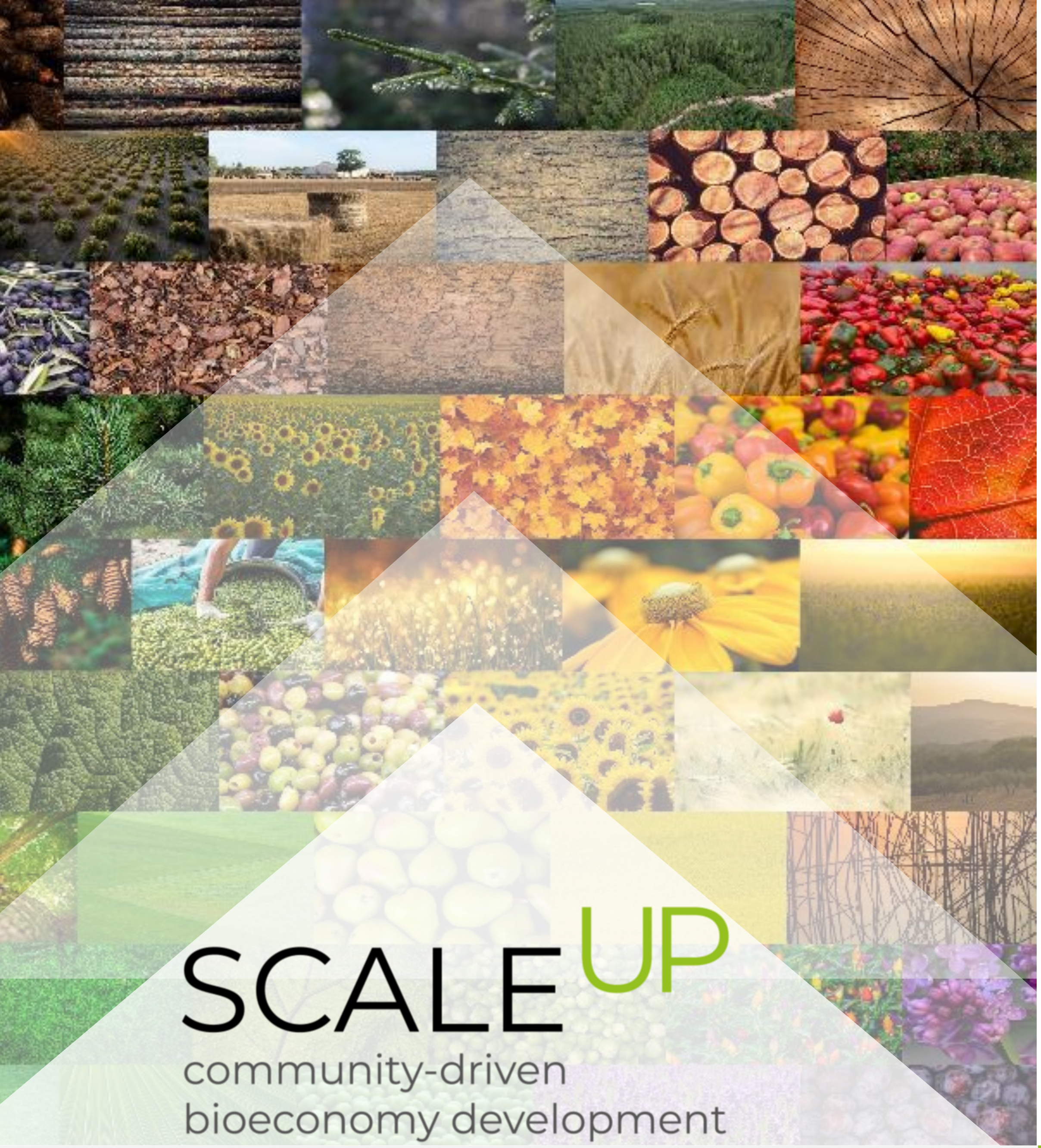


SCALE UP
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# MINDING THE SYSTEM'S BOUNDARIES
# –
# SCALE-UP SUSTAINABILITY SCREENING

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Workstream 7 of the SCALE-UP Training Programme

31 October 2024

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101060264.


Is the bioeconomy intrinsically sustainable?
0 CREDITS
N
Y
?
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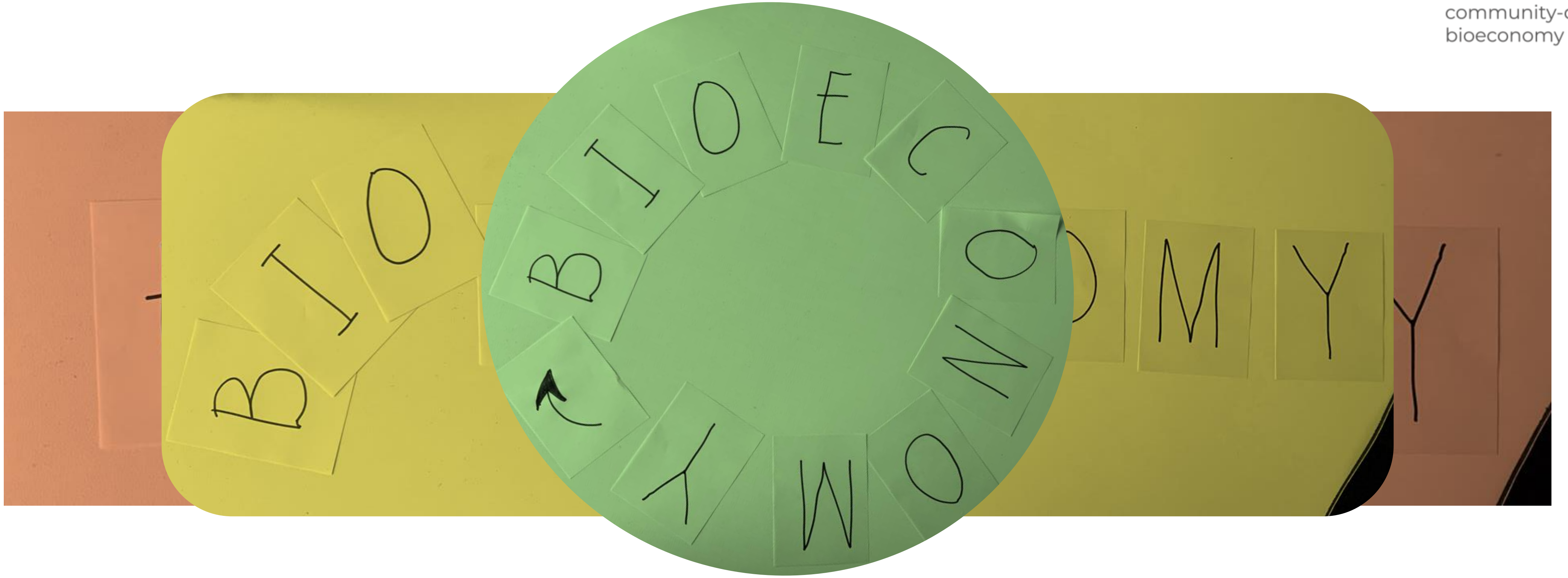


The bioeconomy carries great **potential** for achieving various policy goals related to sustainability.

However, **environmental sustainability is not an intrinsic characteristic of the bioeconomy**, but a potential it could achieve (Zeug et al. 2020).

For a region **to use** its **bioeconomy potential sustainably**, it should carefully **consider the limits** within which it can operate **to avoid ecosystem collapse** and to ensure that resources will remain available for future generations.


Hence, **the burden of the regional bioeconomy** – in terms of used, consumed or degraded resources and emitted pollutants – **should not** be as high as to **destabilize the ecological systems** upon which regions depend.

# LET´S NOW TALK ABOUT:
# WHAT THE CHALLENGE WAS,
# HOW WE APPROACHED IT AND WHY,
# AND WHAT WE LEARNED.

# THE CHALLENGE

- *Regions are the most appropriate territorial level to implement bioeconomy strategies.*
- *There is a need for improving our capacity to assess the environmental impacts of bioeconomy development.*
  - Yet, sustainability assessments were mainly being carried out for the global scale, and
  - such work could be out of reach for regions lacking capacities and who depend largely on project-based impulses.

# THE APPROACH: INTUITIVE GUIDANCE

1. Collecting open, accessible, and regularly updated regional data (i.e. NUTS3 or similar) on water, land, and biodiversity
2. Combining the data into a structured framework to draw broad indications of what the associated limits of a given region might be
3. Gathering previous knowledge on (+/-) impacts of selected economic activities and management practices on water, soil and biodiversity
4. Overlaying information on potential impacts over the “baseline” condition

**Keeping the computational complexity and associated effort low, documenting sources of uncertainty, and working iteratively to incorporate feedback from local experts**

# THE APPROACH: THRESHOLDS & RANKINGS

*Table 37 Proposed thresholds for the water section of the sustainability screening*

| Water body type | Status category | 2018 EU-level assessment results (proportion of water bodies achieving good status) | Proposed thresholds for the sustainability screening | | |
|---|---|---|---|---|---|
| | | | High concern | Moderate concern | Low concern |
| Surface water bodies | Ecological status | ~40% | 0-40% | 41-89% | 90-100% |
| | Chemical Status | 38% | 0-38% | 39-89% | 90-100% |
| Groundwater bodies | Chemical status | 74% | 0-74% | 75-89% | 90-100% |
| | Quantitative status | 89% | 0-89% | - | 90-100% |

Source: Anzaldúa et al., 2022.

*Table 38 Ordinal ranking convention for the water section of the sustainability screening*

| Ordinal ranking for water resources | | Chemical status | | |
|---|---|---|---|---|
| | | High concern | Moderate concern | Low concern |
| Ecological or Quantitative status | High concern | | | |
| | Moderate concern | | | |
| | Low concern | | | |

Source: Anzaldúa et al., 2022.

# THE APPROACH: RESULTS

| Resources screened | | Ordinal Baseline Rating | Cultivation Management Practices | |
|---|---|---|---|---|
| **Category** | **Sub-Category** | | **Potentially beneficial to the baseline status** | **Potentially detrimental to the baseline status** |
| **Water** | **Surface water bodies** | | **- Carefully managed irrigation**<br><br>**- Adequate fertilizer and chemical management.**<br><br>**- Adequate management practices for hemp, miscanthus and flax cultivation can improve the status of water resources** | **- Excessive fertilizer use** (cereal straw), especially phosphate fertilizers. |
| | **Groundwater bodies** | | | |
| **Land Resources** | **-** | | - Conservation tillage and mulching (with care taken to not increase pesticide use).<br><br>- Contouring<br><br>- Avoiding planting crops on high slopes<br><br>**- Adequate management practices for hemp, miscanthus and flax cultivation can improve the status of soil resources** | **- Excessive fertilizer use** (cereal straw), especially phosphate fertilizers. |
| **Biodiversity** | **Endangered Species** | **18** | **- Hemp, flax and miscanthus plants, because of their height, density, low input requirements and harvesting outside bird nesting periods, are refuges for biodiversity** | **- Excessive water abstraction** can be damaging for habitats of certain threatened populations.<br><br>**- Poor fertilizer management** can also damage aquatic and terrestrial habitats. |
| | **Critically Endangered Species** | **1** | | |

# SOME LESSONS

The pilots in BE-Rural and case studies in SCALE-UP were very useful to spot the approach's limitations and its potential when combined with local knowledge.

| | | |
|---|---|---|
| The screening provides a high-level, yet useful basis for engaging regional actors into a more focussed discussion of environmental sustainability and ecological limits | ➔ | The more multi-disciplinary and engaged the screening team is, the more valuable and impactful the results should generally be |
| Readily available and regularly updated data and/or indicators at NUTS3 level were difficult to access (e.g. for water resources) | ➔ | Alternatives were identified, but required more elaborate efforts and sometimes consultation with regional authorities |
| There is low data capacity on the potential burden of specific bioeconomic activities and management practices | ➔ | A literature review approach was a workable solution, but local knowledge is essential to generate more nuanced recommendations |
| Cases, priorities and conditions vary widely among regions. This can have important implications on how the screening unfolds | ➔ | From data capacity issues to interests and dynamics within the screening team, many factors can be influential and limit comparability |

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# THANK YOU FOR YOUR ATTENTION

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