

A satellite view of the Earth from space, showing the Western Hemisphere. The Americas are visible in the center, with the Atlantic Ocean to the right and the Pacific Ocean to the left. The image is partially obscured by a purple rectangular box containing text.

DF 87 – Biodiversity in LCA: how far have we come? Synthesis

Stephan Pfister

Synthesis:

We have come quite far, but still a distance to go...

- LCIA:
 - Species Richness: Global PDF
 - Enhancing with detailed data for foreground process
 - Ocean Acidification
 - Needed for other impacts (consistency still partial)
 - Functional Diversity
 - 3 aspects, data intense, complementary
 - Other metrics (MSA, local loss, ecosystem service, soil health)
 - Recommendation needed by business
 - Additional comparative analyses on methods choice
 - Science evolves...

Programme (*=online presentation)

Time		Speaker [Chair]
08:15	Registration	
01 08:45	Welcome, Setting the scene, relevance/state, GLAM update	Francesca Verones, NTNU
02 09:00	Keynote: Footprints and finances: climate and biodiversity analytics in the private sector	Michal Kulak
A	Advances in life cycle impact assessment modelling	Mod: Stephan
03 09:15	Towards considering functional diversity in impact assessment	Laura Scherer, ULEI
04 09:35	Spatially delineating ocean acidification impacts	Sedona Anderson, NTNU
05 09:55	Swiss biodiversity metric	Maria Bystricki, Agroscope
	10:15 Discussion	
	10:35 Coffee break	
B	Advances in inventory and input-output modelling	Mod: Laura
06 11:05	FABIO and FORBIO: A family of physical MRIO databases tracking the flows of more than 300 bio-based products through the global economy.	Martin Bruckner, WU
07 11:25	Regionalization efforts in ecoinvent to allow for spatial biodiversity assessment?	Thomas Sonderegger, ecoinvent
08 11:45	Biodiversity impacts from land-use change embodied in agri-food supply chains	Livia Cabernard, TU München
	12:05 Discussion	
	12:25 Lunch	
C	Short presentations	Mod: Francesca
09 - 11	13:20 Up to 3 short presentations, 10' each	
D	How to improve pathways for improving biodiversity protection in future	Mod: Martin
12 13:50	Just and viable transformative change pathways and targets for biodiversity	David Leclere, IIASA
13 14:10	What we know and don't know about how policies can enable transformation toward sustainable land use	Jan Börner, Universität Bonn
14 14:30	Identify and assess leverage points for biodiversity conservation in the European Union with a focus on non-food biomass	Stephan Pfister, ETHZ
	14:50 Discussion	
	15:15 Coffee break	
E	Cases and business applications	Mod: Francesca
15 15:45	SBTN: applying science to voluntary corporate target setting methods for land	Marco Daldos Pirri, SBTN
16 16:05	Biodiversity footprint of global food consumption between 1992-2020	Hanzhong Zheng, RU
	16:25 Discussion	
F	Synthesis and Conclusion	
18 16:45	Synthesis and conclusions of the day	Stephan Pfister
	17:00 End of 87th LCA Forum	

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LCI and MRIO:

- More details: FABIO and FORBIO: 300 bio-based products through the global economy.
 - Can be combined with MRIO like Exiobase
- Regionalization efforts in ecoinvent to allow for spatial biodiversity assessment?
 - Combine MRIO and process data
 - Weighting maps at native scales for inventory flows (e.g. by crop and land use)
- Biodiversity impacts from land-use change embodied in agri-food supply chains
 - Not only net changes (abandonment don't compensate new habitat destruction)
 - Allocation to driving consumer (but there is a demand-supply mechanism)
- **Discussion**
 - Go beyond weighted maps towards grid cells assessment?
 - Supply chains:
 - Temporal development
 - If problem mainly supply chains, should we forget about local production?
 - Is trade the problem or rather the resource use (income generation)

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Towards a better future:

- Just and viable transformative change pathways and targets
 - Focus on protected areas (more and better), but also diet shift, food waste, trade and yield gap, Land use management / intensity missing
 - Environmental justice: Downscaling targets, DPSIR, synergies and trade-offs
- How can policies enable transformation toward sustainable land use
 - Science study: The positive impact of conservation actions; 2/3 effective, often large, but.. (Relay policies, normally small effect) -> selection bias
 - Quasi-experimental methods and big data for counterfactual based evaluation
 - Most policies work, but small effect; effectiveness varies across contexts
 - Spatially targeted conservation is more effective (but harder/costly)
- Leverage points for BD conservation in the EU for non-food biomass
 - Gaps in IAM, future MRIO -> coupled models needed
 - Financing and investment is another key aspect of EU BD leverage

Questions/Discussion:

- What about degrowth scenarios and private actions (i.e. do Policies work)

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Business cases:

- Keynote Companies:
 - Time dimension: short 2 years / long 10 years (what about 100y?)
- SBTN: applying science to voluntary corporate target setting methods for land
 - Target 1: no conversion of nat, habitat 2, land FP reduction, 3 Landscape engagement
 - Materiality screening tool: Encore basis
 - 6 impact categories (incl SOC and Erosion)
 - LCA is key for implementation by companies
- Biodiversity footprint of global food consumption between 1992-2020
 - Application of FABIO-MRIO and LC-IMPACT
 - Increased efficiency over time in most regions (especially high impacts)
 - Different results of MSA and PDF

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Announcement - next LCA Discussion Forum:



DF 88: Life Cycle Sustainability Assessment – How can Life Cycle Thinking embrace the Triple Bottom Line?

DF 88, Friday November 22nd, 2024
ZHAW Wädenswil, Campus Grüental

- How can LCSA be put into practice?
- What are the methodological concepts for integration across sustainability dimensions?
- Should we integrate across sustainability dimensions?
- If you would like to contribute: rene.itten@zhaw.ch

Campus Grüental



We are looking forward to meet you in **Wädenswil!**

Zürcher Hochschule
für Angewandte Wissenschaften



Life Sciences und
Facility Management

IUNR Institut für Umwelt und
Natürliche Ressourcen



Thank you & farewell!

We have come quite far, but still a distance to go...

- Intro and keynote
 - Biodiversity is important for our life
 - Recognised by business (follow
- Short presentations
 - Anne Asselin: Agribalyse; GIS Revalim produces LCA data for agricultural LU data; BioSyScan (Biodiversity status not LCA) -> Different methods different results (products and geographies)
 - Silvana Bürck: Biodiversity footprint – what methodologies to use? Recommendation for independent Biodiversity Footprint, “Hemeroby” concept as proxy too uncertain
 - Livia Ramseier: Biodiversity in corporates. Focus still on GHG, Scope 3 froms pending over hybrid to product-based. Biodiversity strategy, communication and synergies with GHG reproting. Challenge Location is more relevant for BD. Challenge: agreement on method, data limitation (regionalized LCI, transparency in supply chains)

Advances in life cycle impact assessment modelling

- Functional diversity
 - Different data availabilities, 3 indicators covered
- Marine acidification
 - Regionalized, accounting
- Detailed management practices in Switzerland
 - Detailed foreground process data (
- **Discussion and Limitations:**
 - Further aspects, like MSA to be addressed
 - Comparison among metrics need further analysis
 -

Advances in inventory and input-output modelling

- FABIO and FORBIO: A family of physical MRIO databases
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 - Combine MRIO and process data
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 - Not only net changes (abandonment don't compensate new habitat destruction)
 - Allocation to driving consumer (but there is a demand-supply mechanism)
- **Discussion**
 - Go beyond weighted maps, intensities, grid cells?
 - Time series as supply chains change
 - If problem mainly supply chains, should it be better
 - Is trade the problem or rather the resource use (income generation) – alternative
 - International trade structure and economies – shift powers
 - What would be needed from ecoinvent (impact assessment side)?

How to improve pathways for improving biodiversity protection in future

- Just and viable transformative change pathways and targets
 - Scenarios to explore potential future states
 - Focus on protected areas (more and better), but also diet shift, food waste, trade and yield gap
 - Land use management / intensity missing
 - Environmental justice: Downscaling targets, DPSIR, synergies and trade-offs
- What we know and don't know about how policies can enable transformation toward sustainable land use
 - Science study: The positive impact of conservation actions; 2/3 effective, often large, but.. (Rellay policises, normally small effect)
-> selection bias
 - Quasi-experimental methods and big data (incl. remote sensing) for counterfactual based evaluation
 - Most policies work, but small effect; effectiveness varies across contexts (more than among policy types)
 - Spatially targeted conservation is more effective (but harder/costly), income effects can be positive or negative, spillovers?
- Identify and assess leverage points for biodiversity conservation in the European Union with a focus on non-food biomass
 - Open gaps in IAM, MRIO -> coupled models needed

Questions/Discussion:

- Degrowth, metrics
- Policy

Cases and business applications

- SBTN: applying science to voluntary corporate target setting methods for land
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