

# ACTION GUIDE



Strategies to strengthen  
inter- and transdisciplinarity in  
your research organization

Inter- and transdisciplinarity (ITD) are key research approaches pursued in academia to contribute to socially relevant solutions, by crossing not only disciplinary boundaries (interdisciplinarity), but also boundaries between science, policy and practice (transdisciplinarity). *Integration* across such boundaries is critical to the success of ITD approaches, a concept here encompassing both the process of combining diverse perspectives as well as the *output* that emerges from such a *process*. Although the importance of integration has increasingly been acknowledged and more and more ITD projects are funded, it remains a challenge to effectively put it into research practice. This is due, among other factors, to the discrepancy between such intent and the actual incentive structures within research organizations today, which tend to favor disciplinary approaches. As a result, academia not only runs the risk of (a) failing to deliver on its promise to contribute to socially relevant solutions, but also (b) forcing researchers with a strong ITD profile out of academia who encounter few to no career opportunities within the current structures over the long-term.

In order to strengthen ITD in research organizations, this action guide synthesizes insights from the literature, reflection workshops and interviews. It lays out a portfolio of actions in four key areas that reach their full potential when adopted in concert.

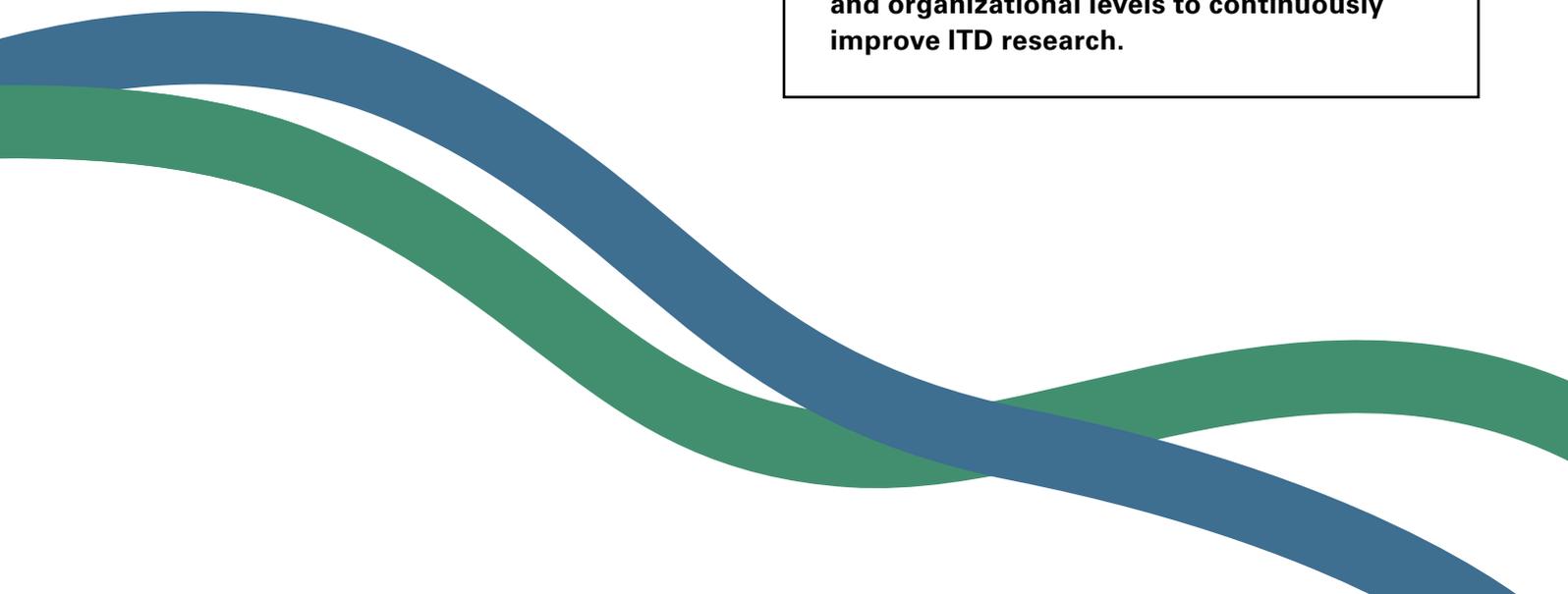
They include:

- 1) providing organizational structures
- 2) diversifying hiring and promotion criteria
- 3) ensuring funding
- 4) arranging learning and mentoring.

This action guide aims to stimulate discussions and provide orientation for initiating change to create a culture for ITD research in your research organization. It will further help ITD researchers to optimally contribute to your organization's ambitions to achieve impact in science, policy and practice.

## Key messages

- **Inter- and transdisciplinarity (ITD) approaches increase the capacity of research organizations to perform societally relevant and actionable research.**
- **Organizational structures should provide permanent and adequate spaces to foster and incentivize ITD research.**
- **Hiring and promotion criteria should recognize a diversity of profiles, ranging from disciplinary to ITD research.**
- **Internal funding should support ITD research, positions and communities of practice on a long-term basis to build up expertise in ITD research.**
- **Learning and mentoring should take place within and between individual, project and organizational levels to continuously improve ITD research.**



**Problem framing:** Organizational structures, customarily geared toward disciplinary research, can hamper inter- and transdisciplinary (ITD) research. ITD researchers are often unsure about their position and status within their organization, lacking a place of their own that is recognized by their colleagues and superiors. Researchers' work is often strongly driven by a narrow definition of 'excellence' that encourages competition over collaboration.

## 1. Provide time and space for ITD exchange

Providing adequate physical space and sufficient opportunities for both spontaneous and planned face-to-face exchange helps promote ITD research and enhances integration across boundaries. Such provisions include offering appropriate offices, conference rooms and informal spaces to meet and work together. In the same vein, encourage setting up other social spaces beyond your organization to foster new types of exchange among researchers and actors from policy and practice. These spaces should allow for joint experimentation with integrative methods and tools. Nurture communities of practice within your organization to enable peer-to-peer exchange among ITD researchers, to strengthen ITD capacity building (see action 10) and to enable ITD organizational learning beyond the boundaries of individual ITD projects and single organizations (see action 12). Create a variety of such spaces, including knowledge platforms, expert panels or cross-organizational ITD programs that can vary in personnel, duration and financing, to enhance integration.

### Practical example

The VSA platforms (Switzerland) are operated jointly by a research institute, a wastewater and water protection experts association and the federal office of the environment.

## 2. Establish an inter- and transdisciplinarity unit

Establishing an institute or center specifically dedicated to ITD ensures a central and visible place for ITD research in your organization. This unit collaborates with different disciplinary researchers and actors from policy and practice (see action 1). Through its continuity, it supports organizational learning over time (see action 12). Make sure that this ITD unit has a fixed organizational home, with financial and technological resources, sufficient personnel and a proper physical space. Such a unit may assume both supportive (i.e., coaching and advising others on ITD) and creative science roles (i.e., exploring, doing and studying ITD). The exact ratio between these two different roles may differ from organization to organization depending on the institution's purpose and the extent to which these roles are already performed by other units. Integrate the unit prominently within your organization's main building instead of isolating it spatially. This assigns legitimacy to this unit and makes it easier for its members to get into contact with their colleagues on a regular basis (i.e. hallway/coffee machine talks).

### Practical example

The TdLab of ETH Zurich (Switzerland) aims to train and support students and other actors in ITD research, as well as to conduct research at the interface between science and society.

## 3. Promote collaboration over competition

Promoting collaboration over competition additionally supports your organization in pursuing sound and high-quality disciplinary and ITD research processes and practices. As the dominant rhetoric of 'excellence' in academia incentivizes competition instead of collaboration, it is advisable to reformulate internal rhetoric towards 'soundness'. This suggestively signals a shift from focusing on evaluation of outputs to an evaluation of processes and practices. Demonstrate through various means (e.g. your organizational strategies, annual events as well as formal and informal discussions) that collaboration is valued by your organization and key for achieving impact in science, policy and practice. Such measures entail welcoming diverse profiles of interest, capacity and experience in your organization, ranging from disciplinary to ITD research (see action 4). In this manner, your organization can enhance legitimacy for both disciplinary and ITD research and protect your researchers from pressures stemming from narrow definitions of 'excellence'.

### Practical example

Utrecht University (Netherlands) redefined their recognition and rewards strategy to include teamwork, research, impact, professional performance, leadership and education.

**Problem framing:** Traditional academic hiring and promotion criteria (e.g., number of papers and grants, impact factors, h-index, etc.) fail to recognize ITD processes and outputs. This acts as a disincentive to tenured and tenure-track researchers from engaging in ITD research since it will not help them gain further advancement. Non-tenure track researchers are often discouraged from engaging in ITD research as they are pressured to produce work that will be recognized by the search committee of their next research organization.

## 4. Adapt hiring and promotion requirements

Diversifying the requirements for academic hiring and career advancement serves to recognize the variety of roles, competencies, tasks and related outputs that make up researchers' achievements. Hence, at the hiring stage prioritize the interest in, capacity for and experience of candidates in terms of collaboration with other disciplines and with actors from policy and practice. At the promotion stage, elaborate complementary quantitative and qualitative criteria for every career stage based on sound *integrative* research and impacts *across* science, policy and practice (see action 3) and assess the variety of roles, competencies, tasks and outputs by means of such complementary indicators. Integrative competencies for ITD research can be assessed, for instance, by asking researchers about challenging moments during their past collaborations and about concrete strategies they used to address them. As leading and engaging in ITD research are emergent processes, integrative research practices should be positively acknowledged – also in cases of 'failures' if demonstrable efforts were made.

### Practical example

The [Coalition for Advancing Research Assessment](#) (Europe) put forward new criteria to better recognize the quality and impact of research in academic assessments.

## 5. Choose external reviewers wisely

Ensuring that hiring and promotion decisions reflect your definition of sound and high-quality integrative research (see action 3) allows your organization to show that it actually does what it claims to do. When considering ITD researchers for permanent positions, draw on the experience of external reviewers who are able to properly assess the value of the researchers' integrative achievements across the boundaries of different disciplines, as well as science, policy and practice. Scholars who have competencies in leading and engaging in integration in ITD projects are better equipped to assess researchers' integrative achievements in terms of both processes and outputs than a narrow discipline-focused panel without direct ITD experience. Make sure that reviewers are well briefed on your organization's ambition for impact in science, policy and practice.

### Practical example

The [University of Luxembourg](#) (Luxembourg) adopted a promotion policy recommending that review committees include external recommendations in the case of ITD scholarship.

## 6. Experiment with novel forms of appointments

Diversifying profiles and experimenting with novel forms of appointments stimulates and embeds new research approaches in your organization. First, hire integration experts to lead, manage, monitor, assess, and/or advise others on integration in ITD projects. These academics fulfill both creative science roles and supportive roles and are key for moving integration forward (see action 2). Second, co-hire researchers between units or organizations to foster collaboration across organizational boundaries, encouraging daily interlinking of perspectives from researchers, policy-makers and practitioners. Third, create positions for actors from policy and practice, including professorships of practice in order to bring their experience into your organization and enhance spaces for exchange (see action 1). Establishing such diverse types of permanent positions in your organization will not only strengthen your overall in-house competencies for ITD research, but will also prevent an organizational brain drain of early- and mid-career researchers with an ITD profile.

### Practical example

The [University of Graz](#) (Austria) hired an integration expert with the explicit goal of implementing transdisciplinary research.

**Problem framing:** Internal funding schemes are often too short and limited to permit meaningful integration in practice and sometimes do not allow flexible uses of funding. Integration is also not yet perceived as researchers' core business when involved in ITD projects, but is rather seen as a mere add-on to disciplinary endeavors.

## 7. Fund preparation phases

Launching internal funding calls that make ITD integration a key requirement increases the capacity of your organization to achieve impact across disciplines as well as science, policy and practice. In doing so, make sure internal funding is available not only for ITD projects, but also for project preparation phases. This includes funding 'cohesion' activities such as joint meetings, workshops or retreats through which prospective team members are able to learn each other's specialized languages, concepts, methods and tools, as well as how to engage in joint problem-framing with actors from policy and practice. This will allow your organization to launch ITD projects on solid ground. Such preparation phases may differ in terms of length and scale. As actors from policy and practice are expected to contribute to ITD integration, provide funding to cover expenses that they may incur when attending joint meetings, workshops or retreats (e.g. travel, hotels, food).

### Practical example

IIT Delhi (India) provides short-term Faculty Interdisciplinary Research Projects grants to support applicants in preparing a project proposal.

## 8. Provide flexibility

Providing sufficiently flexible resources for both ITD integration processes and outputs ensures that integration is assigned importance and recognized as a key task of ITD projects. It ensures that new opportunities arising during the collaboration process can be embraced and unforeseen challenges addressed. For instance, allocate funding for integration expert positions and respective interactive formats to ensure that the integrative potential is fulfilled. A key characteristic of ITD activities is that they are partly open-ended to allow for joint exploration and co-production between actors from science, policy and practice. Neither the exact type of financial resources needed along the way nor the kind of integrated outputs (e.g. useful tools for actors from policy and practice) that emerge from such integrative efforts can be precisely anticipated at the proposal stage. Accountability mechanisms and approval processes for such a flexible use of resources can be agreed upon in the preparation phase.

### Practical example

The SWEET funding call of the Swiss Federal Office of Energy (Switzerland) requires an integration expert for research consortia and allows for an additional budget for unplanned activities.

## 9. Ensure accountability

Establishing accountability mechanisms for ITD projects allows your organization to incentivize researchers' commitment to engage in ITD integration. Such accountability mechanisms include terminating ITD projects if agreed-upon milestones and deliverables related to integration are not met, which can in turn help to redirect resources before the official end date, if necessary. Discussing researchers' integrative efforts in ITD projects during their annual evaluations rather than during single, final project assessments as well as coupling these efforts with promotion and tenure requirements (see action 4) make it easier to stay on track and enhance accountability for ITD integration. As early and mid-career researchers often do most of the integrative work in ITD projects, their decision-making power during integration processes needs to be strengthened by supervisors and directorate members to ensure their commitment. Regular reminders of the importance of integration processes and related integrated outputs beyond traditional academic outputs are essential.

### Practical example

The NIH National Institute of Neurological Disorders and Stroke (United States) uses some milestone-based funding for research projects.

**Problem framing:** Effectively leading and engaging in ITD integration rests upon integrative leadership capacity as well as distinctive cognitive, social and emotional competencies. Generally, researchers are neither trained during their academic careers to lead nor to engage with colleagues from other disciplines and with actors from policy and practice. PhD supervisors are often ill-equipped to guide doctoral students with an ITD topic, underestimating the inherent challenges of ITD integration in doctoral research. Finally, lessons learned from previous integration experiences are often not sufficiently capitalized upon for future ITD projects.

## 10. Offer capacity building

Providing resources for and/or establishing relevant capacity building within your organization such as regular mentoring opportunities, capacity building workshops (e.g., how to apply ITD methods and tools), continuing education (e.g., summer schools), and integrative leadership training increases your organization's in-house competencies for ITD research. Scholarship on ITD integration exists and should be included among such resources. Nurturing peer-to-peer exchanges in communities of practice allows your organization to further strengthen your in-house competencies. In addition, encourage your colleagues and researchers to include the development of ITD competencies in their respective courses in order to support capacity building as early as possible among students. Make it explicit to your colleagues and researchers that engaging in these capacity building opportunities is valued by your organization and included in the annual performance review, which provides a basis for evaluating the overall performance of your organization (see action 3).

### Practical example

Monash University's [Sustainable Development Institute](#) (Australia) provides students with courses relevant for working with actors from research, policy and practice.

## 11. Guide PhD supervision

Co-supervising ITD doctoral theses between disciplinary departments allows your organization to strengthen integration across different disciplines as well as across science, policy and practice. However, co-supervision of ITD doctoral theses takes more time and effort. It is therefore crucial that not merely the PhD students themselves, but also the co-supervisors of these students be sufficiently equipped and open-minded to learn from other disciplines as well as from policy and practice. Likewise they should be capable of and interested in appreciating the languages, concepts, methods and tools specific to these different disciplines, fields and sectors. To ensure that co-supervisors of ITD doctoral theses are ready for this task, your organization can provide step-by-step guidelines on how to supervise ITD doctoral theses and offer co-supervisors training or mentoring sessions to strengthen their integrative competencies for purposes of ITD supervision. Acknowledging the co-supervisors' efforts and participation in such sessions during yearly performance reviews is essential (see action 4).

### Practical example

The 2030 Agenda Graduate School of [Lund University](#) (Sweden) organizes peer-to-peer exchanges among supervisors to tackle the specific challenges of ITD supervision.

## 12. Strengthen organizational learning

Building upon lessons learned from past and current ITD projects ensures that your organization can evolve over time and create new knowledge on ITD in both theory and practice. To ensure such organizational learning, nurture communities of practice within your organization and across organizations (see action 1 and 10). Require that those responsible for internal ITD projects organize workshops at the end to reflect ex post on the adequacy of processes and outputs, delivering concrete lessons learned for future ITD projects. Lessons about what went well or not, what could be improved next time and what resources are needed to do so can help your organization to improve your next round of internal funding calls (see action 7 and 8).

### Practical example

In 2021, [Duke University](#) (United States) set up a specific committee to provide recommendations based on lessons learned from their 11 interdisciplinary units.

## This action guide is based on:

Dettwiler, D., Deutsch, L., Hoffmann, S. (in preparation): **Blowing away the cobwebs: 4 key areas to strengthen inter- and transdisciplinarity in research organizations**

Hoffmann, S., Deutsch, L., Klein, J. T., O'Rourke, M. (2022): **Integrate the integrators! A call for establishing academic careers for integration experts**

Deutsch, L., Pohl, C., Bresch, D. N., Hoffmann, S. (revised and resubmitted): **Creating favorable conditions for inter- and transdisciplinary integration – an analytical framework and empirical insights**

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## ITD Research Group's Positionality

The Inter- and Transdisciplinary (ITD) Research Group at Eawag studies the cognitive, emotional and social dimensions of integration in ITD projects. The three authors have conducted ITD research, primarily in Switzerland, and have been involved in various ITD collaborations in an integration expert role, occupying early-career and senior research positions. This action guide is based both on these experiences as well as examples from other ITD contexts, mainly from Europe, and actionable literature, especially from North American public health scholarship.

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