

Governing sustainability of the bioeconomy: Indicators for measuring, monitoring and assessment

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Presentation at the tF-Symposium 2020: Wege transformativer Forschung: Zielorientierung und Indikatoren , Darmstadt, Oct. 7, 2020 in two parts:

- Part I: **Transformation!**
- Part II: **Indicators** as guidance

Part I: Transformation!



- A marked change in form, nature, or appearance
- A sudden dramatic change of scenery on stage
- A metamorphosis during the life cycle of an animal



Examples:

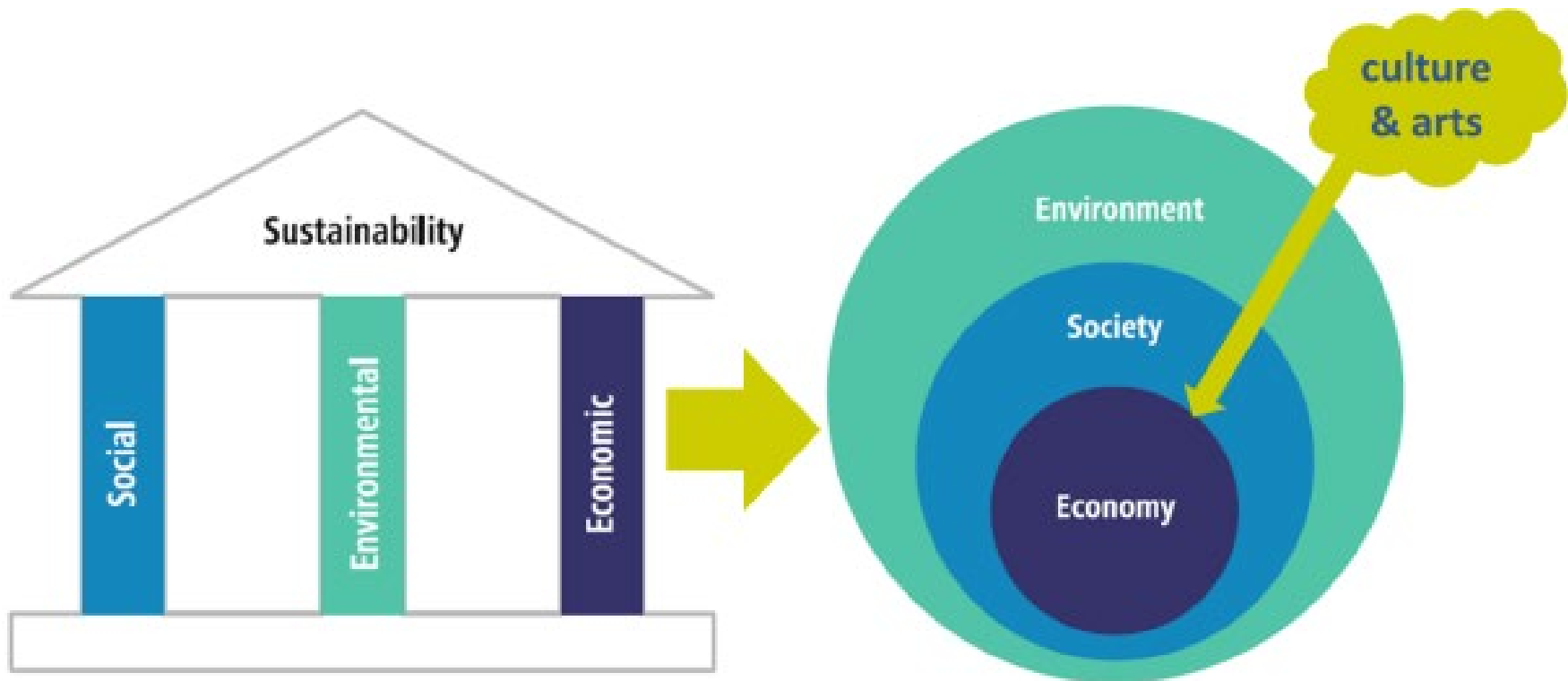
- From degraded or abandoned land to providing biomass and ecosystem services
- From waste streams to energy carriers/materials
- Pipelines: from fossil to renewable gas networks
- From “old” indicator logic to **proxies** (practices)

Transforming Sustainability: From tiles to “wedding cake”



Source: own elaboration based on UN (2015) and Rockström & Sukhdev (2016)

Transforming sustainability: From pillars to embedded systems



Source: Fritsche et al. (2020), based on Göpel (2016) and WBGU (2011)

Transforming the bioeconomy



Future transitions for the
Bioeconomy towards
Sustainable Development
and a Climate-Neutral Economy
Knowledge Synthesis Final Report



*Knowledge Synthesis and Foresight
Work Package 1 - Network of Experts*

Fritsche, U., Brunori, G., Chiaramonti,
D., Galanakis, C.M., Hellweg, S,
Matthews, R. & Panoutsou, C.

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Network of Experts:

- Uwe R. Fritsche (coordinator)



- Gianluca Brunori



- David Chiaramonti



- Charis Galanakis



- Stefanie Hellweg



- Robert Matthews



- Calliope Panoutsou



Towards a circular, sustainable and transformative **BioWEconomy**

- **BioWEconomy** is inclusive (**WE** = all of us)
- Sociocultural actors: innovation in business modes and **social** and **cultural practices** (sharing economy...)
- Nature-based solutions & fair international trade
- Sustainability conditions for finance (EU Taxonomy), participatory **crowd sourcing**
- **Trust**: transparency and co-creation in measuring and verifying sustainability through indicators (**citizen science**)



Landings (Bruno Latour): Build **BioWEconomy** from the ground (BioCities, BioRegions...) with artists, citizens, businesses, policy makers...all of us!

Culture & arts in a BioWEconomy

- Art linking **BioWEconomy** to non-technical and post-modern views and practices:
 - Olafur Eliasson questions the relation of mankind and nature: <https://olafureliasson.net>
 - Emma Hislop explores links of **microbiomes** in our bellies and circular economy concepts <https://opentongue.cargo.site/AiR-2020>
 - Kristiane Kegelmann combines food art and entrepreneurship www.kristianekegelmann.com
 - Banksy inserts art into everyday life through subversive graffiti <http://www.artbanksy.com>
 - Bruno Latour calls for **Landing on Earth** <https://zkm.de/en/exhibition/2020/05/critical-zones>
- **Re-define** nature-based cultural practices (e.g. cooking, gardening, health care, walks etc.) as components of the **BioWEconomy** with societal value
- Including **traditional knowledge** embedded in e.g. in agricultural practices of seed selection (Iran), nature-based long-wearing fabrics and materials (Latin America and Asia) could enrich the **BioWEconomy** further

Sustainable bioeconomy & culture/arts!



6. The transition to a sustainable bioeconomy



6.6 The cultural evolution of bioeconomy (1) / Knowledge base/Education (2)

On the cultural evolution of a sustainable bioeconomy

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See also Fritsche et al. (2020); Göpel (2016), Hanspach et al. (2020) and WBGU (2011)

Part II: Indicators as guidance

From Latin *indicātor* (“one who points out”)

- Pointer or index to **measure** something
- Meter or gauge, or the needle or dial on such a meter
- Substance, such as litmus, used to indicate the concentration of a substance, or reaction degree
- Presence of a plant or animal indicative of some specific environment
- Measure (e.g. unemployment rate) to predict economic trends



Indicators inform about the current or future **status** of a quality or quantity.

Their expression measures (or estimates) **achieving** goals, objectives or targets.



IEA Bioenergy
Technology Collaboration Programme



Towards a Sustainable Bioeconomy:

Work of IEA Bioenergy on how indicators can give guidance

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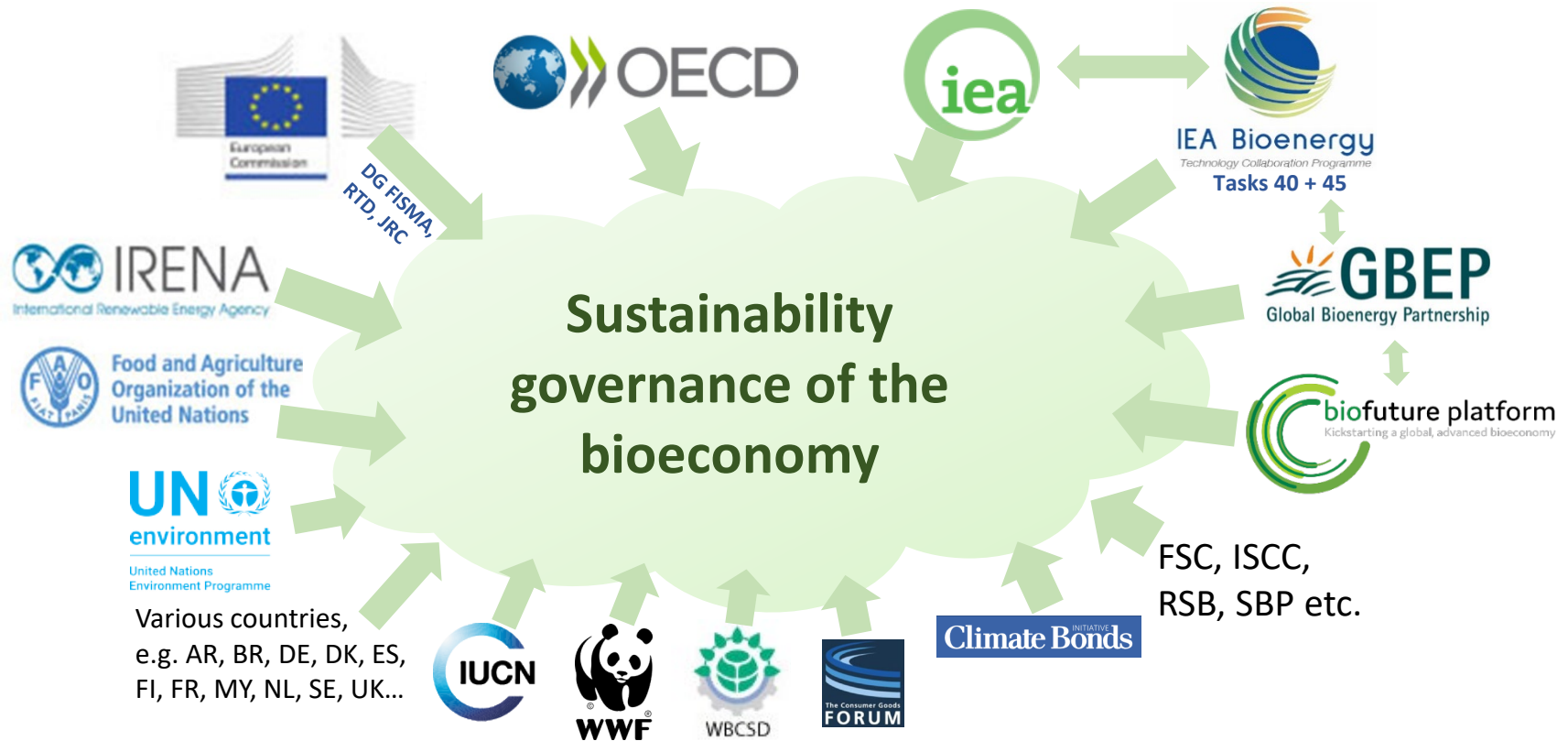
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Governing sustainability of the bioeconomy

- Governance of sustainable bioeconomy requires new **collaborative** approaches + **indicators** to operationalize sustainability (IMMABS project)
- **Creating trust** requires transparent supply chains and participatory verification (**citizen science**)
- **Financing institutions** need sustainability “assurance” for bioeconomy investments – **practical indicators** required

International contributors to sustainable bioeconomy governance

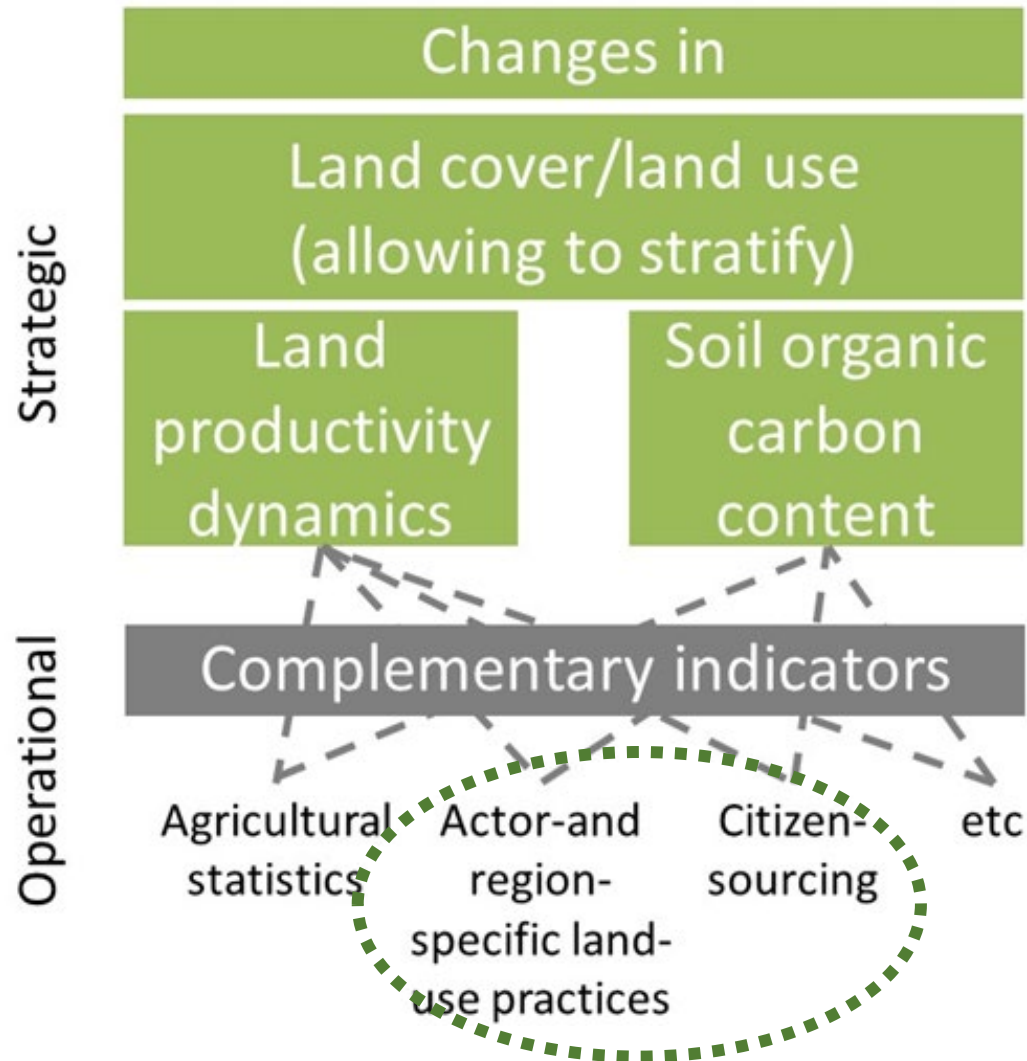


Indicators to measure, monitor and assess bioeconomy sustainability (IMMABS)

- Project of IEA Bioenergy **Task 45 WP3** (sustainability governance of the bioeconomy)
- Contributors: GBEP, JRC, OECD, UNEP
- Collaborate with **financing institutions**
- Approach:
 - Screen “dominant” indicators to generate toolbox/dashboard for variety of assessment and monitoring scopes
 - Critically review methodologies of toolbox/dashboard indicators, develop “**proxies**” if methods/data missing
 - In that, consider **citizen science**
- **First results: mid-2021**



Example: Land indicators in SDG 15.3



Source: Outcome Document of EEA/GLII/IASS Thematic workshop “Possibilities for indicators on sustainable land management for the Global Land Indicators Initiative” (CPH March 2015)

Summary points

- Sustainability concept needs **transformation**: from “pillars” to embedded systems
- Extend concept to **culture & arts**
- **Indicators**: Co-creating approaches (citizen science) and proxies (measurable practices); bottom-up data to **complement** top-down “measuring” (statistics, Earth Observation)
- **Conceptualize internationally, and build from the ground**



More coming mid-November: www.bioweconomy.org

**It always seems impossible
until it's done**

Nelson Mandela



Relevant references and links (Part I)

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A “serious game”: <https://bioeconomy-now.de/>

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- Deutsche Nachhaltigkeitsstrategie Weiterentwicklung 2021 - Dialogfassung. Bundesregierung. Berlin <https://www.bundesregierung.de/resource/blob/998006/1793018/15bb73b6ead4666c62c00cfb893f2eff/dns2021-dialogfassung-data.pdf>
sowie zu den Indikatoren: <https://dns-dialogfassung.github.io/>

Thanks for your attention!

More information:

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