

Assessing the transformative potential of social and technological innovations for biodiversity and equity:

Lessons learnt from the Horizon Europe project DAISY

Elsa Tsioumani (Transdisciplinary Institute for Environmental and Social Studies); Alex Franklin (Coventry University); Sian Green (Coventry University); Florian Rabitz (Kaunas University of Technology); Agnes Zolyomi and Tibor Janosi-Mozes (GreenFormation)

DAISY advances understanding of **how specific mixes of interventions including social-technological innovations can be used to induce transformation for biodiversity and equity**. It focuses on:

- socio-economic, political and behavioural processes that enable society's response to the biodiversity crisis with equity;
- tools and processes that can trigger the transformative change required; and
- intervention mixes that induce transformation in the personal, political and practical sphere in four focus areas: food and agriculture, energy, education, and urban and regional development.

A critical part of DAISY involved **horizon-scanning and critical assessment of the transformative potential of social and technological innovations**, with the aim

- identify, critically assess, and prioritise social/technological innovations with transformative potential; and
- explore deployment pathways and barriers in the context of applicable policy frameworks at the EU level.

We conducted the assessment in **three stages**, using a **mixed-methods design**, to combine structured analysis with expert judgement and contextual sensitivity:

- Using AI-based methods, we generated a long list of social and technological innovations with potentially transformative impact. We extracted such innovations from scientific literature and patent applications using topic modelling, an approach that identifies latent semantic structure across large bodies of text. This stage resulted in a long list of 987 items.
- Via systematic mapping and expert validation, we developed a shortlist of 49 innovations. We assessed them via in-house workshops, involving expert evaluation and use of DAISY's Transformative Diagnostic Tool. We then identified key trends, enabling factors, risks, and opportunities associated with each innovation.
- We identified 29 promising cases across social, digital, and technological innovation. They range from digital tools based on citizen science, to normative and landscape-based concepts, such as rights of nature and community conserved areas. Building on desk-based reviews, we developed a brief profile for each innovation, including an illustrative case study, barriers, and deployment pathways with reference to applicable policy frameworks.

Key findings

Horizon scans and other foresight techniques are indispensable yet imperfect methods for grappling with potential, probable or preferable futures.

Innovation alone is not sufficient for transformative change: it needs to be supported by enabling conditions that address structural, behavioural and cultural barriers with equity at the centre.

Technically sound or ecologically promising innovations are not necessarily transformative unless they also demonstrate relevance to systemic change and inclusivity.

Coherent policy frameworks combining regulatory, financial, and soft-policy instruments, while enabling behavioural change, community engagement, and knowledge transfer are necessary preconditions for transformation.

Commons-based socio-technical innovations and community-based natural resource management systems demonstrate transformative potential, along with tangible results for biodiversity and equity but their uptake in the EU is limited.

Further relevance

Achieving ambitious biodiversity goals requires approaches that address the underlying causes of biodiversity loss by breaking path dependencies defined by short-term economic interests and private profit over public good. Such dependencies are often translated into policies favouring cutting-edge digital and technological solutions as a panacea.

Maintaining a pluralistic and justice-oriented lens and context-specific approach is crucial for the design of intervention mixes for biodiversity and equity. Digital, technological and social innovations show transformative potential as part of broader systems of governance and community relationships, within specific socio-ecological contexts.



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Contact
Elsa Tsioumani at
elsa.tsioumani@gmail.com
Visit DAISY's website,
including deliverables at
mydaisy.eu or scan

