Ten challenges for successful inter- and transdisciplinary collaboration: Briefing Note collection of SSH CENTRE

December 2025

SSH CENTRE
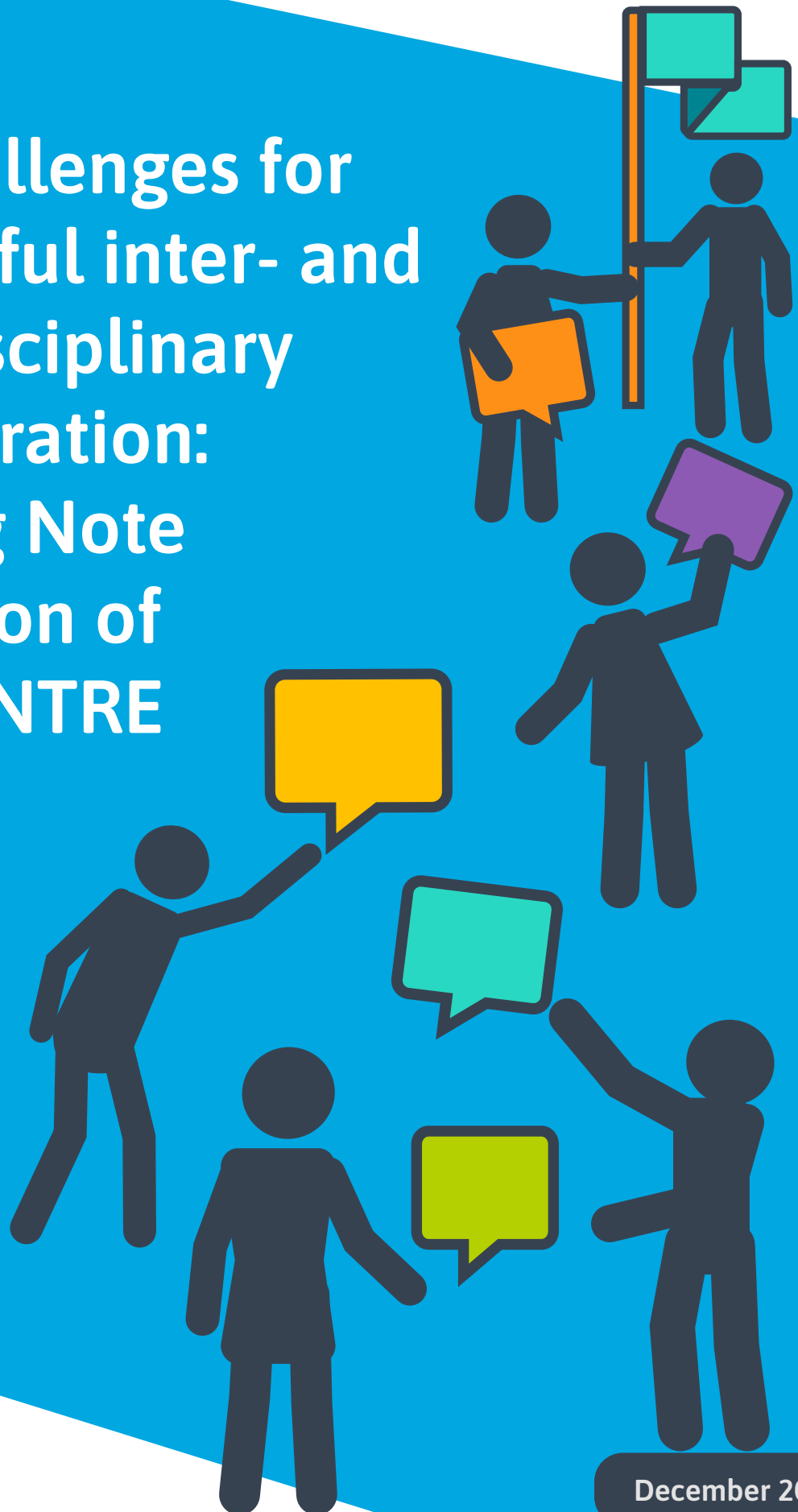
Social Sciences & Humanities for Climate, Energy aNd Transport Research Excellence

Introduction to the Briefing Note collection

Authors

Julia Leventon ✉ leventon.j@czechglobe.cz
Vojtěch Gerlich
Tereza Prášilová

The Global Change Research Institute of the Czech Academy of Sciences – CzechGlobe, Czechia

The Briefing Note collection

This collection of briefing notes aims to provide a comprehensive overview of challenges to Social Sciences and Humanities (SSH) visibility in inter- and transdisciplinary research for climate, energy, and mobility. The collection has been created based on experiences of researchers participating in activities of SSH CENTRE. SSH CENTRE is a Horizon Europe project that aimed to develop best practices for integrating SSH into Europe's climate, energy, and mobility transition research. Through a series of collaborative *epistemic experiments*, the project explored how researchers, policymakers, and citizens can work together more effectively across disciplinary and institutional boundaries.

This collection consists of ten Briefing Notes that identify challenges that need to be overcome for SSH to effectively contribute to EU climate, energy, and mobility transitions. This introduction first provides a justification for why these Notes are needed. We then outline the Formative Accompanying Research (FAR) methodology that informed the challenges explored by the ten Briefing Notes. Following, we present an overview of their structure and contents. We conclude with an explanation of how we envision the Briefing Notes informing ongoing inter- and transdisciplinary research that supports meaningful SSH engagement. Our recommendations are targeted to researchers, project collaborators, and research managers and funders. We therefore flag that actions should be taken by all those with an interest in such work, at multiple levels of the knowledge system, and not just by SSH researchers themselves.

The need to understand challenges faced for meaningful Social Sciences and Humanities collaboration

Social Sciences and Humanities (SSH) research must play a central role in inter- and transdisciplinary research that supports Europe's transition to carbon neutrality.[1] Global challenges such as climate change do not come pre-sorted by academic field but are interdisciplinary in nature. Moreover, the origin of climate change lies in human activities and resource consumption [3]. Addressing climate change requires, alongside understanding the material, ecological, and

---

1 Interdisciplinary research combines methods and theories from different academic fields to tackle complex problems collaboratively. Transdisciplinary research extends this collaboration to non-academic actors [1,2]. Both approaches are understood here as always including SSH.

technological drivers, sustained attention to social, cultural, economic, and political drivers, as well as profound sociocultural and behavioural transformations, all of which fall under the expertise of SSH [4–9]. Europe's climate, energy, and mobility transitions therefore depend on SSH becoming full partners with STEM (Scientific, Technical, Engineering, and Mathematical) disciplines and societal actors.

There is increasing recognition in research and policy that despite its importance, SSH knowledge is overlooked in climate, energy, and mobility research. SSH is historically underfunded compared with STEM research, though with European-funded research this gap is decreasing [10,11]. However, meaningful collaboration must go beyond purely providing financial support. It must include understanding, reflecting, and facilitating the contribution that can be made by SSH research. For example, in many research funding calls, there is a dominance of a technocentric paradigm [6,12,13]. Within such a paradigm, SSH research is employed to facilitate pre-determined, top-down policy initiatives, with the objective of ensuring 'acceptance' among citizens or 'service the needs' of STEM projects in diffusing technology [6,13]. This role does not allow SSH to realize its potential in understanding human systems, identifying drivers of change, synthesizing diverse knowledges, and offering ethically and societally grounded solutions [6,14].

When exploring the challenges that shape SSH visibility and uptake, it is necessary to consider multiple levels of the knowledge system – individual researchers, project conditions, and the wider funding/academic system. Research into scientific processes has placed significant emphasis on the roles of individual researchers, particularly SSH researchers. Here, knowledge points to the kinds of skills and capacities that researchers seeking to do inter- and transdisciplinary research need to foster [15,16]. However, using such skills is often difficult when SSH researchers are in the minority (or are indeed alone) in a STEM-dominated collaboration. Thus, the creation of meaningful SSH collaboration relies on SSH and STEM researchers alike having the skills to collaborate together, but also on them being supported by the broader project conditions that they are operating within. In turn, such project conditions are shaped by the funding, and broader academic systems that they are being implemented within [4,17–19]. Fostering SSH visibility therefore requires a more comprehensive understanding of the challenges to collaboration, and how these are shaped by the individual researchers, project conditions and broader funding and academic requirements.

Formative Accompanying Research methodology

The SSH CENTRE project included a Formative Accompanying Research (FAR), the output of which is this collection of briefing notes. The intention of FAR is to learn about, with, and for, a collaboration [20]. To this end, we participated in SSH CENTRE activities, while structuring a process of reflection, evaluation, and discussion within the team (inspired by [21]). The FAR therefore served as a process of ongoing evaluation and learning to understand what works – and what does not – in fostering SSH involvement in inter- and transdisciplinary collaboration. The formative evaluation focused on three epistemic experiments that were created and run by the SSH CENTRE:

1. *Interdisciplinary Collaborations for EU Policy Recommendations:* This experiment facilitated nearly 30 new interdisciplinary collaborations between SSH and STEM researchers, aimed at generating policy-relevant insights for the European Green Deal. Each collaboration produced a chapter in one of three edited volumes on climate, energy, and mobility policy [22–24].
2. *Transdisciplinary Knowledge Brokerage Initiative:* The Knowledge Brokerage Initiative connected thirty Early Career Researchers (ECRs) from SSH backgrounds with six European municipal hubs working on sustainability transitions. After receiving online training in research-policy brokerage, the ECRs collaborated with local policymakers to co-produce actionable insights supporting decarbonisation goals [25–32].
3. *Debating Europe Citizens' Engagement:* This experiment brought together European citizens to discuss energy and climate issues. Conducted by Debating Europe, it involved focus groups on EU Missions such as Climate-Neutral and Smart Cities, Climate Adaptation, Healthy Soils, and Protecting Ocean and Waters [33].

The FAR process was designed to not only evaluate results, but also to feed insights back into the project during its implementation. The evaluation combined reflexive workshops held at four SSH CENTRE consortium meetings, as well as participant observation at a city-hub workshop, a total

of 44 semi-structured interviews with participants in the epistemic experiments, and 11 debrief interviews with SSH CENTRE partners. Full details of samples, process and interview and workshop protocols are provided on the open science platform Zenodo. Ethics approval was obtained from the Scientific and Ethics Advisory Board of the Global Change Research Institute of the Czech Academy of Sciences, CzechGlobe.

Data analysis of interview transcripts was a bottom-up and iterative process. Emerging issues were identified from interview transcripts and turned into general discussion points for project level reflection (via the aforementioned consortium reflexive workshops), which then fed back into the way that interviews were understood and analysed. The factors that emerged as shaping SSH visibility in the epistemic interventions were grouped by the FAR leads into the 10 challenges that are presented in the Briefing Notes.

Introducing the Briefing Notes

Organisation and structure

Each Briefing Note focuses on a domain where the challenges for meaningful SSH engagement become visible – some arise from structural features of the research and funding systems, others from the internal logics of inter- and transdisciplinary collaboration. The Notes are grouped into two clusters: structural challenges and practice-embedded challenges.

Structural challenges (BNs 1-5) originate in the wider organisation of research – STEM-based standards (BN1), time demands (BN2), organisational barriers (BN3), evaluation metrics (BN4), and funding calls design (BN5). The first Note (BN1) addresses the challenges rooted in lingering misunderstandings of SSH and in disciplinary hierarchies that favour STEM-based standards of evidence and impact. The second Note (BN2) reflects that the very nature of inter- and transdisciplinary research means that involving more disciplines or stakeholders increases the complexity of collaboration, which creates time demands. In the third Note (BN3), the ways in which organisational structures, especially those related to funding and career assessment within research institutions, hinder inter- and transdisciplinary research are explored. The challenge of assessing the quality and impact of research using current metrics is investigated in the fourth Briefing Note (BN4). The fifth Note (BN5) shows how funders, call designers, and reviewers act as gatekeepers, determining which knowledge is considered valuable and which collaborations and outputs receive support.

The practice-embedded challenges (BNs 6-10) stem from the inner logic of inter- and transdisciplinary collaboration – navigating terminology (BN6), research coordination and leadership (BN7), spaces for communication (BN8), reflexivity and positionality (BN9), and stakeholder engagement (BN10). These are intrinsic to collaborative research: if not addressed, they can become systemic barriers. Briefing Note six (BN6) focuses on the challenge of navigating terminology, concepts, and methods in inter- and transdisciplinary research; managing these differences is not trivial, as researchers construct and validate knowledge in relatively narrow problem spaces. Coordinating and leading inter- and transdisciplinary research teams, as Note seven (BN7) describes, requires active integration, trust building, and mediation. Furthermore, spaces for effective communication across disciplinary and stakeholder boundaries are fundamental for successful inter- and transdisciplinary research (BN8). Note nine (BN9), focusing on positionality and reflexivity, shows how addressing complex societal problems through integration of diverse forms of knowledge requires valuing them and identifying power imbalances. The final Note (BN10) emphasises that engaging stakeholders and adapting communication for diverse audiences are central to the effectiveness and impact of inter- and transdisciplinary research, particularly for addressing complex societal challenges such as climate change.

All Briefing Notes follow a common structure. After introducing the topic and a headline message, they provide broad context on how the given challenge has been framed and addressed in existing research literature. Following, they outline the way the challenge was manifested within the epistemic experiments of the SSH CENTRE. These reflect the experiences of the participants in these interventions, and we use quotations for illustration purposes. Quoted interviewees are anonymised using coded identifiers indicating gender (M/F) and career stage (ECR = Early Career Researcher,

within six years of PhD; EXP = Expert Researcher, more than six years after PhD), followed by a random number for identification only (e.g., MECR1, FEXP2). Each Briefing Note concludes by providing a set of recommendations that combine the SSH CENTRE data with literature insights and offer practical actions that can be implemented by individual researchers, at the project level, or by the broader academic community (including funders).

How to use the Briefing Notes

We intend that each Briefing Note can act as a standalone document that is useful for anyone working with SSH in inter- and transdisciplinary collaborations. If a researcher or team is experiencing a particular challenge, then an individual Briefing Note should help to unpack that challenge, and provide tangible actions for navigating it. The references included provide a starting point for further, in-depth exploration. Throughout the Briefing Notes, we are keen to stress that such actions do not come solely from the SSH researchers themselves. By including the different levels of action recommendations (individual researcher, project, academic and funding systems), we ensure that there are clear actions for all those who seek to create meaningful collaborations that include SSH knowledge.

However, we also hope that the complete collection will serve as a constructive handbook for anyone seeking to improve the inclusion, visibility and uptake of SSH knowledge in climate, energy and mobility research. The challenges, lessons and actions presented should shape the ongoing design and implementation of inter- and transdisciplinary research in this field. In cross-referencing between the Briefing Notes, and indeed in this overarching front matter, we demonstrate that all the challenges are interlinked. They will all require attention at some point in inter- and transdisciplinary collaborations. This complete collection should therefore be useful to SSH researchers of all career stages in guiding their own practice and finding space within collaborative research; STEM researchers of all career stages in cultivating the capacities to collaborate with SSH researchers; decision-makers in research institutes in creating supportive environments for inter- and transdisciplinary collaboration; and research funders in providing the structures and framing that facilitates such research. Serving as a formative evaluation, this Briefing Note collection is also useful to members of the SSH CENTRE team in their future endeavours to facilitate such collaborations.

The Briefing Notes

Each briefing note has a title that reflects the challenge it addresses, as follows:

BN1 – Balancing SSH and STEM contributions in inter- and transdisciplinary collaboration

BN2 – Time demands in inter- and transdisciplinary collaboration

BN3 – Organisational structures as challenges to inter- and transdisciplinary collaboration

BN4 – Evaluation metrics in inter- and transdisciplinary collaboration

BN5 – Disciplinary design and evaluation standards in inter- and transdisciplinary collaboration

BN6 – Navigating terminology, concepts, and methods in inter- and transdisciplinary collaboration

BN7 – Coordination and leadership in inter- and transdisciplinary collaboration

BN8 – Spaces for communication in inter- and transdisciplinary collaboration

BN9 – Positionality and reflexivity in inter- and transdisciplinary collaboration

BN10 – Engaging stakeholders and audiences in inter- and transdisciplinary collaboration

Acknowledgements

References

1. Sorman AH. SSH-STEM networks: Bridging divides between social and technical. Cambridge: SSH CENTRE; 2023.

2. d'Andrea L, Feudo F. Responsible Research & Innovation: The developing role of interdisciplinarity. Cambridge: SSH CENTRE; 2023.

3. Goldberg MH, Gustafson A, van der Linden S. Leveraging Social Science to Generate Lasting Engagement with Climate Change Solutions. One Earth. 2020 Sept 18;3(3):314–24.

4. Lyall C, Bruce A, Marsden W, Meagher L. The role of funding agencies in creating interdisciplinary knowledge. Sci Public Policy. 2013 Feb 1;40(1):62–71.

5. Tobi H, Kampen JK. Research design: the methodology for interdisciplinary research framework. Qual Quant. 2018 May 1;52(3):1209–25.

6. Sonetti G, Arrobbio O, Lombardi P, Lami IM, Monaci S. '"Only Social Scientists Laughed"': Reflections on Social Sciences and Humanities Integration in European Energy Projects. Energy Res Soc Sci. 2020 Mar;61:101342.

7. Cole M. The case for the "climate humanities": toward a transdisciplinary, equity-focused paradigm shift within climate scholarship. Sustain Sci. 2023 Nov;18(6):2795–801.

8. Välikangas A. The Limited Role of Social Sciences and Humanities in Interdisciplinary Funding: What are Its Effects? Soc Epistemol. 2024 Mar 3;38(2):152–72.

9. Elixhauser S, Boni Z, Gregorič Bon N, Kanjir U, Meyer A, Muttenzer F, et al. Interdisciplinary, but how? Anthropological Perspectives from Collaborative Research on Climate and Environmental Change. Environ Sci Policy. 2024;151:103586-.

10. Overland I, Sovacool BK. The misallocation of climate research funding. Energy Res Soc Sci. 2020 Apr 1;62:101349.

11. Directorate-General for Research and Innovation (European Commission). Integration of social sciences and humanities in Horizon Europe: first monitoring report on SSH flagged projects funded under Pillar II of Horizon Europe : 2021 2023 [Internet]. Publications Office of the European Union; 2025 [cited 2025 Nov 12]. Available from: https://data.europa.eu/doi/10.2777/6733555

12. Dudman K, de Wit S. An IPCC that listens: introducing reciprocity to climate change communication. Clim Change. 2021 Sept 7;168(1):2.

13. Foulds C, Royston S, Berker T, Nakopoulou E, Bharucha ZP, Robison R, et al. An agenda for future Social Sciences and Humanities research on energy efficiency: 100 priority research questions. Humanit Soc Sci Commun. 2022 June 30;9(1):1–18.

14. Hamborg S, Meya JN, Eisenack K, Raabe T. Rethinking resilience: A cross-epistemic resilience framework for interdisciplinary energy research. Energy Res Soc Sci. 2020 Jan;59:101285.

15. Caniglia G, Freeth R, Luederitz C, Leventon J, West SP, John B, et al. Practical wisdom and virtue ethics for knowledge co-production in sustainability science. Nat Sustain. 2023 May;6(5):493–501.

16. Augsburg T. Becoming Transdisciplinary: The Emergence of the Transdisciplinary Individual. World Futur. 2014 May 19;70(3–4):233–47.

17. Harris F, Lyon F, Sioen GB, Ebi KL. Working with the tensions of transdisciplinary research: a review and agenda for the future of knowledge co-production in the Anthropocene. Glob Sustain. 2024;7:e13.

18. Salmon RA, Priestley RK, Goven J. The reflexive scientist: an approach to transforming public engagement. J Environ Stud Sci. 2017;7(1):53–68.

19. Salmela M, Vienni-Baptista B, Cheas K. Towards the Recognition of Interdisciplinary and Transdisciplinary Researchers. Minerva [Internet]. 2025 Feb 28 [cited 2025 May 14]; Available from: https://doi.org/10.1007/s11024-025-09578-y

20. Freeth R, Vilsmaier U. Researching Collaborative Interdisciplinary Teams: Practices and Principles for Navigating Researcher Positionality. Sci Technol Stud. 2019;33(3):57–72.

21. Freeth R, Caniglia G. Learning to collaborate while collaborating: advancing interdisciplinary sustainability research. Sustain Sci. 2020 Jan 1;15(1):247–61.

22. Keserü I, Basu S, Ryghaug M, Skjølsvold TM, editors. Strengthening European Mobility Policy: Governance Recommendations from Innovative Interdisciplinary Collaborations [Internet]. Cham: Springer Nature Switzerland; 2024 [cited 2025 Jan 10]. Available from: https://link.springer.com/10.1007/978-3-031-67936-0

23. Galende Sánchez E, Sorman AH, Cabello V, Heidenreich S, Klöckner CA, editors. Strengthening European Climate Policy: Governance Recommendations from Innovative Interdisciplinary Collaborations [Internet]. Cham: Springer Nature Switzerland; 2024 [cited 2025 Jan 10]. Available from: https://link.springer.com/10.1007/978-3-031-72055-0

24. Crowther A, Foulds C, Robison R, Gladkykh G, editors. Strengthening European Energy Policy: Governance Recommendations From Innovative Interdisciplinary Collaborations [Internet]. Cham: Springer Nature Switzerland; 2024 [cited 2025 Jan 10]. Available from: https://link.springer.com/10.1007/978-3-031-66481-6

25. Heuninckx S, Khalid R, Kola-Bezka M, Quast P, Wood N. Inclusivity Framework for Energy Communities [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi.org/10.5281/zenodo.14763151

26. Alonso Raposo M, Carvalho J, János Lőrincz M, Lawlor E, Rossetti R. Towards Sustainable Mobility: A Roadmap for establishing a Community of Practice in Porto [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi.org/10.5281/zenodo.14763554

27. Cevheribucak G, Etienne E, Moreno C, Robiou du Pont Y, Tiwari A. A user guide to engage citizens in the Valencia Climate Alliance [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi.org/10.5281/zenodo.14763376

28. Staňková N, Novikau A, Zaphiropoulo J, Robison R, Varjú V, Caiati G. Insights from Social Sciences and Humanities: Infosheets and live challenges for Rijeka's District Heating (Croatia) [Internet]. Cambridge: Zenodo; 2024. Available from: https://doi.org/10.5281/zenodo.14763630

29. Aubois-Liogier V, Baturina D, Marcroft TP, Niessen L. Transversalité pour la circularité et la sobriété à Grenoble [Internet]. Cambridge: SSH CENTRE; 2027. Available from: https://doi.org/10.5281/zenodo.14763521

30. Aubois-Liogier V, Baturina D, Marcroft TP, Niessen L. Transversality for circularity and sufficiency in Grenoble [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi.org/10.5281/zenodo.14763427

31. Capaccioli A, Djukic M, Hook H, Martinez L, Tuteja K. Building capacities to implement inclusive digital mobility: A Knowledge Brokerage Initiative in Čačak [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi. org/10.5281/zenodo.14763576

32. Heuninckx S, Khalid R, Kola-Bezka M, Quast P, Wood N. Towards Inclusive Energy Communities in Arnhem [Internet]. Cambridge: SSH CENTRE; 2024. Available from: https://doi. org/10.5281/zenodo.14763151

33. Malaize J, Rohse M, Foulds C, Loewen B, Crowther A. Citizen-led recommendations for the Horizon Europe Missions on sustainability [Internet]. Zenodo; 2025. Available from: https://doi. org/10.5281/zenodo.14747487