

# Workshop “VALUES”

Valuing ecosystem services for environmental assessment: state-of-the-art and prospective solutions

30 August 2016 (Side-event of the EcoSummit 2016)



5<sup>TH</sup> INTERNATIONAL ECOSUMMIT  
**ECOLOGICAL SUSTAINABILITY**  
ENGINEERING CHANGE

Room Sully 3 (14:00 - 16:00)

*Identifying and modelling the complex and interlinked human–environment nexuses is one affordable way to assess the relationships between antroposphere and geobiosphere. Such an assessment shall support the establishment of environmental and nature conservation policies, and the life cycle sustainability development of technologies. The theory of ecosystem services (ES) turns out to be at the interface among these research and decision-making questions: assessing the value of ES means understanding and quantifying the very nature of coupled ecological–economic systems. While scientific effort intensifies in this domain, still relevant challenges underlie the implementation of integrated modelling frameworks, the analysis of future scenarios, and the interaction among different disciplines, such as methods of life cycle impact assessment (LCIA), spatial analysis and system dynamics. This workshop intends to deepen the discussion on the multi-scale and multi-objective features that underpin the ES assessment, with a special focus on the latest developments in the field of LCIA combined with ecological modelling.*

Source: <http://www.ecosummit2016.org/participation-in-side-events-session.asp#pse0177>

Organization:

Luxembourg Institute of Science and Technology (LIST)  
Environmental Research & Innovation (ERIN) department  
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# AGENDA

## Part 1 (platform presentations and discussion), 14h00 → 15h30

### “Introduction to the workshop”

14h00 → 14h10

**Title:** The need for an integrated assessment of ecosystem services

**Abstract:** The main advantages, drawbacks and challenges underlying the assessment of ecosystem services in LCA will be outlined in this first short introductory talk, which aims to pave the way to a cross-cutting discussion on the need for an integrated assessment of ecosystem services. A screenshot on the VALUES project (<http://www.list.lu/en/project/values/>) will also be offered as a conceptual framework to embrace all the topics investigated in the rest of the workshop.

**Speaker:** **Benedetto Rugani** (Department ERIN, Luxembourg Institute of Science and Technology, Luxembourg)

Benedetto Rugani (PhD) is R&T Associate at the Luxembourg Institute of Science and Technology (LIST) since 2010. He is an environmental accounting specialist and currently Principal Investigator of the project VALUES “VALUing Ecosystem Services for environmental assessment” (<http://www.list.lu/en/project/values/>)



### “Sustainability scenarios for ecosystem service assessment: different angles of a same room”

14h10 → 14h55

[14h10 → 14h25]

**Title:** Understanding and designing synergies between technological and ecological systems

**Abstract:** There is an urgent need to transform engineering toward a paradigm that includes nature in design decisions, rather than the current paradigm that tends to take nature for granted. Such a paradigmatic shift will not only enable engineering to shift toward sustainability by operating within ecological constraints, but also enable innovative designs that benefit from nature's ability to meet human needs in ecologically and economically superior ways. A recent framework of Techno-Ecological Synergy (TES) aimed at meeting this challenge was recently proposed (Bakshi, Ziv and Lepech, *Env Sci Tech* 49, 1752-1760 (2015)). This talk will present the principles of TES, and explore an example application of TES for a biodiesel production plant.

**Invited speaker:** **Guy Ziv** (School of Geography, University of Leeds, Leeds, UK)

Dr Guy Ziv is a Lecturer in Ecosystem Services at the University of Leeds. His research is on the interplay between policy, land management decisions and land use change impacts on societal benefits from the natural environment. Dr. Ziv is involved in several research projects concerned with using nature to solve technological problems, in particular meeting goals of decarbonisation and ecological sustainability in the UK and Brazil.



[14h25 → 14h40]

**Title:** Is sustainability assessment not anthropocentric and how could this perspective affect valuation of eco- and industrial systems?

**Abstract:** The anthropocentric nature of sustainability assessment is first argued. The position of ecosystems within this concept is discussed, more precisely these should be managed in function of their ecosystem services and disservices. Finally, we elaborate on how this anthropocentric perspective may translates itself to valuating/assessing the impact of ecosystems, industrial and combined systems in (integrated) LCA and ES assessment models.

**Invited speaker:** **Thomas Schaubroeck** (Dept. of Sustainable Organic Chemistry and Technology, Ghent University, Ghent, Belgium)

Thomas Schaubroeck (PhD, received 2014; Ghent University), R&T Associate at the Luxembourg Institute of Science and Technology (LIST). 6.5 years of research experience in mainly LCA, and (forest) ecosystem modelling and service assessment. Publication list: [https://www.researchgate.net/profile/Thomas\\_Schaubroeck](https://www.researchgate.net/profile/Thomas_Schaubroeck)



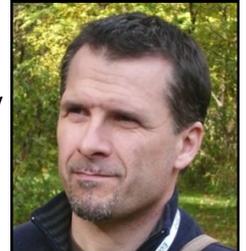
[14h40 → 14h55]

**Title: Life Cycle and the Cycle of Life: from primary energy to GDP**

**Abstract:** (by F.M. Pulselli, L. Coscieme, S. Bastianoni): *A physics-oriented approach may help interpret and emphasize the role of Nature and ecosystem goods and services for human life and activity. Our contribution aims at identifying actors and relations involved in the transformation processes occurring between the capture of primary (mainly solar) energy by ecosystems and the production of any (also economic) output. An input-state-output framework will be introduced, as well as different measures/indicators to describe this investigation procedure within a kind of enlarged Life-Cycle assessment.*

**Invited speaker: Federico M. Pulselli** (Dept. of Earth, Environmental and Physical Sciences, University of Siena, Italy)

Federico M. Pulselli (PhD) is Researcher in Environmental and Cultural Heritage Chemistry at the University of Siena (Italy), where he teaches environmental sustainability indicators. Graduated in Economics, he obtained a PhD in Chemical Sciences-Environmental Curriculum at the University of Siena. His research is focused on the various aspects of sustainable development and the interaction between man and Nature.



## “Routinising the spatial assessment in ecosystem services valuation”

14h55 → 15h10

**Title: From maps to accounts: The development of natural capital accounts in the EU**

**Abstract:** *Countries of the EU have invested substantial resources in mapping and assessment of ecosystems and their services (Action 5 of the EU Biodiversity Strategy to 2020). The next step is routinely update these maps of ecosystem stocks and ecosystem services flows and organize them in statistical accounts so that they can be used to inform policies which have an impact on natural resources. This paper introduces an integrated system for natural capital and ecosystem services accounting (INCA). INCA is a project of several Directorates General of the European Commission (Eurostat, DG Environment, DG Research, JRC) with the European Environment Agency. The idea is to integrate different data sources and models for ecosystem accounting that are available at the EU level – including satellite imagery, land use surveys, agriculture and other statistics, biodiversity data and models – into a single ecosystem accounting system for the EU.*

**Invited speaker: Joachim Maes** (European Commission, Joint Research Centre, Ispra, Varese, Italy)

Joachim Maes (PhD) works as a scientific officer for the Joint Research Centre, the European Commission's in-house science service. He coordinates the scientific activities on biodiversity and ecosystem services in support of the EU Biodiversity Strategy.



## “Final remarks and outlook, with a state-of-the-art on VALUES”

15h10 → 15h30

**Title: Towards a roadmap definition for the integrated assessment of ecosystem services**

**Abstract:** *The on-going VALUES project (<http://www.list.lu/en/project/values/>) aims at developing a novel methodology for the life cycle impact assessment of ecosystem services based on the use of an integrated multi-scale system dynamics model. In accordance with the scope of this workshop, preliminary results from VALUES will therefore be presented to show the relevance of integrating different concepts, models, datasets and approaches in one unique modelling system to improve the assessment of ecosystem services. Concluding remarks on the link between VALUES and the different topics investigated in the workshop will be presented focusing on the definition of a roadmap for the integrated assessment of ecosystem services in the sustainability analysis of technologies and large-scale anthropic systems.*

**Speakers: Benoit Othoniel & Benedetto Rugani** (Department ERIN, Luxembourg Institute of Science and Technology, Luxembourg)

Benoit Othoniel is PhD student at the Luxembourg Institute of Science and Technology (LIST). He works within the project VALUES “VALUing Ecosystem Services for environmental assessment” (<http://www.list.lu/en/project/values/>) as an expert in integrated modelling and mapping of ecosystem services.



Part 2 (round-table discussion), 15h30 → 16h00

The second part of the workshop will be dedicated to a round-table discussion open to all the attendees. The end-point of the workshop is to put the basis for a position paper on the “Assessment of ecosystem services in LCA and related tools”.



## CALL FOR PAPERS – SPECIAL ISSUE OF “ECOSYSTEM SERVICES”

Attendees to the workshop and any other interested expert in the fields of ecosystem services and life cycle assessment are cordially invited to submit their manuscripts to a call for papers of a special issue of the “Ecosystem Services” journal, entitled **“Human-Nature nexuses: broadening knowledge on integrated biosphere-technosphere modelling to advance the assessment of ecosystem services”**

Further information are available here:

<http://www.journals.elsevier.com/ecosystem-services/call-for-papers/human-nature-nexuses-broadening-knowledge-on-integrated-bios>

(submission deadline: Feb 15, 2017)

