA and implementation considering both analyses.

While limits, gaps, problems and lessons learnt are beginning to be formulated, the EA progress and implementation show that we are still at an early stage of EA implementation in many countries, but motivation is high to support the consideration of ecosystems in the systems of national accounting.

Keywords: natural capital account, SEEA-EE

2. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

INCA2021-2023, advance the implementation of ecosystem accounts in the EU

First authors: Bruno Smets
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The INCA 2021-2023 project provides support on ecosystem accounting following the framework of the System of Environmental Economic Accounting (SEEA). This involves, in particular, preparation of methodological documents on ecosystem accounting for expert discussions, development of workflows and tools to build ecosystem accounts and validate produced data. It targets to advance the implementation of ecosystem accounts in the EU in a well-coordinated and methodologically robust way to Eurostat and Member States. The project builds on the results of the KIP-INCA project, ecosystem accounting work undertaken in Member States and aggregation across them, and the outcomes of the SEEA Ecosystem Accounting (SEEA EA) revision process. Tools will be developed for Member States to facilitate the development and production of ecosystem accounts at national scale as well as EU wall-2-wall scale, hence the feasibility of a tiered approach will be examined. The tools will be advanced to support a methodologically robust and consistent production. The KIP-INCA ecosystem service accounts will be extended for the reference year 2018 and one more reference year, and the procedures will be advanced towards a regular production. Initial tools and validation workflows will be developed to validate the ecosystem accounts and their underlying geospatial data by Member States according Eurostat's standards, hence ESS validation concepts and principles. Synergies will be explored how ecosystem accounting can contribute to policies, e.g. Sustainable Development Goal indicators, reporting for the EU

Nature Directives, etc. The presentation will address the tasks and expected outcomes of the INCA 2021-2023 project, kicked off in February 2021. The project is funded by the European Commission and awarded by Eurostat to the consortium, led by VITO.

Keywords: INCA, ecosystem service accounting tools, SEEA EA revision

3. Type of submission: Abstract

O. Open sessions: O4 - Guidelines, tools, databases and standards for implementing integrated ecosystem services assessment

A criteria-based framework for evaluating ecosystem accounts

Presenting author: Lieven de Smet
Other author(s): Sander Jacobs, Merlijn Jocque, Hans Van Calster
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What are the properties of a sound ecosystem (extent, condition and ecosystem services) account? How do pilot accounts for Flanders meet these properties and what does this mean for their use and further development? To answer these questions we develop a criteria based framework for evaluating ecosystem accounts and apply / test this framework to pilot ecosystem accounts for Flanders. We are eager to share and discuss the criteria framework as well as insights from its application.

Keywords: natural capital accounting, ecosystem accounting, evaluation

3rd ESP EUROPE CONFERENCE Tartu, Estonia 2021 7-10 June
Ecosystem Services Science, Policy and Practice in the face of Global Changes

4. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Environmental accounting: a hesitant walk between strong and weak sustainability. An illustration with the history of monetary valuation in the SEEA between 1993 and 2020

First authors: Clément Surun
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The System of Environmental and Economic Accounting has been developed over the last 30 years to better reflect the relationship between the economy and the environment in national accounting. In 2012 a statistical standard was created in this context: the SEEA Central Framework. Its complementary volume, the Experimental Ecosystem Accounts, is currently being revised in the perspective to develop a standard on the specific subject of ecosystems. Our paper studies the history of the standardization process from 1993 to today, focusing on the debates around monetary valuation. Although a few experts involved in the process have written their personal analysis of a given period or issue, none have described the 30-year process. However, understanding the evolution of the controversies around monetary valuation and how the institutional process has shaped them sheds new light on current debates. Through the lenses of controversy and actors' relationships analyses, this paper reviews the different versions of the SEEA, most of the documents of London Group and UNCEEA meetings as well as some related academic papers. Interviews of experts involved in the process complement this. As a result, a general history of this statistical standard creation process is proposed. Four controversies are also analysed in detail: modelling or observation; monetary or physical accounts; cost-based valuation or damage-based valuation; ways to integrate environmental and economic accounts. We show that choices made in the SEEA result mostly from rational arguments, general trends in environmental economics, institutional considerations, and apparent strategies of individuals. Overall, we show how there has been a gradual shift from a system designed at first at preserving the environment to a system devoted to value benefits of ecosystem services to the economy.

Keywords: SEEA, monetary valuation, sustainability, history, controversies

3rd ESP EUROPE CONFERENCE Tartu, Estonia 2021 7-10 June
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5. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Ecosystem accounting: past scientific developments and future challenges

First authors: Adrien Comte

Other author(s): C. Sylvie, Campagne, Adrian García, Bruzón, Lars, Hein, Fernando, Santos, Harold, Levrel

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While biodiversity is under threat across the globe from human activities and evidence accumulates that ecosystems provide important goods and services to humans, national accounts do not record interactions between the economy and ecosystems. This issue of producing ecosystem accounts has been the subject of international scientific efforts, notably materialized through the construction of an international system of accounts under the United Nations, the System of Environmental-Economic Accounting (SEEA). The conceptualizations and applications on ecosystem accounting produced by the scientific literature have never been assessed in a systematic way to characterize pas scientific developments and future challenges. Here, a systematic literature review on ecosystem accounting is conducted to detail the evolving trends in concepts, methodologies, and applications of ecosystem accounting and to identify gaps for future work. Our results yielded 255 scientific articles published between 1990 and 2018. This literature is very diverse in terms of conceptual frameworks developed, valuation methods used, and accounts proposed. Among the ten ecosystem accounting frameworks constructed, the SEEA is the most widely used, and is discussed in more articles than all other frameworks combined since 2015. This literature seems to have moved from closing conceptual gaps towards addressing implementation issues of ecosystem accounts. It is primarily conducted in European countries, on forest ecosystems, using biophysical and preference-based economic valuation methods to produce accounts. While this review identifies a convergence of efforts towards implementation of SEEA as the primary ecosystem accounting framework, it also shows that a diverse set of methods and accounts can be produced. The gaps that should be the focus of future work include the issue of implementation: methodologies (particularly economic valuation), data, and collaborations, and the issue of the use of ecosystem accounts in decision-making. Scientific inquiry could benefit from applications on more diverse ecosystems and geographic locations.

Keywords: ecosystem accounting, national accounting, SEEA, natural capital, systematic review

6. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Lessons learned on accounting for ecosystem services: bridging the values of services and measures taken

First authors: Kaia Oras
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Maintaining the assets that supply ecosystem services need targeted measures. For these measures to be successful, a link to the owners of the land where the important ecosystems are located has to be established. In order to develop this ownership dimension, the link between ecosystem and ownership was developed at the level of cadastral units. The current work describes how ecosystem accounts are arranged and proposes the concept for the bridging of various accounts in order to be better used in ecosystems management policy in the example of the management of semi-natural grassland ecosystems. Three analytical tables were developed: "Grassland ecosystems by type, management status and ownership, in ha" (1), "Ecosystem services provided and the subsidies paid for the maintenance of the semi natural grasslands, absolute values" (2) and "Values per ha estimated grassland ecosystem services and the rates of the subsidies to improve the status of associated species on semi-natural grasslands"(3). The questions posed were: (1) What kind of added value could the ownership dimension as an integral part of the extent account provide for targeting environmental measures? (2) Is the linking of the financial support for the preservation (restoration and conservation) of semi-natural grasslands appropriate and sufficient considering the scope and magnitude of the services provided by these ecosystems? (3) The question whether the monetary supply table of ecosystem services could, in principle, be aggregated in order to allow more relevant analyses is posed as well. This work outlines the observations, describe the bottlenecks and highlight the lessons learned. This work is closely related and partly carried out with funding from Eurostat grants no 831254-2018-EE-ECOSYSTEMS, "Development of the land account and valuation of ecosystem services regarding

grassland ecosystem" and "Development of the ecosystem accounts" (881542-2019-ENVECO).

Keywords: ownership dimension, extent account, monetary supply table, subsidies

7. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Natural capital accounting at catchment scale in Ireland: scaling down to scale up

First authors: Catherine Farrell

Other author(s): Lisa Coleman, Daniel Norton, Mary Kelly-Quinn, Carl Obst, Cathal O'Donoghue, Stephen Kinsella, Jane Stout

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The INCASE (Irish Natural Capital Accounting for Sustainable Environments) project is piloting the UN System of Environmental and Economic Accounting (SEEA) – Ecosystem Accounting (EA) at catchment scale in Ireland, with a view to informing how to scale up to national level accounts. We present our initial findings for the development of core and thematic EA accounts for four diverse catchments. In the absence of a national ecosystem map or detailed landcover / use data, extent accounts are underpinned by CORINE and remote sensing datasets. Condition data is limited and there is a need to align further research at national and catchment level to develop robust datasets for the stages of condition accounting as set out in the SEEA-EA. Services and benefits data gathered by an array of agencies are not always freely available and as they are gathered at national and cadastre level, these data are often not aligned with catchment level accounting. With the establishment of an Ecosystem Accounts unit by the national statistics office, there is an emerging opportunity to establish a national data sharing platform, streamline the accounting process steps to align with national accounts, and coordinate research to fill data gaps. The accounting is still in early development, however, there is keen interest from a range of stakeholders from local to national. Using the pilot accounts we are engaging policy makers and end-users as to how natural capital (ecosystem) accounting can inform trade-offs between various land-uses from agriculture, forestry, energy production and infrastructure developments to achieving ambitious national targets set around climate action, biodiversity, water quality and sustainable development.

Keywords: core ecosystem accounts, catchment scale

8. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Ecosystem Services accounts INCA applications in EU27

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The issue of “intermediate services” characterizes the compilation of Supply and Use Table of Ecosystem Services within the SEEA EA. This issue is key because it concerns the risk of double counting. Recent applications in INCA show that there is no default classification of ecosystem services as “intermediate”, it all depends on how the assessment takes place. The example of crop provision and in-situ soil retention demonstrates how an ecosystem “vertical” risk of double counting (i.e. across services) can be avoided by transparently reporting all the components of the biophysical assessment. The example of water purification demonstrates how an ecosystem “horizontal” risk of double counting (i.e. across ecosystem types) can be avoided by clearly reporting whether the role of each element of the overall ecosystem is assessed comprehensively or separately. Since monetary valuation translates the outcomes of biophysical assessment in currency unit, it should consistently reflect their role and meaning and thus avoid double counting. The “vertical” and “horizontal” cases in INCA are reported in physical and monetary terms, with their accounting tables and maps.

Keywords: natural capital accounting, intermediate ecosystem services, water purification, in-situ soil retention, crop provision

9. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Presentation on the System of Environmental-Economic Accounting—Ecosystem Accounting (SEEA EA)

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The final draft of the System of Environmental-Economic Accounting—Ecosystem Accounting (SEEA EA) has been submitted to the 52nd session of the United Nations Statistical Commission in March 2021, to discuss the adoption of the SEEA EA as a statistical standard and encourage its implementation in countries. The presentation on the SEEA EA at the 3rd ESP Europe conference, will aim to inform the conference participants of the latest draft of the SEEA EA as discussed at the Statistical Commission and the revision process that began in 2018 and involved many experts in various fields, including the ESP community. The presentation will focus on the new ecosystem accounting framework outlining the developments in the methodology for ecosystem accounting that reflects the progress made over the revision and reinforces the role of national statistical offices as data stewards. It will aim to clarify the agreed terminology, concepts, definitions and classifications for ecosystem assets and services in both physical and monetary terms. The presentation will be very timely, shortly following the discussion at the UN Statistical Commission.

Keywords: ecosystem accounting, SEEA, natural capital accounting, NCA

10. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Methodological and empirical challenges of SEEA EEA in developing contexts: towards ecosystem service accounts in the Kyrgyz Republic

First authors: Marta Sylla
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SEEA EEA represents a crucial approach to incorporate the assessment of the sustainable use of natural resources and ecosystems into decision- and policy-making. However, its application is constrained by challenges distinct across specific implementation contexts, including those present in developing nations. In this paper, we focus on a pilot SEEA EEA application in a local-scale case study in Kyzyl Unkur, Jalal-Abad region, the Kyrgyz Republic,

characterized by a unique natural walnut forest. We summarize key methodological and empirical challenges identified through collaboration with local experts and stakeholders during the compilation of Supply and Use tables for selected ecosystem services relevant at local, national and global levels. Specifically, we focus on the methodological challenges related to a) defining and assigning benefits for own consumption; b) delineating the chain of ES flows (e.g. fodder for farm animals); c) uncovering the relevance of carbon sequestration in developing nation contexts which are often minor GHG emitters and demand for the service lies mostly beyond their boundaries. Among empirical challenges, we highlight the issues of data collection and availability. The aim of this communication is to provide lessons learnt from building SEEA EEA accounts in a developing, data-scarce context, potentially transferable to other similar applications.

Keywords: ecosystem service accounting, system of environmental and economic accounting, developing country, environmental accounting

11. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Flood regulation accounting in mountain watersheds in Bulgaria

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The mapping and assessment of ecosystems and their services in Bulgaria during the last few years have led to the development of knowledge and data which can be used the integration of ecosystem values into accounting and reporting systems. The accounting of flood regulation is based on the assumption that specific ecosystems can reduce the extent and intensity of floods, thus reducing the risk to build environments. The ecosystems which provide the flood control functions are located at a particular distance from the demand areas. The spatial relationship between them is conceptualized by the Service Providing Areas (SPA) and the Service Demanding Areas (SDA). The accounting is applied in three case study areas, which has already been an object of flood regulation mapping and assessment. The assessment of ES supply is based on the results of biophysical modeling by the GIS-based

AGWA tool which utilizes the KINEROS hydrologic model and the ArcSWAT tool. The actual flow of flood regulation is calculated as a ratio between ES demand and ES potential and it represents the area of SPA which corresponds to the demand for flood regulation represented by SDA. Accounting tables of flood regulation potential, demand and actual flow are prepared in both biophysical and monetary terms for the period 2000–2018. The main critical point of the approach is the identification of the SPA based on the hydrological modeling results and specifically how to determine the threshold value which outlines the SPA. The development of a precise procedure to define the threshold value is one of the main challenges for future work. The identification of the SPAs and the accounts of their regulation function would be a valuable contribution to the update of the Flood Risk Management Plans which are among the main policy drivers in flood regulation accounting.

Keywords: hydrological modeling, ArcSWAT, SPA, SA, actual flow

12. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Under the influence of Nature: the contribution of Natural Capital to tourism spend

First authors: Alice Fitch
Other author(s): Laurence Jones, Jake Kuyer, Patricia Yague-Garcia, Bruce Macdonald, Jacob Gower, Caroline Roberts, Natalya Kharadi
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Natural Capital Accounts (NCAs) have been compiled for the UK, but currently do not consider the contribution of natural capital in tourism and outdoor leisure (T&OL). The tourism sector contributes roughly 4% to the UK's GDP (ONS, 2018), approximately 10.4% to global GDP and is forecast to be one of the fastest growing sectors over the next decade (World Travel & Tourism Council, 2019). The appeal of a country or region for tourism is complex, consisting of many elements including its culture, history, climate, accessibility, built and natural environments. Natural capital may be the primary purpose for tourism (nature-based tourism), alternatively, it may be a secondary factor in that the primary purpose is an outdoor leisure activity, for instance to go for a bike ride, and the choice of location is influenced by natural capital. However, many activities can't occur without 'other factors of production' that support

participation in the activity. Separating out these contributing elements and understanding their value is challenging. Though previous studies further our understanding of the value of natural capital to tourism, the contribution of natural capital and other capital to T&OL needs to be further pulled apart to enable progress towards developing a full set of NCAs. In this study we developed a transparent and repeatable method that provides estimates of the contributions of natural capital to the output from T&OL activities. This study disaggregated the results in different ways: between natural and other forms of capital, spatial location, and types of natural capital. The method was developed to work with existing aggregate economic statistics on expenditure associated with T&OL (big data) and open source GIS datasets to ensure repeatability, scalability and implementation elsewhere.

Keywords: natural capital accounts, toursim, GIS, natural capital, tourism spend

13. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

Ecosystem Extent Accounting and Reporting in Flanders: Lessons learned

First authors: Wouter Van Reeth
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In 2020 the Research Institue for Nature and Forest developed two pilot ecosystem extent accounts for its biennial Nature Report. One is based on a rather coarse set of Corine land cover data (100x100m, 1990 – 2018) , the second on a set of more detailed Flemish land use data (10x10m, 2013-2016). The accounts were formatted according to the land accounting apporoach suggested by the European Environment Agency some years ago. The acounts and derived indicators were reported in the Nature Report – a biennial state of nature report to the Flemish minister for environment and nature – to evaluate land take and ecosystem extent. More detailed accounting sheets and metadata are presented online (English version under way). Knowledge derived from the accounts and graphs has been used in communications with the ministerial cabinet and in parliamentary debates on urbanization, loss of farmland and forest expansion. For the pilot account based on Flemish land use data a validation to assess the reliability of the data has been conducted, resulting in lessons on the feasibility and practical usefulness of the accounts for policy and management applications in the near future.

Further work on these extent acocunts, on condition accounts and on ecosystem service supply and use accounts is planned for 2021 and the years to come, as part of INBO's new research challenges.

Keywords: natural capital accounting, ecosystem extent account, ecosystem mapping, land use change, ecosystem assessment

14. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – From assessment to accounting: how countries experience the development of NCA. Insights from applications

The SEEA EEA Water Filtration Account for the Czech Republic

First authors: Eva Horváthová
Other author(s): Petr Krpec
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Both biophysical and monetary accounts for water filtration were developed for the Czech Republic. The analysis is based on a detailed database covering yearly data for all water withdrawal points in 2018. The biophysical account is depicted in the amount of extraction of groundwater and surface water while the monetary account is expressed in the reduced treatment cost for drinking water production from groundwater relative to surface water. The biophysical account is based on the analysis of the quantity of water extraction and geographical data on areas of water extraction and water protection. For the monetary account development, we applied the replacement cost method to measure the difference in production costs of drinking water from groundwater relative to surface water. The study presents the present value of water filtration flows and associated asset values in 2018. We found that the unit drinking water production costs are by about 3 CZK (0.12 EUR) lower if the drinking water is produced from groundwater. Next, we conclude that demanganization, denitrification and iron removal increase the water production costs, with demanganization having the greatest and the most statistically significant impact. When demanganization is applied the production costs increase by about 4 CZK (0.16 EUR). If no treatment is needed, the unit production costs are significantly lower (by about 0.05 EUR) while the production costs only slightly increase with the amount of electric power consumption (0.02 EUR). We confirm economies of scale in drinking water production as well.

Keywords: monetary valuation, ecosystem accounting, ecosystem contribution, natural capital

15. Type of submission: Abstract

T. Thematic Working Group sessions: T17 - From assessment to accounting: how countries experience the development of NCA. Insights from applications

Integrating biodiversity data into Mapping and Assessment of Ecosystem and Their Services (MAES) implementation in Greece: The Flora pilot

First authors: Ioannis Kokkoris
Other author(s): Konstantinos Kotsiras, Panayotis Dimopoulos
Affiliation: Department of Biology, University of Patras, Patras, Greece
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We present a testing approach on how to integrate an extensive, georeferenced floristic dataset into Mapping and Assessment of Ecosystems and their Services implementation in Greece, setting, also, a baseline for natural capital and ecosystem condition accounts, in the frame of the H2020 project “Mapping and Assessment for Integrated Ecosystem Accounting” (MAIA). This study incorporates extent and biodiversity data for all terrestrial ecosystem types, with the aim to (i) delineate ecosystem type’s diversity; (ii) assess ecosystems’ condition using the plant diversity proxy(i.e., total-, endemic-, range-restricted species diversity, exclusively or not present at one or more ecosystems); (iii) develop ecosystem asset proxy indicators, by combining ecosystem extent and ecosystem condition outcomes; (iv) identify possible shortcomings and (v) propose future, biodiversity-based, steps and implications for the MAES implementation and natural capital accounting. Following the United Nations System of Environmental Economic Accounts-Experimental Ecosystem Accounting (SEEA-EEA) guidelines and the already developed National Set of MAES Indicators for Greece, we created a set of proxy indicators reflecting floristic diversity distribution in relation to the ecosystem type’s presence and their area cover at each floristic region and at each EEA 10x10 km reference grid-cell of Greece. The results suggest a methodological procedure to develop baseline data for MAES studies and natural capital accounting when well-developed biodiversity datasets are available and in combination with ecosystem extent data. Via relevant thematic mapping the important areas, from the aspect of their floristic and ecosystem types diversity, are pinpointed throughout Greece, providing guidance for future steps and decision-making.

Keywords: ecosystem condition, floristic data, MAIA, natural capital accounting


3rd ESP
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2021 7-10 June
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