BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: S6/T17

Accounting for Ecosystem Services: (1) Policy support for protected areas and (2) Integrated capitals thinking to promote and support sustainable decision making in Africa.

Hosts:

	Title	Name	Organisation	E-mail
Host:		Bruno Smets	VITO	bruno.smets@vito.be
		Martine Van Weelden	Capitals Coalition	martine.vanweelden@capitalscoalition.org
Co-host:		Arsene Alain Sanon	IUCN PACO	arsene.sanon@iucn.org
		Souleymane Tiemtoré	IUCN PACO	Souleymane.Tiemtore@iucn.org
		Peter Katanisa	World Bank	pkatanisa@worldbank.org
		Catherine Van den Hoof	VITO	catherine.vandenhoof@vito.be
		Martin Lok	Capitals Coalition	martin.lok@capitalscoalition.org
		Hannah Brooke	Capitals Coalition	Hannah.brooke@capitalscoalition.org

Abstract:

Accounting for ecosystem services provides a tool to perform physical measurement, mapping as well as monetary valuation. After the System of integrated Environmental and Economic Accounts – Experimental Ecosystem Accounting (SEEA-EEA) was proposed in 2012, a wide application of accounting modules throughout the world has been developed for many applications.

The first part of the session will focus on developed applications in the frame of the Regional Governance of Protected areas. IUCN-PACO[1] and its partner VITO have been mandated to setup such an application in West Africa, funded by the European Union for the benefit of ECOWAS[2] and WAEMU[3] States members. The session will show how tools and applications for ecosystem

[1] International union for conservation of nature – Programme for Central and West Africa (www.iucc.org/paco)

accounting can support the process to preserve or restore protected areas and hence contribute to the post-2020 biodiversity goals. The applications presented will have "accounting tables" and supporting geospatial "maps" as the key elements around which the while measurement turns around. Biophysical assessments, and if applicable their relation through monetary valuation, are presented consistently within the accounting frame of SEEA-EEA. Special focus will be set to the "policy use": examples of accounting should be in line with regional or countries' policy priorities related to preserving natural capital.

The second part of the session will focus on business decision making. The capitals – natural capital, social capital, human capital and produced capital – form the foundation of human wellbeing and economic success. By understanding how organizations impact and depend on the capitals, organizations can make holistic decisions that create value for nature, people and society alongside businesses and the economy.

The Capitals Coalition is actively promoting the capitals approach as a way to transform decision making in a sustainable and meaningful way. In Africa, several projects are under development or have been developed that will support the inclusion of all capitals and ecosystem service flows in public and private sector decision-making.

In this session, we will consult our speakers and audience on their experiences of how capitals approaches such as ecosystem service valuation have been used to engage the African public and private sectors. We will reference ongoing work, and request suggestions for how the capitals approach can be employed by researched to increase multi-stakeholder engagement across the discipline.

The session will cover:

- Practical experiences of how a capitals framing has helped engage different audiences. To include the African Natural Capital Accounting Community of Practice, The Economics of Ecosystems and Biodiversity Agrifood Project, and others.
- Abstract presentations and suggestions from the audience are welcomed.
- Discussion about the benefits and limitations of capitals approaches, to recommendations to equip the audience in applying capitals to their own work.

Goals and objectives of the session:

The goal of this session is to present a number of applications of Experimental Ecosystem Accounts, both core accounts (i.e. extent, condition, services, assets) and thematic accounts (i.e. water, carbon, biodiversity), linked to nature conservation with focus on preserving protected areas. The presentation of accounting modules should ideally provide insight on what can and cannot done in terms of opportunities, risks and needs to preserve or restore protected areas and potentially contribute to the post-2020 biodiversity strategy and show the policy uses of these accounts.

Secondly, the goal is to share examples of how a capitals framing has helped to bring new public and private sector audiences to ecosystem service research, and consult the audience on practical ways forward.

Also we seek to build collaboration between the business and scientific community in Africa as part of the initiatives of the ESP Sectoral Working Group 6- ES in Business and the Capitals Coalition Regional Hubs.

Planned output / Deliverables:

- A summary of the session will be published online, including recommendations for how ecosystem services researchers can use the capitals approach to increase engagement from the public and private sector.
- Building collaboration between the business and scientific community in Africa as part of the initiatives of the ESP Sectoral Working Group 6- ES in Business and the Capitals Coalition Regional Hubs.

Related to ESP Working Group/National Network:

Sectoral Working Groups: SWG 6 – ES in Business & Thematic working group: TWG 17 – ES Accounting & Greening the economy

II. SESSION PROGRAM

Date of session: Wednesday, June 8, 2022

Time of session: 11:30–13:00 & 14:00–15:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
11:30	Bruno	Smets	VITO	Introduction part I
11:40	Adem Esmail	Blal	Ruhr University Bochum, Germany	Mapping and assessing ecosystem services for sustainable policy and decision making: a case study application in Eritrea
11:55	Daniel	Bazzucchi	SETIN Servizi Tecnici Infrastrutture, Italy	Accounting for Ecosystem Services in Guinea-Bissau: the role of protected areas
12:10	Fatou	Mar	Sahara and Sahel Observatory, Tunesia	Contribution of the ENCA approach in the ecosystems valorization
12:25	Tony	Ramihangihajason	Institute and observatory of geophysics in Antananarivo, Madagascar	Ecosystem natural capital accounting, an environmental management tool: case of some protected area in Madagascar
12:40	Catherine	Van den Hoof	VITO	Applying the Natural Capital Accounting tool ENCA at multi-scale, from country to national parc level

Time	First name	Surname	Organization	Title of presentation
12:55	Bruno	Smets	VITO	Closing part I
14:00	Martine	Van Weelden	Capitals Coalition	Introduction part II
14:05	Bruno	Smets	VITO	Q&A part I
14:15	Peter	Katanisa	World Bank	Natural Capital Accounting Community of Practice Africa
14:30	Marie Jeanne	Senghor	University of Geneva, Switzerland	Policy mainstreaming of ecosystem services in West-Africa
14:45	Sylvia	Buleti		Options for sustainable intensification of smallholder farms in western Kenya
15:00	Martine	Van Weelden		Integrated capitals thinking to promote and support sustainable decision making in Africa
15:15				Q&A & Closing

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 - Accounting for ecosystem services: policy support for protected areas

Mapping and assessing ecosystem services for sustainable policy and decision making: a case study application in Eritrea

Presenting author: Blal Adem Esmail

Other author(s): Prof Christian Albert, Dr Chiara, Cortinovis, Prof Davide, Geneletti, Dr Jingxia, Wang

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Mapping and assessment of ecosystem services and their dynamics is key to inform sustainable policy, and decision-making at national and sub-national level. Responding to the increasing

call for studies in sub-Saharan Africa context, this paper proposes an expert-driven application in Eritrea, based on land cover, matrix-based approach with data visualization techniques. Three questions drive the research: (i) what is the institutional, policy, and legal context in the case study country, and how does it relate with ecosystem services assessment application? (ii) how has the land cover changed in the last five years? (iii) what are the impacts in terms of the potential supply of key ecosystem services? And what are possible implications for policy-, and decision- making? Accordingly, we reviewed relevant documents and databases to define the institutional, policy, and legal context in the case study. This is a crucial step to enhance the saliency of the proposed MAES application for national policy, and decision making, for example, by selecting the most relevant ecosystem services. We then analysed landcover changes during the period 2015-2019, following the selection of landcover data to represent ecosystem services. The analysis includes zonal statistics for the administrative regions and selected areas of the country. Finally, we mapped and assessed the potential supply of ecosystem services (and its dynamics) and analyse the results against the policy priorities identified earlier. Key to this step was a review of applications of ecosystem services mapping and assessment in similar climatic conditions to determine the potential supply of ecosystem services for the 11 land cover classes in the case study. Overall, our study presents a worked-out example to illustrate the potential of mapping and assessment ecosystem services to support sustainable policy, -and decision making.

Keywords: IPBES, Global Copernicus Land cover, Land cover change analysis, Matrix approach, SEEA-EA

2. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – Accounting for ecosystem services: policy support for protected areas

Accounting for Ecosystem Services in Guinea-Bissau: the role of protected areas

Presenting author: Daniel Bazzucchi

Other author(s): Giacomo Cozzolino

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Guinea-Bissau is a country rich in terms of natural, historical and cultural heritage, while the country is economically ranked as one of the poorest in the world. A great portion of its nature is preserved thanks to its protected area system. The "Strengthening natural resource valuation capacities for improved planning and decision making to conserve the global environment" project has been implemented in Guinea-Bissau between 2018 and 2022. The objective of this project is to develop technical and institutional capacities for undertaking an economic valuation of ecosystem services.

One of the main outcomes is the introduction of environmental accounting in the country, to assess the value of the natural capital and economically estimate the value of ecosystem services. To this end, two specific exercises have been made: the estimation of the ecosystem services values for the whole country and for a pilot-site area, the Natural Park of the Cacheu River. These exercises are also useful to test a methodology of environmental accounting and ecosystem services assessment and to obtain the first results on the values of nature. The methodology includes the IPBES ecosystem services classification, the most common and consolidated approaches from the environmental economics to estimate ecosystem goods and services and a set of indicators; moreover it considers the System of integrated Environmental and Economic Accounts – Experimental Ecosystem Accounting.

The results show that the annual value of ecosystem services in the country is worth about 1,000 USD/hectare. Then, protected areas in Guinea-Bissau have a significant role in terms of ecosystem services maintenance, particularly for habitat creation and maintenance, climate regulation and cultural services. On the other hand, the annual value of ecosystem services in

the Natural Park of the Cacheu River is worth about 1,500 USD/hectare (50% more than the average value for the country).

Keywords: ecosystem services, environmental accounting, protected areas

3. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – Accounting for ecosystem services: policy support for protected areas

Contribution of the ENCA approach in the ecosystems valorization

Presenting author: Ndeye Fatou MAR

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Ecosystem degradation or restoration is not being considered either in the wealth of nations or in international economic exchanges, which hinders the evaluation of economic performance and social progress for a sustainable development. Many initiatives launched within the United Nations system have recently made it possible to experiment with ecosystem accounting based on geo-referenced biophysical and ecological assessments. Several experiments are thus carried out and/or underway based on the manual of "Ecosystem Natural Capital accounting – a quick start kit" that the Convention on Biological Diversity (CBD), published in 2014 in support of the implementation of the EEAS (UN Environmental Economic Accounting System), in order to reach and achieve Objective 2 of the Aïchi Strategy.

In the framework of COPERNICEA project, implimanted by the Sahara and Sahel Observatory (OSS), we will present the takes a holistic look at what it takes to integrate biodiversity values into national and local planning processes and how to help African countries internalize the costs and benefits of biodiversity conservation and the sustainable use of ecosystems.
Also, it will illustrate how the COPERNICEA program will operationally fill the lack of quantification of ecosystems in order to meet international concerns and requirements relating to the consideration of biodiversity and ecosystem services in national planning processes,

based on the Quick Start Kit (QST) for ecosystem accounting drawing up environmental accounts in terms of vegetation cover, biocarbon, fresh water, ecological infrastructure, resilience index or ecosystem health.

Keywords: Ecosystem accounting, COPERNICEA, Biodiversity, Africa

4. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – Accounting for ecosystem services: policy support for protected areas

Ecosystem natural capital accounting, an environmental management tool: case of some protected area in Madagascar

Presenting author: Tony Ramihangihajason

Other author(s): Solofo Rakotondraompiana, Edmond Roger, Miadana Faramalala, Solofoarisoa Rakotoniaina, Lalaina Rambeloarisoa

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Maintaining critical natural capital is paramount. This enables the sustainable use of natural resources. Ecosystem accounts are needed to show these critical thresholds. Among these accounts are CARE, INVEST, SEEA, ENCA. ENCA allows the production of indicators of accessibility and sustainable use of natural resources at several scales. In this work, the method was applied at a local scale, in protected area of Antrema, protected area of Bombetoka and in the Complex of Mahavavy-Kinkony (CMK). All of them are located at the North-West of Madagascar. The choice of the site was based on the accessibility of the data needed to establish the accounts.

Basically, the results show the same trends between these three protected areas. In general, there is a decrease in water resources, a deterioration of water quality, a decrease in forest cover and an increase in population. For CMK, human activity is concentrated on agriculture, while in the other two PAs it is fishing that is favoured. These activities have impacts on natural resources, such as the extension of agriculture in spite of the other natural cover for CMK and the overexploitation of the forest to make canoes and huts. Taking into account of their

category status according to the IUCN, the results show good management of the three sites. Even if there is a decrease in resource stocks, use remains sustainable except for carbon. The use of the biocarbon resources is mainly concentrated on the wooded cover (comprising forest and mangroves). Excessive use of resources can lead not only to resource depletion but also to a degradation of resource quality. This can have an impact on the overall capacity of the ecosystem to provide these services.

Keywords: Ecosystem accounting, protected area, Madagascar

5. Type of submission: Abstract

T. Thematic Working Group sessions: T17 – Accounting for ecosystem services: policy support for protected areas

Applying the Natural Capital Accountig tool ENCA at multi-scale, from country to national parc level

Presenting author: Catherine Van den Hoof
Affiliation: VITO (Flemish Institute for Technological Research), Belgium
Other authors: Souleymane Tiemtoré, Arsene Alain Sanon, Bruno Smets, Marcel Buchhorn
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Ecosystem Natural Capital Accounting (ENCA) provides practical metrics to measure ecosystem and biodiversity degradation. These metrics can provide better insight to understand the drivers and feed into policy decision making and conservation finance processes.
Within the IUCN/VITO PAPBIO ENCA pilot project on the Niokolo-Koba National Park in Senegal/Guinée Conakry, we developed an automatic NCA tool based on the international SEEA-Experimental ecosystem accounts standard. Our OpenSource computing platform allows to quantify degradation on multiple scales from country level up to national parc level. The platform starts from the capability of the ecosystem, and not of the loss of services, where capability includes ecosystem productivity and health. Based on the land characteristics, it quantifies the stock and natural flows in three domains: Ecosystem carbon account – expressed in tons Carbon per hectare, Ecosystem water account – expressed in cubic meter, and Ecosystem infrastructure functional services account – expressed in weighted hectares. The

accounting tables for each domain contain both quantitative information which represent an index of intensity of use, as well as elements for making diagnosis of ecosystem health. Both indexes, calculated for all three domains, are then combined into a new metric of ecosystem ecological unit value (ECU). By multiplying the ECU index with the domain potentials, the indicator for the total capability of the ecosystem (TEC) can be used in time series analysis to evaluate the development of ecosystem degradation or improvement.

During our presentation we will showcase how our ENCA tool can help to identify area of concern from country level up to sub-parc level. Special attention will be given to the importance of data integration when implementing public as well local datasets. Moreover, we will show case how data aggregation can help to focus the ENCA tool output to the specific needs of the target group (i.e. detailed statistics for scientist versus overviews for decision makers).

6. Type of submission: Abstract

S. Sectoral Working Group sessions: S6 - Integrated capitals thinking to promote a sustainable and healthy agriculture & food sector

Options for sustainable intensification of smallholder farms in western Kenya

Presenting author: Sylvia Buleti
Other author(s): Shem, Kuyah
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Push-pull technology is one of the intensification practices that has been used to increase yield and income in smallholder cereal-based production systems by controlling insect pests (fall armyworm and stemborer) and the parasitic striga weed, while improving soil health and providing fodder for crop-livestock integration. The technology is however restricted to maize and traditional cereals, and application is limited to the scale of fields. Harnessing the full potential of push-pull requires further intensification of the technology. An on-going research in Western Kenya seeks to expand the scope and applicability of push-pull in smallholder farming systems. Ten focus group discussions with 91 participants drawn from 10 villages in

three counties (Kisumu, Siaya and Vihiga), and key informant interviews with 25 participants from the same region were used to identify sustainable intensification practices that farmers want integrated in push-pull systems. Respondents were aware of, and mentioned mixed farming, intercropping, crop rotation, push-pull system, use of fertilizers and organic manure, good agronomic practices, agroforestry and conservation agriculture as the practices they adopt to increase crop yields without expanding the area under cultivation. Similar sustainable intensification practices were mentioned across counties, implying that environmental context played minimal or no influence on these practices. Respondents rated mixed farming, intercropping and crop rotation as the most widely practiced in the region. They prefer to intensify push-pull with options that would increase productivity, boost income and provide firewood and fodder. However, broader challenges to uptake of technologies in the region (e.g. shortage of land due to high population, dearth of information on some of the approaches, aggravated by lack of skills and shortage of extension agents, broader cultural issues of land ownership and land use that prejudice against women and youth, high costs of inputs, and limited access to market) affect adoption of push-pull.

Keywords: Intercropping, desmodium, cereals, focus group discussion, key informant interviews

7. Type of submission: Abstract

S. Sectoral Working Group sessions: S6 - Integrated capitals thinking to promote a sustainable and healthy agriculture & food sector

Policy mainstreaming of ecosystem services in West Africa

Presenting author: Marie Jeanne Senghor

Other author(s): Geneva School of Social Sciences - Environmental Governance and Territorial Development Hub (GEDT)

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The ever-increasing importance of the environmental issue in the international debate has led to several global environmental governance mechanisms. Meanwhile, concepts such as ecosystem

services (ES) have emerged and progressed, redefining our relationship with nature by reinforcing an anthropocentric vision of biodiversity. In the literature, ES are addressed from different angles, ranging from valuation and mapping to formal mainstreaming into policy or decision-making processes. While the ES concept is advocated in science and policy, its appropriation remains debated, with uncertainties and controversies. Far from considering this concept as a "panacea for sustainability", the discourse on the ES mainstreaming invites us to re-examine and deconstruct the concept through mainstreaming instruments; and wonder about its real societal stakes.

Through a holistic and critical analysis of the concept, this research seeks to understand how ES are integrated into policy and decision-making processes in West Africa. To this end, we develop an analytical framework for ES mainstreaming in different contexts and perspectives. Hence, the exploration of practical ES mainstreaming implementation has thus led us to the following entry points:

- Economic incentive instruments for ecosystem management and restoration or carbon compensation (such as PES, REDD+);
- Development and knowledge dissemination tools on the monetary and physical value of ecosystems and their services (such as Natural capital accounting approaches/ecosystems mapping and valuation)
- Tools for integrating ES into planning and management.

Keywords: Ecosystem services, policy mainstreaming, Natural capital, analytical framework, West Africa

8. Type of submission: Abstract

S. Sectoral Working Group sessions: S6 – Integrated capitals thinking to promote a sustainable and healthy agriculture & food sector

Integrated capitals thinking to promote and support sustainable decision making in Africa

Presenting author: Martine van Weelden

Other author(s): Peter Katanisa

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This presentation will introduce the concepts of natural, social, and human capital and why this framing is important when incorporating sustainability into decision making. We will assess how a "capitals approach" can add deeper insights and discuss some examples of how it is already being applied across Africa by both policy makers and businesses.

Keywords: natural capital, accounting, economics, business

9. Type of submission: Abstract

S. Sectoral Working Group sessions: S6 – Integrated capitals thinking to promote a sustainable and healthy agriculture & food sector

Natural Capital Accounting Community of Practice Africa

Presenting author: Peter Katanisa

Other author(s): Martine van Weelden

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The Africa Natural Capital Accounting Community of Practice is a regional learning and knowledge platform that brings together professionals from governments institutions, nongovernmental organizations and academia that are interested in or working on Natural

Capital Accounting (NCA) in Africa. This presentation will offer an update on activities and invite connections with other initiatives.

Keywords: natural capital, accounting, economics, policy