



BOOK OF ABSTRACT

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I. SESSION DESCRIPTION

ID: T17

Combining accounting structures with ecosystem services: biophysical models, valuation techniques and policy uses.

Hosts:

| | Title | Name | Organisation |
|-----------------|-------|-------------------------|--|
| Host: | Dr. | Alessandra La Notte | Joint Research Center of the European Commission |
| Co-host: | | Ioanna Grammatikopoulou | |

Abstract:

Accounting frameworks have specific features. When building accounts for ecosystem services, the internal mechanism and the accounting rules have to be followed. Ecosystem services have as well their own features and the meaning of flows, stock, value need to be interpreted appropriately, in order to avoid that a system of integrated accounts leads to misleading messages. This session proposes a focus on accounting from all the needed perspective: (i) which biophysical models to use? (ii) which valuation techniques to use? (iii) what is the value added of using ecosystem services accounting rather than already existing environmental indicators? Specifically, it is very important to understand how the outcome of ecosystem services accounting can be employed directly, or can be further processed in order to enhance the tools policy analysts already use, or will use. Any contribution meant to address these topics is welcome, especially if presented through practical case studies.

Goals and objectives of the session:

The goal of the session is to gain and share knowledge of the specific features of accounting when assessing and valuing ecosystem services. It is also important to understand whether and how policy makers can treasure this tool.



Planned output / Deliverables:

Relevant contributions can be collected in a special issue.

Related to ESP Working Group/National Network:

[Thematic Working Groups: T17 – ES Accounting & Greening the economy](#)

II. SESSION PROGRAM (T17)

Date of session: Tuesday, 16 October 2018

Time of session: 16:30 – 18:00

Timetable speakers

| Time | First name | Surname | Organization | Title of presentation |
|-------------|------------|------------------|---|---|
| 16:30–16:45 | Alessandra | La Notte | Joint Research Center | Combining accounting structures with ecosystem services: biophysical models, valuation techniques and policy uses |
| 16:45–17:00 | Francesca | Visintin | eFrame ltd | Environmental Accounting for assessing the Value for Money of Torre Guaceto Marine Protected Area |
| 17:00–17:15 | Stefano | Balbi | The Basque Centre for Climate Change (BC3) | The Outdoor Recreation Service in Italy and the innovative approach of ARIES technology |
| 17:15–17:30 | Marta | Sylla | Wrocław University of Environmental and Life Sciences | Accounting for ecosystem services on the example of local economy |
| 17:30–17:45 | Ioanna | Grammatikopoulou | Global Change Research | Developing pilot supply and use forest ecosystem accounts in Czech Republic |



| Time | First name | Surname | Organization | Title of presentation |
|-------------|------------|------------------|----------------------------------|-------------------------------------|
| | | | Institute | |
| 17:45–18:00 | Ioanna | Grammatikopoulou | Global Change Research Institute | Discussion/Wrap up of presentations |

III. ABSTRACTS

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

1. Type of submission: **Abstract**

T. Thematic Working Group sessions: T17 Combining accounting structures with ecosystem services biophysical models, valuation techniques and policy uses.

The Outdoor Recreation Service in Italy and the innovative approach of ARIES technology

First author: Stefano Balbi

Other author(s): Riccardo Boschetto, Alessio Capriolo, Rosa Anna Mascolo, Ferdinando Villa

Affiliation, Country: The Basque Centre for Climate Change (BC3), Spain, Italy

Under the general objective of developing ecosystem accounts aiming to implement the main development of the KIP INCA at EU level, ISPRA recently started a project to carry out pilot accounts on selected ecosystem services, in line with the methodological advancements already achieved under MAES and SEEA-EEA. Outdoor recreation is one the service being estimated and can be described as the natural features providing landscape suitability for recreational activities. This study examines how this specific ecosystem service can be valued and mapped through a modern modeling approach based on the innovative ARIES technology. We provide quantification and monetary assessment of outdoor recreation by considering the natural and social agents with crucial roles: (1) providers (areas of high naturalness or including relevant landscape features) and (2) beneficiaries (human individuals) visiting those areas for recreational day trips. Following the SEEA-EEA accounting procedures, preliminary results on Italy are produced for accounting purpose including the Extent Account of the ecosystem asset generating the service; the Conditions Account of this asset; the potential Supply Account; and the Use Account (estimated through a potential demand assessment model and its combination with the supply). The machine learning techniques incorporated in ARIES have been key to improve the quality of these estimates, in particular as the numbers of intra-day visitors that would likely take a day-trip



is substantially unknown in most of the supply areas due to the absence of any particular presence detection system. We “learned” the correlations of such values against social and natural features of data-rich areas in Italy and Spain, and use the learned estimates to predict the values in data-poor natural areas in Italy. Finally the travel cost method is used for monetary valuation of the recreation service considering recreational day trips to supply areas and main costs influencing such trips.

Keywords: Ecosystem Account; Outdoor Recreation; Aries; Machine Learning

2. *Type of submission: Abstract*

T. Thematic Working Group sessions: T17 Combining accounting structures with ecosystem services biophysical models, valuation techniques and policy uses.

Developing pilot supply and use forest ecosystem accounts in Czech Republic

First author: Ioanna Grammatikopoulou

Other author(s): David Vačkář

Affiliation, Country: Global Change Research Institute of the Czech Academy of Sciences, Prague, Czech Republic, Greece

The System of Environmental–Economic accounting (SEEA) framework has been developed as a tool for analysing ecosystem functions and processes and their relation to economic and other human activities. SEEA accounting model follows the principles of the System of National Accounts (SNA) and Supply and Use tables (SUT) are the cornerstone of the balancing process and the main focus of SNA. With this study we aim to integrate the values of forest ecosystem services provided in the national accounts and compile the SUT tables both in physical as well as in monetary terms. The selection of forest ecosystem is based on its significant contribution to human well-being by providing numerous ecosystem services and important habitats. For the Czech Republic in particular forest accounts are regarded as a policy priority given that forests amount of almost 35% of land cover while agro-forestry sectors accounts for almost 3% of the GVA (Gross Value Added) of national accounts. The pilot accounts were constructed according to the methodological protocol developed in close collaboration with the Czech Statistical Office. Ecosystem extent accounts were formed in advance to facilitate the derivation of the physical flow of services. For SUT tables we followed four steps: (a) selection of relevant ecosystem services, (b) selection of appropriate indicators and identification of data sources, (c), assessment/modelling of supply of ecosystem services, (d) recording of the beneficiaries of ecosystem services and assigning the flows of ecosystem services and products to them. The monetary SUT are considerably



depended on the selection of the appropriated economic valuation methods. We employed market valuation approaches for provisioning services and a meta-analytic benefit transfer for the regulating and cultural ones. The accounts show an annual flow of ecosystem services that value approximately 1,434 mil EUR which is allocated by 70% to industry entities, 25% to households and non profit institutions and, 5% as a global benefit.

Keywords: ecosystem accounting, supply and use tables, economic valuation

3. *Type of submission: Abstract*

T. Thematic Working Group sessions: T17 Combining accounting structures with ecosystem services biophysical models, valuation techniques and policy uses.

Accounting for ecosystem services on the example of local economy

First author: Marta Sylla

Affiliation, Country: Wrocław University of Environmental and Life Sciences, Poland

SEEA-EEA provides a coherent approach to the assessment of the ecosystems, and measurement of the flows of services from ecosystems into economic activity and human well-being. However, the empirical studies employing the SEEA-EEA are still scarce. In this contribution, we aim to explore the contribution of ecosystem services and benefits to local economy using the SEEA-EEA approach. We present the framework for accounting for ecosystem service in the biophysical and non-monetary terms on the example of local economy of several municipalities within the Ślężański Landscape Park in Poland (8190 ha). We first assemble ecosystem extent and condition accounts as a part of ecosystem asset accounts. We also present ecosystem services supply and use table in physical terms. We use different methods based on environmental regression, spatial interpolation and causal relationships to show spatial heterogeneity of biophysical ESS supply. We construct use tables by beneficiary and ecosystem type. We disaggregate the ecosystem benefits into those that are contributing to products and services already included in the system of national accounts (SNA) according to ISIC and that are not (non-SNA). The work is supplemented with socio-economic information, such as local activities, development plans, population distribution and business by type and location, that help us to identify drivers of change and the general dependence on nature. The local case study has been designed to test the feasibility of the system of environmental economic accounts for the local economy that relies on the benefits from nature, but the environmental protection regime (landscape park) enabling relative freedom of economic activity. The work is done within the research



project which final aim is to provide consistent with SEEA-EEA and consulted with stakeholders' monetary accounts framework at the local scale.

Keywords: ecosystem service, mapping, ecosystem accounting, SEEA, landscape park

4. *Type of submission:* **Abstract**

T. [Thematic Working Group sessions: T17 Combining accounting structures with ecosystem services biophysical models, valuation techniques and policy uses.](#)

Environmental Accounting for assessing the Value for Money of Torre Guaceto Marine Protected Area

First author: Francesca Visintin

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Affiliation, Country: eFrame ltd, Italy

The progressive decrease of public funding often leads decision-makers to cut funds for protected areas, without fully considering the ensuing environmental-economic-social impacts, and to seek information that can be used to improve resource allocation. Increased emphasis is partly due to changes in society, especially the increased demand for accountability, transparency, and demonstrable 'value for money'. The local scale environmental accounting model is applied to the 29 Italian marine protected areas in the frame of the research project financed by the Italian Ministry of the Environment. The research investigated what and how much value the Torre Guaceto Marine Reserve (Italy) was able to preserve and create from the money received from government and funding bodies. From a methodological point of view, the environmental accounting is based on the Cost-Benefit Analysis approach. The model aimed to supplement monetary accounting based on costs and revenues with environmental accounting, which reflects not only environmental costs but also environmental revenues, i.e. environmental benefits. Environmental costs took into account the cost related to some anthropic activities (i.e. institutional activities, fishing and tourist activities, tomatoes and oil production) assessed in terms of CO₂eq emission using the Life Cycle Assessment approach. Environmental benefits assessed ecosystem services as listed by the Common International Classification of Ecosystem Services for the marine coastal water ecosystem, such as: Wild animals and their outputs, Maintaining nursery functions and habitats, Global climate regulation by reduction of greenhouse gas concentrations, Experiential use of plants, animals and land/sea-scapes



in different environmental settings, Physical use of land/sea-scapes in different environmental settings, Scientific, and Educational. The difference between costs and benefits, both economic and environmental, represented the value produced or consumed by the Protected Area. The value produced by the Protected Area fully covered the money spent by public authorities by a rate of 2.5.

Keywords: marine protected area, environmental accounting, ecosystem service, life cycle assessment, cost benefit analysis