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Climate Division

## **SWEETER: Call-Guideline Complement**

# **Recommendations for the Formation of Transdisciplinary Consortia and Work Programmes**

This document was prepared by the Network for Transdisciplinary Research (td-net) of the Swiss Academies of Arts and Sciences



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## 1 Purpose and contents of this document

This document complements the [SWEETER Call Guideline and pre-proposal template](#) to improve the formation of transdisciplinary (TD) consortia and work programmes.<sup>1</sup> Its purpose is to help consortia to develop and implement TD research approaches.<sup>2</sup> The document should stimulate meaningful reflection and systematic action within the extended consortia you are forming to prepare a pre-proposal for the SWEETER funding instrument.

Sections 2 and 3 provide the key background information on TD research. Section 4 builds on this foundation to inform the formation of TD consortia and work programmes. Section 5 clarifies the links between TD research, integration, and knowledge and technology transfer (KTT), and their implications for the key positions in SWEETER. Sections 6 and 7 provide information and resources on joint problem framing, stakeholder analysis, collaboration and involvement, and impact orientation. These can help you to develop and implement TD research approaches, and to prepare a pre-proposal. Annotations on other resources that are not directly related to pre-proposal preparation can be found in Section 8. If you would like to know more about the td-net, please refer to Section 9.

Ensure that all digital and physical working documents produced by your extended consortium during the preparation of the pre-proposal are kept in a dedicated place so that you can use them during the full proposal workshop, refine your TD research approaches during the preparation of the full proposal and update them regularly during the implementation phase. The working documentation does not need to be polished and may include handwritten notes, workshop materials, graphical sketches and illustrations that have helped your extended consortium to develop, describe and implement its TD research approaches.

## 2 Description of TD research

As stated in [Sections 1.1 and 1.2 of the Call Guideline](#), the purpose of SWEETER is to fund TD research with a focus on the goals of Switzerland's Energy Strategy 2050 and the long-term climate strategy. TD research is briefly described below, as interpreted by the Swiss Federal Office of Energy (SFOE) in the context of the SWEET funding programme.<sup>3</sup>

To clarify the characteristics of TD research, it is instructive to contrast it with multidisciplinary research and interdisciplinary research:

- In multidisciplinary research, each scientific discipline receives input from other disciplines, for example in the form of knowledge and data, but the boundaries between disciplines remain distinct. In addition, each discipline retains its own paradigms, nomenclature, knowledge and methodologies, so there is little or no lasting impact of the research on the disciplines. Multidisciplinary research is appropriate for problems that can be solved by a single discipline, but where the solution benefits from the input of other disciplines.
- In interdisciplinary research, scientific disciplines provide input to each other to solve a problem that could not be solved by one discipline alone. Thus, although the boundaries of the disciplines remain distinct, there is an integration of the disciplines into something greater than the sum of its parts. This integration enriches the paradigms, nomenclature, knowledge and methodologies of each discipline. This enrichment in turn leads to the development of new knowledge and methodologies that have a lasting impact on the disciplines.

<sup>1</sup> Version prepared for SWEETER Call 1-2026.

<sup>2</sup> The document may also be helpful for developing and implementing interdisciplinary research approaches, or approaches that aim to integrate diverse non-academic knowledge bodies. Both of these are considered prerequisites for TD research. (For more on this, see Section 2.)

<sup>3</sup> For an overview of definitions of TD research, see: Pohl, C., & Hirsch Hadorn, G. (2007). *Principles for Designing Transdisciplinary Research*. Oekom. <https://doi.org/10.14512/9783962388638>



TD research can be seen as a deeper and broader form of interdisciplinary research. It is deeper because it transcends scientific disciplines, thereby blurring disciplinary boundaries. It is broader because it involves not only academic but also diverse non-academic actors such as representatives from politics, business and civil society, who should be involved as partners or stakeholders in all stages of the research process. TD research represents an approach to problem solving that addresses problems from multiple perspectives, integrating scientific and non-scientific perspectives and taking complexity into account as far as possible. The complexity of societal problems stems not only from a lack of knowledge, but also from their controversial and contested nature. TD research is therefore necessary to solve problems that arise at the interface between science and practice, or what is sometimes called the “life-world”. The results of TD research cannot be attributed to academia alone and include not only new knowledge and methodologies, but also new scientific paradigms and practice-oriented procedures, tools, products and services. TD research can be thought of as research and innovation that generates not only systems knowledge (what is?) but also target knowledge (what are desirable target states?) and transformation knowledge (how to change?),<sup>4</sup> and ideally has a transformative effect on stakeholders, reflected in new practices, capabilities, norms and implementation.<sup>5</sup> Each academic and non-academic partner or stakeholder contributes to the three forms of knowledge, depending on its approach to framing the problem and formulating research questions, and its ability to link abstract scientific and context-specific practice-oriented knowledge. This heterogeneity of contributions is seen as an asset in TD research, but it also requires respectful collaboration, careful stakeholder involvement and impact orientation, starting with a stakeholder analysis and a common understanding of the problem.

When it comes to the SWEETER funding instrument, it is imperative that TD research be understood as going beyond merely consulting or selectively involving non-academic actors. Instead, consortia are expected to establish and sustain collaborative research partnerships between science and practice on an equal footing.<sup>6</sup>

### 3 The ideal TD research process

This section describes the ideal TD research process, which can be divided into three stages:

1. framing the problem,
2. analysing the problem, and
3. exploring outcomes.<sup>7</sup>

Figure 3-1 shows how the three stages are embedded in the application and evaluation phase and the implementation phase of SWEETER. Consortia should go through the three stages of the TD research process at least once during pre-proposal preparation and at least once during full proposal preparation, and several times while implementing their work programmes. Obviously, problem analysis and outcome exploration are preliminary during the application and evaluation phase, compared to their refinements during the implementation phase.

It is not always necessary or appropriate to follow the sequence of stages given above. As TD research is an iterative process, the stages may overlap, be revised, or occur in a different order. For example, you may need to adapt your initial problem frame to new insights generated during problem analysis or

<sup>4</sup> For a description of the three forms of knowledge, see: Pohl, C., & Hirsch Hadorn, G. (2007). *Principles for Designing Transdisciplinary Research*. Oekom. <https://doi.org/10.14512/9783962388638>

<sup>5</sup> The SWEET programme assumes that most stakeholders are non-academic, although academic ones may also be relevant.

<sup>6</sup> For a description of what it means to go beyond consulting or the selective involvement of non-academic actors, see: Jahn, S., Newig, J., Lang, D. J., Kahle, J., & Bergmann, M. (2022). Demarcating Transdisciplinary Research in Sustainability Science—Five Clusters of Research Modes Based On Evidence From 59 Research Projects. *Sustainable Development*, 30(2), 343–357. <https://doi.org/10.1002/sd.2278>

<sup>7</sup> For a description of the origins and evolution of the ideal transdisciplinary research process, see: Pohl, C., Krütli, P., & Stauffacher, M. (2017). Ten Reflective Steps for Rendering Research Societally Relevant. *GAIA – Ecological Perspectives for Science and Society*, 26(1), 43–51. <https://doi.org/10.14512/gaia.26.1.10>

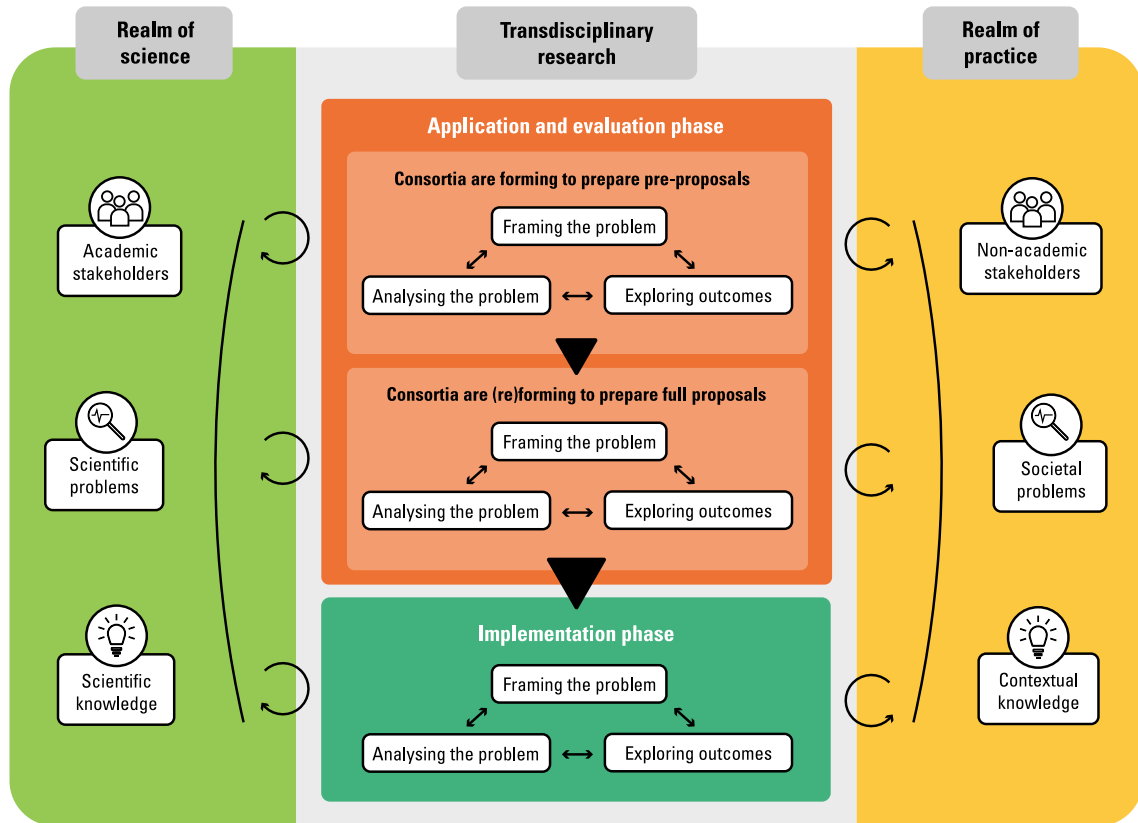


Figure 3-1: The ideal TD research process, embedded in the SWEETER phases, where consortia dynamically engage with stakeholders, problems and knowledge from science and practice.

the identification of unexpected side effects during outcome exploration. The TD research activities that you are encouraged to undertake are outlined below, grouped with the stages in which these activities are particularly instructive. This does not mean that they are unimportant elsewhere in the process.

### 3.1 Framing the problem

The first step is to frame the problem: the consortium and its preliminary non-academic stakeholders (who are potential members or collaboration partners) jointly define the problem and the types of solutions or interventions to be pursued. This stage is essential in order to address the complexity and diversity of potential problem understandings, and to ensure that the consortium is relevant to a wide range of non-academic stakeholders. Activities typically include:

1. consortia selecting relevant non-academic perspectives on a problem,
2. integrating them together with stakeholders into a common understanding of the problem, and
3. jointly developing and discussing outcomes for solving the problem, including deciding on indicators to assess progress towards these outcomes.

For each SWEETER call, the guiding theme and the research challenges set some constraints on problem framing. However, within these constraints, consortia are free to develop and discuss outcomes for their non-academic stakeholders, and to choose TD research approaches that are appropriate to those outcomes.

Refer to Section 6.1 and Resources [a] and [b] in Section 7 for assistance with joint problem framing.

It is essential that you involve non-academic stakeholders of the extended consortium you are forming in problem framing. These stakeholders should be as diverse as possible (i.e., include representatives from politics, business, and civil society) to cover a variety of problem understandings that need to be considered in the problem frame. Therefore, joint problem framing should start with an initial stakeholder



analysis. This analysis needs to be refined as the problem frame becomes more concrete, as it may turn out that a perspective is missing or underrepresented.

Refer to Section 6.2 and Resources [c], [d] and [e] in Section 7 for assistance with analysing stakeholders, which may help you to conduct your stakeholder analysis for [Section 1 of the pre-proposal template](#).

### 3.2 Analysing the problem

In an ideal TD research process, it is not enough to jointly frame a problem, but it is equally important to know how to develop approaches to answering the research challenges. Given the diversity of perspectives and practices, the co-production of knowledge is essential for problem analysis. The co-production takes place between academic and non-academic consortium members and collaboration partners, while it may be extended to relevant stakeholders if necessary or beneficial.

Not all stakeholders need to be involved all the time or equally closely in problem analysis. The level of involvement can vary from informing and consulting stakeholders to conducting research with them on an equal footing. Use your stakeholder analysis to identify and prioritise relevant stakeholders, and to decide which stakeholders to involve, when, where and how. This will help you to plan and implement effective KTT activities. If it becomes apparent that a stakeholder should become part of your extended consortium, SWEETER allows and encourages you to add it as a member or collaboration partner.

Refer to Section 6.2 and Resources [f] and [g] in Section 7 for assistance with involving stakeholders, which may help you to extend your stakeholder analysis in [Section 1 of the pre-proposal template](#) and prepare your KTT concept for a potential full proposal.

Developing approaches to answering the research challenges requires knowledge to be continuously integrated between academic and non-academic members and collaboration partners. To support a consortium-wide integration process, ensure that leadership boards, meeting cycles and work programme activities systematically include academic and non-academic representatives, achieving an appropriate balance of expertise from both science and practice.

Focus your attention and integration resources on those work packages and tasks in which you anticipate greater involvement from a variety of knowledge bodies, including different scientific disciplines, various non-academic actors, and research spanning the science–practice interface. Create dedicated integration spaces for these instances. These can range from formalised, structured interactions, such as regular workshops, off-site retreats and board meetings, to relatively open and loose formats, such as regular lunchtime events and *jour fixe* gatherings.

Refer to Section 6.3 and Resources [h], [i], [j], [k], [l] and [m] in Section 7 for assistance with creating integration spaces, which may help you to explain the collaboration and involvement of your extended consortium in [Section 4 of the pre-proposal template](#) and prepare your integration concept for a potential full proposal.

### 3.3 Exploring outcomes

Outcome exploration involves collaborating with stakeholders to develop and test ideas, actions and solutions that matter to them. Rather than being the final stage of the ideal TD research process, it is a recurring, iterative cycle in which potential weaknesses and unexpected side effects can continually be explored, allowing problem analysis and framing to be refined accordingly. This helps to connect the practice-oriented outputs of the extended consortium to the ‘real world’ by exploring their impact on non-academic stakeholders.

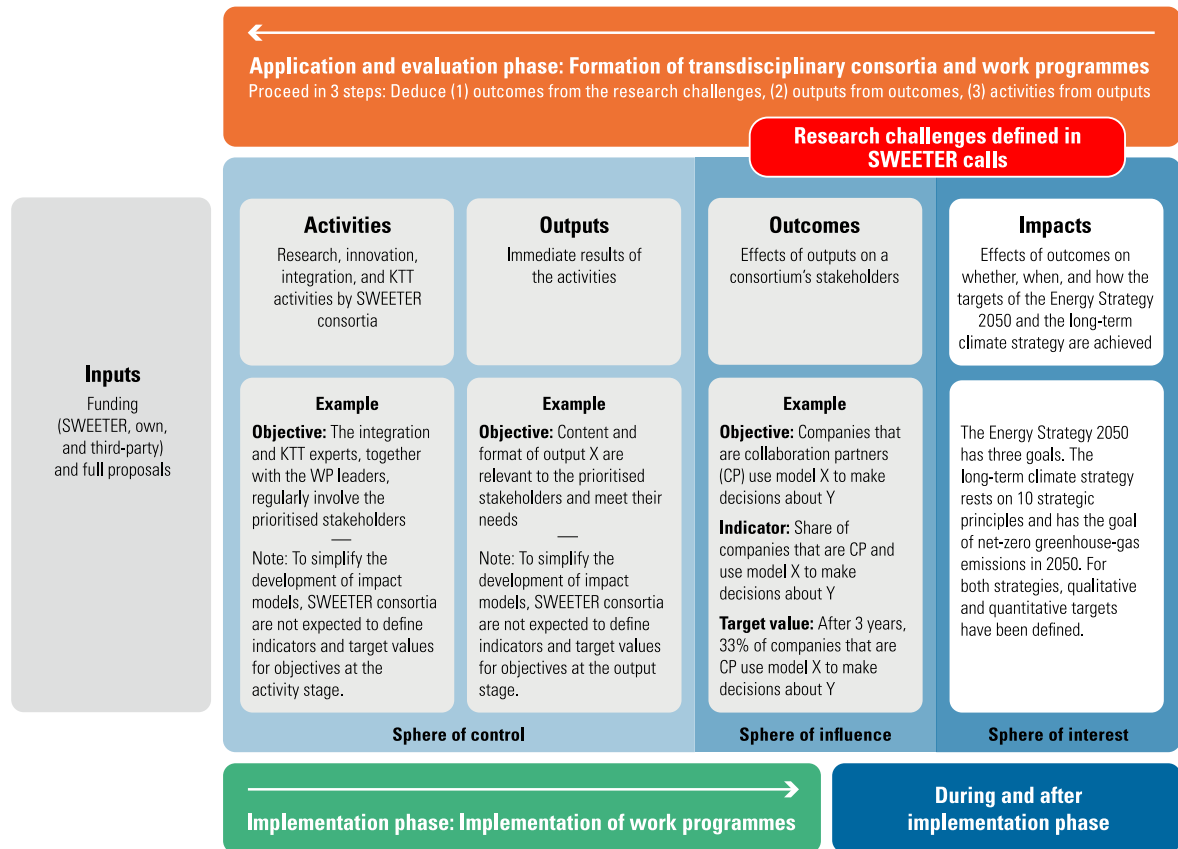


Figure 3-2: The five-stage impact model as applied to SWEETER consortia. As indicated in the figure, the research challenges contained in SWEETER calls may be classified as outcomes or impacts. During the application and evaluation phase, i.e., when forming TD consortia and work programmes, applicants are expected to proceed in three steps by (1) deducing outcomes from the research challenges, (2) deducing outputs from the outcomes, and (3) by deducing activities from the outputs.

This type of exploration refers to “impact orientation”, a specific way of thinking about and approaching TD research. It starts at the beginning of your extended consortium’s formation and at the end of the societal impact pathways, i.e. how activities and outputs are expected to lead to outcomes for specific stakeholder groups that you intend to activate through your research, innovation, integration and KTT activities. As shown in Figure 3-2 (also be found in [Section 1.2.2 of the Call Guideline](#)), impact orientation involves:

1. study the research challenges in the SWEETER call and consider which effects need to occur for which non-academic stakeholders, so that effective addressing of these challenges is possible;
2. formulate these desired effects in terms of outcomes, together with appropriate indicators and target values, and check them with the relevant stakeholders;
3. develop and discuss with these stakeholders the practice-oriented outputs needed to realise these outcomes;
4. select the outputs you intend to co-produce with them and build your extended consortium and work programme accordingly.

Progress towards the outcomes should be monitored using the indicators. The outcomes with their indicators and target values, the outputs derived from the outcomes, and the activities derived from the outputs form a so-called impact model. Impact models are a manifestation of impact orientation and an essential tool for the formation of TD consortia and work programmes and the monitoring of progress towards outcomes.



Refer to Section 6.4 and Resources [n], [o], [p], [q], [r], [s] and [t] in Section 7 for assistance with impact orientation, which may help you to develop your impact model for [Section 2 of the pre-proposal template](#).

## 4 Formation of TD consortia and work programmes

This section builds on the previous sections to provide guidance on the formation of TD consortia and work programmes during the application and evaluation phase of SWEETER calls. It also briefly covers the first year of the implementation phase.

### 4.1 Pre-proposal stage

The pre-proposal template is structured to reflect the steps needed to form a preliminary TD consortium and lay the foundation for the elaboration of a TD work programme in the full proposal. To develop the content requested in the pre-proposal template, it is essential that you heed the ideal TD research process described in Section 3 and that you go through the three stages (framing the problem, analysing the problem, and exploring outcomes) at the very least once. To go through the three stages, it is critical that you bring together the core of the extended consortium you are in the process of forming, including the first academic and non-academic members, as well as potential collaboration partners from politics, business, civil society, and academia.

Begin by framing the problem based on the descriptions of the guiding theme and the research challenges in the Call Guideline and thereby develop a preliminary understanding of the call and its context. In addition, examine the Call Guideline for references to non-academic stakeholders who could benefit from the TD research of your consortium. This may provide you with a starting point for your stakeholder analysis,<sup>8</sup> which you will need to record using the dedicated template and describe in [Section 1 of the pre-proposal template](#).

The next steps are based on the five-stage impact model, see Figure 3-2, starting with the outcomes, deducing outputs from the outcomes, and finally deriving the activities from the outputs. The resulting outcomes, outputs, and activities constitute your consortium's impact model, which you will need to detail in the dedicated templates and describe in [Section 2 of the pre-proposal template](#). Begin by formulating a first draft of the most important intermediate outcomes<sup>9</sup> relevant to your top-ranked stakeholders. Only then, you should decide on the outputs to be co-produced with them. You also need to consider the practice-oriented research outputs that will help you to achieve the most important intermediate outcomes for these stakeholders. This approach allows you to start at the end of the societal impact pathways you wish to activate through your TD research. Working backwards from the envisaged outcomes, also known as backcasting, helps you to identify potential barriers early on, opens up space for innovation and supports participation.

Once you have drafted the most important intermediate outcomes and the outputs linked to them, you ought to reach out to the top-ranked non-academic stakeholders.<sup>10</sup> Introduce them to your understanding of the call and explain why you consider them to be important stakeholders in your TD research. Next, discuss your draft intermediate outcomes and outputs with the stakeholders and refine and adapt them according to their perspectives, needs, and expectations. If appropriate, consider making the contacted stakeholders part of your consortium. Whether they become members or collaboration partners,

<sup>8</sup> Another way to identify potential stakeholders, particularly multipliers, is to consult the 2024 Programme-Level Stakeholder Mapping provided by the SFOE. The relevant files are available on a dedicated webpage, alongside other resources regarding TD research, integration and KTT in the SWEET programme: <https://www.bfe.admin.ch/bfe/en/home/research-and-cleantech/funding-program-sweet/td-integration-ktf-for-sweet.html>

<sup>9</sup> "Intermediate outcomes" are the outcomes at the end of the first part of a consortium's implementation phase, i.e., at the end of year 3. The term "outcome" is used here in the context of the five-stage impact model (see figure 3-2). Further information is available on a dedicated webpage, alongside other resources regarding TD research, integration and KTT in the SWEET programme: <https://www.bfe.admin.ch/bfe/en/home/research-and-cleantech/funding-program-sweet/td-integration-ktf-for-sweet.html>

<sup>10</sup> If feasible, you could also reach out directly to your top-ranked non-academic stakeholders and draft the outcomes and outputs with them from the outset. However, experience has shown that it may be more productive to bring a first draft with you for the first time you involve stakeholders, rather than starting with a blank page.



or remain important stakeholders outside the extended consortium, update your preliminary stakeholder analysis accordingly.

Once the outcomes and outputs have been validated by the relevant non-academic stakeholders, proceed to deriving the research, innovation, integration, and KTT activities required to achieve the outputs. You will need to provide an overview of your activities in [Section 5 of the pre-proposal template](#). When you have derived a first version of the activities, ask yourself the following questions: Do you have the necessary academic, non-academic, and methodological TD expertise for the envisaged activities with your extended consortium (i.e., members and collaboration partners) and the systematic involvement of relevant stakeholders? If needed, adapt the composition of your extended consortium. In addition, consider the implications of the above questions for the positions of the director and the integration and KTT experts (i.e., their tasks, competencies, responsibilities, authorities, and who could be considered for these positions). Your extended consortium and how you plan to collaborate within it must be described in [Sections 3 and 4 of the pre-proposal template](#).

Before submitting the pre-proposal, you should update your stakeholder analysis and your understanding of the call and its context once more, considering the implications of your updated impact model and the composition of and collaboration within your consortium.

## 4.2 Full-proposal stage and the first year of implementation

To complete the full proposal, you will need to update and expand the pre-proposal. The overall approach is analogous to the loops described in Section 4.1, through which you now passed more than once:

1. update your understanding of the call, your frame of the problem, and your stakeholder analysis;
2. update your intermediate outcomes and the outputs linked to them, then get in touch with your top-ranked non-academic stakeholders (some of whom may now be part of your consortium) to refine and adapt these stages of your impact model;
3. depending on stakeholder validation of outcomes and outputs, update the activity stage of your impact model. Consequently, adapt the composition and key positions (i.e., their tasks, competencies, responsibilities and authorities, as well as who you have considered for these positions) of your consortium, as well as your approaches to collaboration and involvement, to ensure you are equipped to carry out the activities necessary for co-producing the outputs.

A substantial amount of additional content in the full proposal will be devoted to converting your activity overview from [Section 5 of the pre-proposal template](#) into a TD work programme. This will involve collecting related activities into work packages, detailing their outputs, as well as explaining how these outputs contribute to the overall outputs outlined for the consortium in [Section 2 of the pre-proposal template](#).

You will submit the most recent versions of your consortium and work programme with the full proposal, yet these will continue to be formed and adapted iteratively throughout the implementation phase. (SWEETER gives you adequate flexibility to add or remove members, collaboration partners, and work packages.) The first year after consortia are awarded funding is particularly instructive, as it provides an opportunity to refine the ideal TD research process outlined in Section 3 by kicking off their work programmes with all members, collaboration partners, and stakeholders. As some time has typically passed since the previous collaboration and involvement, going through the three stages (framing the problem, analysing the problem, exploring outcomes) again together ensures that the most recent non-academic perspectives, needs and expectations are incorporated into work programmes.

## 5 Interplay between TD research, integration, and KTT in SWEETER

This section complements [Section 3.1.4 of the Call Guideline](#), setting out the links between TD research, integration, and KTT, and their implications for the three key positions in SWEETER.



Within the ideal TD research process, integration is an interactive process that combines a wide range of scientific disciplinary perspectives with diverse perspectives from actors outside academia. In SWEETER, this process involves linking and relating the various perspectives across cognitive, social, and emotional dimensions<sup>11</sup>, creating an extended consortium greater than the sum of its members and collaboration partners. Integration occurs contextually between two, several or all members and collaboration partners.

KTT is a necessary task to make the research and innovations developed by the extended consortium available to all external stakeholder groups through appropriate channels, in particular to stakeholders from politics, business and civil society. Importantly, KTT is not only a one-way flow of information from the extended consortium to stakeholders, but also an activity that includes consultation (e.g. identifying stakeholders' needs) and, where appropriate, the co-production of knowledge. By carefully pursuing knowledge integration within the extended consortium, it creates the conditions for successful KTT activities with non-academic stakeholders (who are actors formally outside your extended consortium). In addition, your KTT concept should be based on the stakeholder analysis and impact model, which you adapt periodically as part of your TD research.

SWEETER recognises three key positions: director, integration expert, and KTT expert. The individuals in these positions work together to ensure that integration and KTT activities complement each other within the TD research process.

- The director is responsible for forming and implementing a TD consortium and work programme, and for providing overall leadership<sup>12</sup>.
- The director is supported by an integration expert who oversees the co-production of knowledge within the extended consortium, focusing on activities and outputs where expertise from various academic and non-academic representatives should converge. Consortium colleagues, such as work package leaders, support this expert in gaining an overview of the knowledge and approaches being co-produced to answer the research challenges.
- The director is also supported by a KTT expert. This expert oversees why selected non-academic stakeholders need to be involved, when, where and how, and how the research and innovations developed by the extended consortium should be utilised for this (based on the integration expert's overview and expertise). Together with relevant consortium colleagues, such as work packages leaders, they orchestrate how these activities and outputs should be enriched by the non-academic stakeholders involved.

## 6 Suggested resources for the development and implementation of TD research

This section provides information on specific TD research methodologies that you can use to prepare your pre-proposal, and for which various resources are referenced in Section 7. These resources could be step-by-step guides for exchange and workshop formats within your extended consortium, or they could be academic journal articles introducing methodologies to a scientific community and substantiating selected tool-specific resources. Table 6-1 provides an overview of these resources, which are grouped by the section of the pre-proposal to which they are relevant and the type of information they provide. You are encouraged to try out a variety of resources and select and combine the ones that work best for your extended consortium.

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<sup>11</sup> For a description of integration as a multi-dimensional interactive process and examples of the different dimensions, see: Pohl, C., Klein, J. T., Hoffmann, S., Mitchell, C., & Fam, D. (2021). Conceptualising Transdisciplinary Integration as a Multidimensional Interactive Process. *Environmental Science and Policy*, 118(1), 18–26. <https://doi.org/10.1016/j.envsci.2020.12.005>

<sup>12</sup> For a description of leadership strategies in TD research, see: Deutsch, L., Bjørnsen, A., Fischer, A., Hama, A., Zimmermann, N., Zurbrugg, C., & Hoffmann, S. (2024). Herding Cats: Integrative Leadership Strategies in Inter- And Transdisciplinary Research Programs. *Sustainability Science*, 1–21. <https://doi.org/10.1007/s11625-024-01585-4>



Table 6-1: Overview of the suggested resources, grouped by section of the pre-proposal and type of information.

Section	Application-oriented information (e.g., step-by-step guides, templates, tools)	Introductory background information (e.g., blog posts, presentations, videos)	In-depth background information (academic journal articles)
1	[c], [d], [f]	N/A	[e], [g]
2	[n], [o], [q]	[r], [s]	[p], [t]
4	[k], [m]	[h], [i], [j]	[l]

The SFOE has developed a toolbox containing 30 suggestions for methods that SWEETER consortia can use to plan their KTT activities. Selected suggestions are highlighted in this section, and their method cards can be found on a dedicated [webpage](#) by the SFOE, alongside other resources regarding TD research, Integration and KTT in the SWEET programme.

### 6.1 Joint problem framing

To help you with the joint problem framing, you are encouraged to explore Resources [a] and [b] in Section 7.

Resource [a] is a blog post providing concise information on joint problem framing and the key challenges involved, alongside a framework for reflecting on these challenges and improving future iterations of the process. Together with Resource [b], an academic journal article that builds on the information in the blog post, these resources can help you to navigate the problem-framing process. This involves setting boundaries for the problem understandings and outcome statements shared by your extended consortium.

### 6.2 Stakeholder analysis

To assist with your stakeholder analysis in [Section 1 of the pre-proposal template](#), you are encouraged to explore Resources [c], [d], [e], [f] and [g] in Section 7, as well as the [webpage](#) provided by the SFOE.

Resources [c] and [d] provide step-by-step guides for creating an overview of potentially relevant non-academic stakeholders for your extended consortium. Based on the academic journal article in Resource [e], these steps can help you systematically identify, collect, categorise, map and prioritise stakeholders from different perspectives, using specific criteria such as their roles, expectations, interests and influence.

Resources [f] and [g], as well as pages 19–20 of the SWEET KTT Toolbox, enable you to extend your stakeholder analysis and prepare your KTT concept for a potential full proposal. They provide a rationale and procedure for the functional (i.e., in relation to a specific objective of involvement) and dynamic (i.e., in relation to a specific type of involvement) involvement of stakeholders. Resource [f] provides a step-by-step guide to a collaborative activity within your extended consortium, as well as a template for a diagram showing who needs to be involved, why, when, where and how. Resource [g] is an academic journal article that proposes this rationale and procedure for approaching public participation in site selection processes for long-term nuclear waste disposal.

### 6.3 Collaboration and involvement

To help you explain the collaboration and involvement of your extended consortium in [Section 4 of the pre-proposal template](#) and prepare your integration concept for a potential full proposal, you are encouraged to explore Resources [h], [i], [j], [k], [l] and [m] in Section 7, as well as the [webpage](#) provided by the SFOE.

Resources [h] and [i] (a presentation and a blog post) provide general introductions to setting up your extended consortium for integration and offer recommendations for useful collaborative arrangements between members and collaboration partners. Resource [j] is an academic journal article that focuses



on the critical role of integrative leadership in TD consortia. It identifies six key leadership challenges and offers strategies to address them.

Resources [k] and [l], as well as pages 21–22 of the SWEET KTT Toolbox, propose a structured procedure to enable your extended consortium to create links between different research parts. Resource [k] contains a step-by-step guide for a workshop centred around a matrix template. Completing this template during workshops helps to prepare integration spaces and activities. This is achieved by improving the mutual understanding of different perspectives and practices, and by envisaging potential mutual involvement between collaborative subunits, such as work packages. The blog post in Resource [l] complements the workshop script.

Resource [m] offers an alternative approach to integration, inspiring the creation of a diagram that can act as a unifying element for your extended consortium. This approach is translated into a tool that allows you to explore the expertise available in your extended consortium in relation to common topics of interest together. Similarly, members and collaboration partners can be mapped to common themes to flesh out potential candidates for prospective involvement in joint consortium boards, meeting cycles and work programme activities.

#### 6.4 Impact orientation

To help you develop your impact model in [Section 2 of the pre-proposal template](#), you are encouraged to explore Resources [n], [o], [p], [q], [r], [s] and [t] in Section 7, as well as the [webpage](#) provided by the SFOE.

Resource [n] offers an introductory presentation of the five-stage impact model in SWEETER, offering background information, examples for each stage, and practical recommendations for getting started with model development.

Resource [o] and Pages 23–24 of the SWEET KTT Toolbox provide a step-by-step guide that allows you to articulate the outcomes of your extended consortium within the boundaries set during joint problem framing. You will be guided through a collaborative activity with your extended consortium and, optionally, non-academic stakeholders selected on the basis of your stakeholder analysis. During this activity, you will collect, formulate and make visible outcomes by classifying them using a conceptual map template. Mapping the outcomes provides a structured way to evaluate jointly whether they fall within or outside your boundaries. Resource [p] is an academic journal article that builds on the step-by-step guides and provides conceptual background information.

Resources [q], [r], [s] and [t], as well as pages 63–64 of the SWEET KTT Toolbox, support you in developing theories of change, a specific impact model type, to which your extended consortium is contributing through its TD research. Model your consortium's theories of change in a workshop with stakeholders. Resource [q] provides a step-by-step guide and documentation template for this, while Resource [r] offers a blog post and Resource [s] provides a short video. Resource [t] is an academic journal article on lessons learned from developing theories of change in a water and sanitation research programme at various levels, including project and programme levels.

## 7 Resource references

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- [d] Buser, T. (n.d.). *Context and Actor Analysis*. Partnering for Change: Link Research to Societal Challenges. <https://tales.nmc.unibas.ch/en/partnering-for-change-link-research-to-societal-challenges-46/setting-up-a-transdisciplinary-research-project-240/context-and-actor-analysis-1418>
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- [i] Misra, S., Rippey, M. A., & Grant, S. B. (2024). *Setting up Your Team for Knowledge Integration*. Integration and Implementation Insights. <https://i2insights.org/2024/10/22/integration-by-teams/>
- [j] Deutsch, L., Björnsen, A., Fischer, A., Hama, A., Zimmermann, N., Zurbrugg, C., & Hoffmann, S. (2024). Herding Cats: Integrative Leadership Strategies in Inter- And Transdisciplinary Research Programs. *Sustainability Science*, 1–21. <https://doi.org/10.1007/s11625-024-01585-4>
- [k] Stauffacher, M. (2021). *Give-And-Take Matrix*. *td-net Toolbox Profile (16)*. Swiss Academies of Arts and Sciences: td-net Toolbox for Co-Producing Knowledge. <https://zenodo.org/records/4627136#.YHfnzGhCTBI>
- [l] Stauffacher, M., & Studer, S. (2021). *Give-And-Take Matrix for Transdisciplinary Projects*. Integration and Implementation Insights. <https://i2insights.org/2021/08/10/give-and-take-matrix/>
- [m] Pearce, B. (2020). *Venn Diagram Tool*. *td-net Toolbox Profile (6)*. Swiss Academies of Arts and Sciences: td-net Toolbox for Co-Producing Knowledge. <https://zenodo.org/records/3717541#.Xs5zDC9XbBI>
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- [o] Mitchell, C., & Fam, D. (2020). *Outcome Spaces Framework*. *td-net Toolbox Profile (9)*. Swiss Academies of Arts and Sciences: td-net Toolbox for Co-Producing Knowledge. <https://zenodo.org/records/3717200#.Xs5tkC9Xb-Y>
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- [q] Belcher, B., & Claus, R. (2020). *Theory of Change*. *td-net Toolbox Profile (5)*. Swiss Academies of Arts and Sciences: td-net Toolbox for Co-Producing Knowledge. <https://zenodo.org/records/3717451#.Xs5wtS9XbBI>
- [r] Clark, H. (2021). *Theory of Change in a Nutshell*. Integration and Implementation Insights. <https://i2insights.org/2021/08/24/theory-of-change-in-brief/>
- [s] Monitoring, Evaluation & Learning Channel (2023). *Theory of Change*. <https://www.youtube.com/watch?v=gYfSwXfVjw0>
- [t] Deutsch, L., Belcher, B. M., Claus, R., & Hoffmann, S. (2021). Leading Inter- And Transdisciplinary Research: Lessons From Applying Theories of Change to a Strategic Research Program. *Environmental Science & Policy*, 120(1), 29–41. <https://doi.org/10.1016/j.envsci.2021.02.009>



## 8 Further resources (with annotations)

- [u] Angarita, E., Hajdu, A., Huang, Y., Pearce, B., Peres-Cajías, G., Zeidan, H., & Zhu, Y. (2025). *Inter- and Transdisciplinary PhD Supervision Guide*. ITD Alliance: ECRs Working Group. <https://itd-alliance.org/working-groups/early-career-researchers/itd-phd-supervision-guide/>

Find discussion questions aimed at fostering mutual understanding of roles, expectations and processes in interdisciplinary or TD PhDs, to help supervisors and supervisees develop self-awareness of their respective perspectives on the research.

- [v] Australian National University (n.d.). *Integration and Implementation Sciences (i2S): Improving Research Impact on Complex Real-World Problems*. <https://i2s.anu.edu.au/>

Find a resource repository and an intellectual hub for conducting research on complex, real-world problems and tackling challenging societal and environmental issues in cross-disciplinary teams.

- [w] Pearce, B., Dallo, I., & Antwi, S. H. (2024). *Handbook – Interdisciplinary and Transdisciplinary Research*. ITD Alliance: ECRs Working Group. <https://itd-alliance.org/working-groups/ecr-handbook/>

This handbook contains the most frequently asked questions about interdisciplinary and TD research, which were compiled from fifteen coffee hours with early career researchers discussing their challenges and concerns.

- [x] SHAPE-ID (n.d.). *Pathways to Interdisciplinary and Transdisciplinary Research: the SHAPE-ID Toolkit*. <https://www.shapeidtoolkit.eu/>

Find tools and resources to make informed decisions about interdisciplinary and TD research with the Arts, Humanities and Social Sciences, the Sciences, Technology, Engineering and Mathematics, and societal partners.

- [y] Swiss Academies of Arts and Sciences (n.d.). *td-MOOC: Open Online Course on Transdisciplinary Research*. <https://en.transdisciplinarity.ch/capacity-building/offers-td-net/td-mooc>

Join a Massive Open Online Course (MOOC) on TD research as a living experience with a solid theoretical and methodological basis and five outstanding projects that illustrate promising different ways of dealing with complex societal challenges.

- [z] Swiss Academies of Arts and Sciences (n.d.). *td-net Toolbox for Co-Producing Knowledge*. <https://naturalsciences.ch/id/brZ74>

Find methods and tools to jointly develop projects, conduct research and explore ways to impact in heterogeneous groups.

## 9 About the td-net

The td-net is a competence centre of the Swiss Academies of Arts and Sciences, which are organised as a non-profit association. Organisationally, the td-net is integrated into the governance structures of the Swiss Academy of Sciences. In addition to the Swiss National Science Foundation, the Swiss Academies are a research funding institution for networking and dialogue according to the Federal Act on the Promotion of Research and Innovation. They carry out and promote the early identification of societally relevant topics in the fields of education, research and innovation, network the academic community, are committed to the perception of ethical responsibility in research and teaching and shape the dialogue between science, policy, practice and society in order to promote mutual understanding.



The td-net sees itself as a supporter of researchers and as a dialogue partner for research funders, higher education institutions, administration and science policy. It is anchored in the National Institutions for Research and Innovation Promotion and works with other expert bodies at the interface between society, practice, policy and science. The td-net has the explicit mandate to strengthen dialogue and early identification. It assumes this responsibility on behalf of the Swiss Confederation without representing any particular interests and works on a non-profit basis. Although the State Secretariat for Education, Research and Innovation contributes to the basic funding of the td-net, it is dependent on third-party funding in order to be able to carry out target group-specific mandates for advisory, coaching or capacity building services<sup>13</sup>.

For over 20 years, the td-net has been engaged in capacity building for TD research, drawing on experience, professionalisation efforts and evaluation results from the community of practice of TD researchers – in Switzerland, from German-speaking countries (D-A-CH) and internationally. Due to its position as a university-independent body that does not solicit research funding itself, the td-net succeeds in shaping and mediating the exchange of experience among TD researchers, in acting as an interface between researchers, higher education institutions, and research funders, and in promoting mutual learning.

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<sup>13</sup> For more information, see: <https://en.transdisciplinarity.ch/>