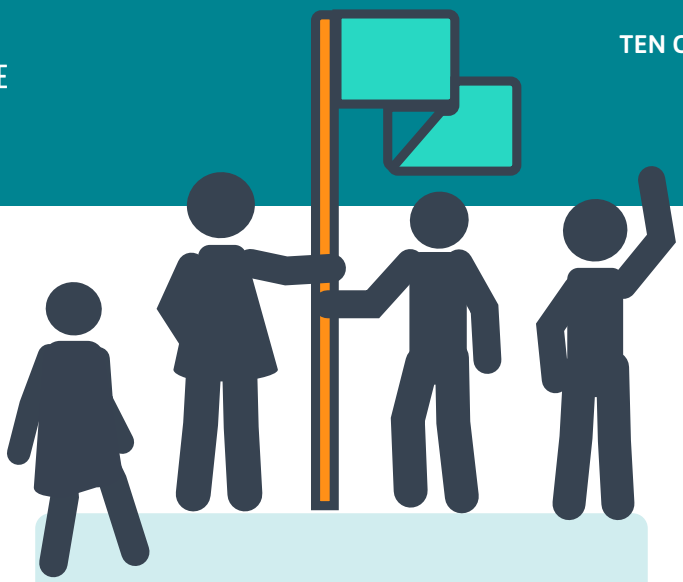

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Coordination and leadership in inter- and transdisciplinary collaboration

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Fostering clear leadership creates spaces for constructive integration across disciplines and knowledges.

Introduction

One of the major challenges of managing inter- and transdisciplinary teams is how to handle their complexity. Such teams have heterogenous composition; they consist of scientists from many different disciplines, and in the case of transdisciplinary research include stakeholders from practice. Such diversity within teams enables the investigation of complex climate, energy and mobility issues [1,2]. However, while inter- and transdisciplinary teams are considered to be better equipped for addressing highly complex problems [3], the heterogeneous composition of research teams and the complexity of research problems can make it difficult to coordinate and manage them.

This Briefing Note addresses coordination and leadership in inter- and transdisciplinary research. The inter- and transdisciplinary literature emphasizes that managing such teams require active integration, trust building, and mediation to transform heterogeneity into cohesive results. The findings of the SSH CENTRE confirm this: teams functioned well when one or multiple researchers took on the role of a team

What did the SSH CENTRE project do?

SSH CENTRE (Social Sciences and Humanities for Climate, Energy aNd Transport Research Excellence) is a Horizon Europe project that focused on generating best practices for incorporating both Social Sciences and Humanities (SSH) and inter- and transdisciplinary research into the European Union's climate, energy, and mobility transition policy. The SSH CENTRE project deliberately created spaces for *epistemic experimentation* – i.e. structured collaborations that bridge different epistemic (knowledge) cultures to co-produce policy-relevant knowledge:

Interdisciplinary Collaborations for EU Policy Recommendations

The SSH CENTRE project facilitated nearly 30 novel collaborations between the SSH and STEM (Science, Technology, Engineering and Mathematics) disciplines, for strengthening European climate, energy, and mobility policy. These resulted in three edited books, whereby each Interdisciplinary Collaboration produced a chapter. For more see SSH CENTRE Interdisciplinary EU Policy Book Collection.

Transdisciplinary Knowledge Brokerage Initiative

The Knowledge Brokerage Initiative for sustainability transitions gathered 30 early- and mid-career SSH researchers working on themes of climate, energy, and mobility. These researchers actively engaged in accelerating the transition process towards a carbon-free society by working with six European cities on sustainability issues and brokering SSH knowledge. The researchers organised workshops and produced a range of reports that provided knowledge to support the cities' transitions. For more see Knowledge Brokerage Reports.

This Briefing Note is one of 10 that present the findings and recommendations from the evaluation of these epistemic experiments. For more, see the Introduction to the Briefing Note collection and the Formative Accompanying Research methodology.

leader – whether formally appointed or emerging organically – and assumed responsibility for coordinating operational tasks, mediating between disciplines, and supported mutual understanding based on previous inter- and transdisciplinary experiences. The final part of this Briefing Note (BN) includes best practice solutions at individual, project, and systemic levels, as identified by literature and the Interdisciplinary Collaborations and Knowledge Brokerage teams.

Problem description and literature insights

A review of the literature on inter- and transdisciplinary collaborations reveals that **an inter- or transdisciplinary project is unlikely to progress in the desired direction without proper oversight and guidance from a leader** [4]. Compared to monodisciplinary teams, such collaborations face a range of additional challenges – differences in how problems and solutions are framed and envisaged [9], misconceptions about how the other disciplines work [5], and greater risks of imbalances in power distribution within the team [8]. Laissez-faire leadership, which relies on organic integration of the different parts of inter- and transdisciplinary work, has been demonstrated to be ineffective, as the different parts tend to drift further apart, making integration later on even more difficult [3].

Integration is, therefore, an important task in the coordination of inter- and transdisciplinary teams. Integration can be defined as the combination of knowledge, methods, and perspectives to "create a new whole which is greater than the sum of its parts" [5 p40]. Effective integration requires outlining the project's purpose, setting strategic goals, defining success criteria, mapping out key phases, identifying stakeholders, and planning their engagement at the outset of a project [6]. At the same time, team management should avoid over-defining project outcomes, as successful projects require flexibility and the capacity to evolve over time [3].

An important prerequisite for such integration, and inter- and transdisciplinary collaboration in general, is **building trust** among the research team. When team members do not share a common language, have limited casual interactions, or are not in physical proximity, establishing trust can be challenging [5]. Thus, it is recommended to dedicate time early in the project to structured teambuilding activities. These efforts help foster open communication and align team members around shared understandings of the research goals [7].

Once the project gets underway, **the role of the leader or coordinator is to facilitate contributions from each area of expertise and to encourage interdisciplinary synthesis** [5,8]. Due to their complexity and heterogeneity, inter- and transdisciplinary teams have a high potential for disagreement and conflict. In such situations, the role of the leader is to mediate and balance the interests of the parties involved. It is important to allow space for conflict to surface, as suppressing it may lead to more serious issues later. At the same time, effective inter- and transdisciplinary collaboration requires a tolerance for ambiguity and an understanding that consensus may not always be reached within the team [4]. Although researchers tend to avoid interference in the domains of the other individual disciplines, in inter- and transdisciplinary research it can be beneficial, and an experienced leader can create "controlled confrontation" to harness the advantages offered by team heterogeneity [3].

Strategic planning, active integration, trust-building, facilitation of collaboration, conflict mediation, tolerance for ambiguity, and overall ability to manage complexity and diversity are all traits of good inter- and transdisciplinary team leadership. Of course, what the specific role that fulfils these traits looks like can vary from one research team to another. The literature emphasizes that leaders, coordinators, or research community managers (RCMs) [6] should have a flexible and not overly strict style, fostering freedom of research and dynamic development [9]. An inter- and transdisciplinary leader needs to be supra-disciplinary – valuing the perspectives of other disciplines and recognizing the limits of their own discipline [5]. Research indicates that the most effective leaders tend to be those who possess an inter- and transdisciplinary background or at least have previous experience, and who facilitate spaces for learning from others [4]. Indeed, opportunities for peer learning and clarification of disciplinary perspectives must be actively created within the project, as there will always be a need to explain terms and concepts. Taking the time to discuss and develop a shared understanding of key ideas is fundamental to building a strong and productive research partnership [10] (see BN2 on Time demands).

Manifestation in the SSH CENTRE

The evaluation of the SSH CENTRE experiments shows how team leaders emerged without authoritative or rigidly hierarchical processes. It was common for team leadership in both Interdisciplinary Collaborations and Knowledge Brokerage Initiative (see the first page) to emerge organically, with scientists naturally allocating roles. This worked well in most cases – it was one of the things that several teams independently highlighted as a positive and smooth process.

The organic division of team roles allowed sufficient flexibility and space for researchers from different disciplines to collaborate. In the Interdisciplinary Collaborations, the leadership role was often naturally associated with a lead author, though not necessarily one person each time. As this was a collaboration between SSH and STEM disciplines, there were sometimes two leads, one for each "group". In Knowledge Brokerage teams, researchers differentiated roles according to skills and seniority. However, in one case, the team did not organically develop a leader, which caused coordination issues. This role was filled by a partner from the SSH CENTRE consortium and eventually, one researcher took the lead role.

The teams noted that leading inter- and transdisciplinary teams requires a combination of many different skills, which means the role may not always be embodied in just one person. A very important quality was that of "interdisciplinary leadership" – someone enabling contributions and facilitating integration between disciplines.

> *It's a kind of learning how (…) to become two-headed, (…) which means understanding the technical side and grasping the social challenges and trying to balance between both. (…) In our case, what was very specific is that [MEXP1, a*

> *STEM researcher] got an initial appetite for social science. And personally, I [FEXP2, an SSH researcher] got an initial appetite for technical stuff. So yes, this helped us to get together and yet to co-lead this project and to advance. So, this is something very important. If you don't have someone that may have the appetite of others' knowledge and others' discipline etc., it might not be very easy to conduct this type of project.* (FEXP2, Interdisciplinary Collaborations)

Two scientists from different disciplines took on the role of interdisciplinary leaders in this team. In other cases, this role was filled by a single researcher – often someone with an interdisciplinary background or previous experience in this type of research. Such a background was highly valued across research teams:

> *I had a really good group. We had a couple of people who had already had a little bit of experience in these types of things so they could be leaders in that way, which was very helpful.* (FECR6, Transdisciplinary Knowledge Brokerage Initiative)

More operational matters such as task allocation, note-taking, creating clear internal deadlines, and the organization, frequency, and regularity of meetings were also regarded as an important part of the research work organization. As noted, this did not have to be held by a single researcher, nor was it necessarily associated with an overall leadership role.

In the Knowledge Brokerage Initiative, researchers were accompanied by mentors, who were members of the SSH CENTRE consortium and supported leadership and coordination. The mentors provided valuable support throughout the program. They were not necessarily subject matter experts, but had experience with the relevant methods, theory, and background literature, which was helpful. In several cases, some researchers dropped out of the Knowledge Brokerage collaboration (for reasons ranging from personal issues to visa problems), which required the intervention of a mentor. The mentors checked in regularly, made time for feedback, and helped the teams overcome challenges, such as if communication with the cities stalled. They also acted as mediators between the team members, while letting the teams to take the lead, and provided them with guidance when needed, for example, by structuring meetings. The mentoring was well-received by participants, who valued the offered support, often lacking in other inter- and transdisciplinary projects.

> *[The mentor] was never like [in a] pyramid position. It was more coordination and mediation because also we need some mediation between us. And [the mentor] was really good in this because as a person that was 'external' in the practical activity that we were asked to do, he could sometimes mediate among us.* (FECR5, Transdisciplinary Knowledge Brokerage Initiative)

Team leaders and mentors had in common that they were not directive in their approach and had previous inter- and transdisciplinary experience, which they put to good use.

Despite the overall success of coordination and team leadership within the SSH CENTRE experiments there were challenges if leadership was contested. Members of some teams had differing work styles, and specifically some members pre-emptively took the lead. This sometimes excluded others from decisions or led to duplicated/dissected work.

Recommendations at individual, project, and systemic levels

Across literature and the SSH CENTRE experience, it is clear that fostering coordination and leadership is about creating spaces in projects for discussion. Some of this leadership is practical, in terms of keeping good meetings, notes and deadlines. Other aspects of leadership are more about steering the project, offering insight, wisdom and finding ways to navigate interpersonal dynamics.

Recommendations at the individual/researcher level

- Take initiative in sharing your disciplinary perspective: prepare a short "disciplinary primer", e.g., select key texts from your discipline or give an introductory presentation on your fields.
- Practice reflexivity on conflicts and disagreements: reflect on where tensions come from (disciplinary assumptions, communication styles, personal expectations) and share this reflection with the team [4].

Recommendations at the project level

- Maintain good coordination procedures: establish internal deadlines, clear task division, and circulate notes after each meeting.
- Use mentors as neutral mediators to structure regular meetings and to facilitate space for confrontation where disagreements can surface productively [3,6].
- Distribute leadership roles across scholars from multiple disciplines, preventing single-background bias, or ensure the leader has an inter- or transdisciplinary background.
- Ensure coordination activities are properly resourced: allocate budgeted time and funds for integration activities such as in-person meetings, note-taking, and mentor sessions [6].
- Dedicate time early in the project to structured team-building activities [7].

Recommendations at the systemic/broader academia and funding level

- Encourage diverse leadership: design calls to support PIs (Principal Investigators) with explicit inter- and transdisciplinary experience, co-PIs (SSH+STEM) or leadership committees, avoiding single-discipline dominance.
- Recognise integration activities: treat workshops, boundary objects, and facilitation roles as legitimate outputs in evaluation.
- Ensure funding covers time, travel, and administrative work needed for coordination; make these eligible costs [6].

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References

1. Tkachenko O, Ardichvili A. Critical factors impacting interdisciplinary university research teams of small size: A multiple-case study. Team Perform Manag. 2020;26(1/2):53–69.
2. Bammer G. Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems. 1st ed. Canberra: ANU E Press; 2013.
3. Hollaender K, Loibl MC, Wilts A. Management: Management of Transdisciplinary Research. In: Handbook of transdisciplinary research. Springer; 2008. p. 385–97.
4. Lyall C, Bruce A, Tait J, Meagher L. Interdisciplinary Research Journeys : Practical Strategies for Capturing Creativity. In: Lyall C, Bruce A, Tait J, Meagher L, editors. Interdisciplinary Research Journeys : Practical Strategies for Capturing Creativity [Internet]. 1st ed. London: Bloomsbury Academic; 2011 [cited 2025 May 6]. Available from: https://www.bloomsburycollections.com/monograph?docid=b-9781849661782
5. Vladova G, Haase J, Friesike S. Why, with whom, and how to conduct interdisciplinary research? A review from a researcher's perspective. Sci Public Policy. 2025;52(2):165–80.
6. Sharan M, Karoune E, Hellon V, van Praag CG, Kayumbi G, Bennett A, et al. Professionalising Community Management Roles in Interdisciplinary Research Projects. 2024 [cited 2025 May 6]; Available from: https://arxiv.org/abs/2409.00108
7. Di Giulio A. Implementing Interdisciplinarity: Connecting the Mindset of a Worrier, a Dreamer, and a Bookkeeper. In: Practicing Interdisciplinarity [Internet]. Germany: Walter de Gruyter GmbH; 2024 [cited 2025 May 6]. p. 1–6. Available from: https://www.degruyter.com/document/doi/10.1515/9783111339849-001/pdf
8. Morss RE, Lazrus H, Demuth JL. The "Inter" Within Interdisciplinary Research: Strategies for Building Integration Across Fields. Risk Anal. 2021;41(7):1152–61.
9. Gray B. Enhancing Transdisciplinary Research Through Collaborative Leadership. Am J Prev Med. 2008;35(2):S124–32.
10. Stephenson J. What does energy mean? An inter-disciplinary conversation. Energy Res Soc Sci. 2017 Apr;26:103–6.

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