Collaboration and Transdisciplinarity

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Overview

An Ecohealth approach is used to understand and solve complex problems of health and environment, which necessitates involvement of different disciplines. Transdisciplinarity, usually referring to research, is considered one of the main pillars of Ecohealth, integrating the social and natural sciences in a common approach (interdisciplinarity) and simultaneously including knowledge systems that are not of a specialist or expert nature, in a participatory and interactive process. Contributors to the development, planning, and implementation of Ecohealth projects are diverse. Researchers come from different disciplines, different types of communities may be stakeholders, and policy-makers come with a variety of agendas. The success of a project depends on how these people work together. The conditions for, and skills to enable, working together are essential for an Ecohealth project.

This module is designed to help you teach understandings of transdisciplinarity, Ecohealth perspectives of it, what it can mean in practice, and its application to your (and your learners’) research context. The reasons why “working together,” across disciplines and schools of thought, is equivalent to “transdisciplinarity” and the reasons why this may be desirable but difficult to attain, are discussed.

Module Aims

- To provide strong guidance on the meanings of interdisciplinarity and transdisciplinarity and how to explain the need for transdisciplinarity in an Ecohealth project
- To allow participants to formulate their own explanations for the importance of different types of knowledge and expertise, and therefore the necessity for collaboration, in Ecohealth
- To allow participants to develop social and communication skills for collaboration and team-building
- To help participants identify the most appropriate style of working together for a particular task, and the levels of agreement, resources, and management support necessary for that style
- To highlight the “network” as one particular form of working together.
Learning Objective: Recognize that different types of knowledge and expertise influence the way problems can be identified, defined, and acted upon.

Learning Objective: Understand why well-developed cooperation and communication among scientific disciplines and between science, communities, and society are required for Ecohealth, and for complex and uncertain societal matters.

Learning Objective: Explain why well-developed cooperation and communication among scientific disciplines and between science, communities, and society are required for Ecohealth, and for complex and uncertain societal matters.

Learning Objective: Describe the features of networking successfully, as an example of working together through collaboration.

Learning Objective: Reflect on the potential and limitations of their own disciplinary research approach.

Learning Objective: Use other ways of knowing, and methodologies, including non-specialist (non-academic) knowledge, to construct and adapt their research practice.
Why is this topic important?

We are faced with complex and uncertain (“messy” or “wicked”) problems of environmental change and human well-being, where the health sciences’ dedication to a clinical/medical model is exposed as not just limited, but potentially part of the problem. This situation demands that we go beyond disciplinary norms and their theoretical frameworks and methodologies. “Real-world” problems require proper characterization and not only integration of theory and methods from multiple disciplines, but also perspectives and knowledge from the public themselves, where problems will be formulated, and with whom solutions will be found. This collaboration, considered central to Ecohealth approaches, shifts the focus of attention to place-based activities, demanding an exploration of case studies, each with a unique set of socio-cultural circumstances. Ecohealth involves understandings from not only different academic disciplines but also other knowledge systems (including local, traditional, intuitive, and strategic). Such research and intervention go beyond interdisciplinary research in a collaborative, transdisciplinary venture, where knowledge is legitimately derived from different value systems, different ethical bases, and different philosophical traditions.

Key Concepts

The module explores the importance of “working together” in both the instructing and learning of Ecohealth, as well as in Ecohealth research processes. The idealized goal of working together across disciplines and schools of thought can be termed transdisciplinarity, and the reasons why this may be desirable, but difficult to attain, are discussed. On a practical level, the module discusses successful features and strategies of collaboration and how these apply to teamwork situations in which the learners have been involved. It thus aims to help learners develop strategies and a better understanding of how to use collaborative approaches in their work.
Guiding Questions

1. How does one distinguish between different categories of knowledge?
2. How do “learning” and “research” contribute to any of these types of knowledge?
3. Why do we need different types of knowledge (and those who are “particularly good at” those types), to understand and solve a problem?
4. Why then does working together become needed for a particular task?
5. What skills, attitudes, structures, processes, and resources does one need to ensure that different styles of working together become more successful?
6. What else (in addition to the above) would you consider important to fully comprehend the scope of transdisciplinarity?

Basic Learning Objectives

After completing this module, learners will be able to:

- Recognize that different types of knowledge and expertise influence the way problems can be identified, defined, and acted upon
- Understand why well-developed cooperation and communication among scientific disciplines and between science, communities, and society are required for Ecohealth, and for complex and uncertain societal matters
- Describe the features of networking successfully, as an example of working together through collaboration.

Advanced Learning Objectives

Advanced learners will be able to:

- Integrate different types of knowledge and expertise in developing research and action plans, including using principles of participation and equity in the integration
- Reflect on the potentials and limitations of their own disciplinary research approach
- Use other ways of knowing, and methodologies, including non-specialist (non-academic) knowledge, to construct and adapt their research practice.
Practical Notes

- Ideally instructors should have experience using collaborative approaches in teaching or conducting research. Instructor knowledge of Ecohealth or experience in Ecohealth research is an asset.
- The module can be completed within 2 to 3 hours, although it can be extended if more time is available.
- No prerequisites are required of the learners, although participants ideally should be in a position where they will have further opportunities to work as part of collaborative groups. If possible, learners should be asked to read the case studies before attending the course.

Case study

This module will use a case study on land management as an example to stimulate learners to discuss transdisciplinarity and collaboration. Learners are requested to read carefully and critically the case study before the module starts. It is best to send the file to learners beforehand, depending on how trainers use and adapt this for the other module.

Background information

The following information can be included into Activity 1 below if trainers feel that participants will benefit.

Disciplinary and multidisciplinary research

Disciplinary research follows cognitive and practical goals within a clearly defined scientific school and related institutional framework. Disciplinarity embraces growingly specialized fields of knowledge related to a single discipline that evolves in isolation from other disciplines. Therefore a person may, in fact, study biology and handle it well without the need to consider specific knowledge related to physics or psychology. A discipline uses standard and accepted methods and techniques, with centralizing theories and dogmas that appear stable and generate power, capable of maintaining boundaries between other such pursuits.

In multidisciplinary research, the different disciplines look at one research object from different perspectives. Multidisciplinary research is based on a combination of several scientific disciplines, without implying that continual interaction and negotiation between these disciplines is necessary (as opposed
to interdisciplinary research). Each discipline carries out its analyses separately, applying the approaches and methods inherent to their individual disciplines. Generally, the final result is a multi-faceted picture of an object of study. No systematic integration or synthesis is made. Results are often expressed in disciplinary journals.

**Interdisciplinary research**

Interdisciplinary research integrates two or more scientific disciplines with the goal of advancing the understanding of complex cognitive and practical problems. It involves the development of a common conceptual or theoretical framework and, to a great extent, also a methodology that integrates or connects the research methods of the participating disciplines. In research programs focusing on complex society-health-environment interrelations like Ecohealth, interdisciplinary research usually incorporates the natural and technical sciences and social sciences and humanities, coordinated to achieve a higher-level purpose, or value, or desirable achievement.

**Transdisciplinary research**

Transdisciplinary research integrates the social and natural sciences in a common approach (interdisciplinarity), and simultaneously includes non-academic knowledge systems as well to understand and solve socially relevant problems. Max-Neef (2005) argues that transdisciplinarity coordinates four critical questions: what exists? (the disciplines), what are we capable of doing? (multidisciplines), what is it we want to do? (interdisciplines), and finally what we must do, or rather, how to do what we want to do?

**Social learning for transdisciplinarity**

Societal learning, which is necessary for moving towards a more Ecohealth approach, is a combination of social learning at all three levels:

- **Individual level:** sharing knowledge and information, developing social, emotional, and learning competences (openness, taking others’ points of view), improving communication, adapting prevailing ways of thinking, and personal attitudes, intentions, and behaviour
- **Organizational level:** individuals often work in organizational setups that do not allow them to put suggested changes of attitudes and intentions into practice; therefore, organizational and institutional norms, values, and rules need to be adapted simultaneously
- **Structural level:** most complex adjustments have to be made at the social, economic and political levels where different organizations and institutions interact, representing different parts of society or nations.

**Skills required for transdisciplinarity**

- Communication among scientific disciplines on the one hand, and between science and society on the other hand, are key challenges in
trying to achieve societal learning. Societal learning requires a shift from individual to collective learning, which is reflected in various levels and types of collaboration, from simple information-sharing to struggling together with others to define and resolve problematic situations (see Activity 4 and the related handout for more on this). Indeed, apart from sound disciplinary knowledge, Ecohealth research also calls for inter- and transdisciplinary research, which in turn involves social, ethical, and communication skills, such as:

- A reflective and critical attitude towards one’s own discipline, knowing its potentials but also its limitations, and being able to question one’s own standpoint
- An open, tolerant, and respectful attitude towards colleagues from other scientific disciplines, as well as towards non-academic actors
- The ability to manage conflicts of interests
- Learning the language of the other
- Develop reciprocity; being prepared to give time to the agendas of other people
- Clarity when communicating.

Activities

Section One: Transdisciplinarity

Activity 1

What is transdisciplinarity and when do we need it?

Learning Objective:

- Recognize that different types of knowledge and expertise influence the way problems can be identified, defined, and acted upon.

INSTRUCTIONS

TRANSDISCIPLINARITY AND SOCIAL LEARNING

Introduce the module by giving a presentation on transdisciplinarity, which will take about 20 to 30 minutes. The introduction will focus on the discussion of different types of research: disciplinary, multidisciplinary, interdisciplinary to transdisciplinary research within an Ecohealth context. Discuss the skills required for transdisciplinary research.

Several schools are discussing the definition of these terms, but finding a common and acceptable term for a common understanding will be part of this exercise.
The following points can be covered:

- Transdisciplinary research is often a new form of learning and problem solving for learners, involving cooperation among different parts of society and academia to meet complex social challenges and to solve socially relevant problems.

- Those who contribute to the development, planning, research, and follow-up of Ecohealth projects usually include researchers, community members, and policy-makers. These general groups include many subsets, such that researchers from different disciplines would normally work together, and different types of communities may be stakeholders. The success of a project depends on how well these people work together.

- Discuss the differences between disciplinary, multidisciplinary, interdisciplinary, and transdisciplinary approaches. Refer to the section Background Information for more detailed discussion of these terms.

## Activity 2

*Determining the degree of transdisciplinarity.*

**Learning Objective:**

- Recognize that different types of knowledge and expertise influence the way problems can be identified, defined, and acted upon.

### INSTRUCTIONS

This exercise aims to stimulate learner discussion about the degree of transdisciplinarity in a project. Split the class into groups of three to five participants, briefly introduce the selected case study on dengue fever intervention (see *Module 4 – Handout 1 – Activity 1: Case Study: Dengue Fever Prevention*) to be analyzed. Alternative case studies (e.g. Charron 2012) can be used if desired.

1. Instruct the class to read the dengue fever case study if they are not already familiar with it.

2. Encourage the groups to work through the table and engage in the discussions suggested in the handout.

3. Alternatively, deliver a lecture using a different case study that provides an analysis of transdisciplinarity for the learners.

**Handouts for this activity:**

- Case study, suggested: Dengue Fever Prevention (*Module 4 – Handout 1 – Activity 1*).

- *Module 5 – Handout 1 – Activity 2*, Transdisciplinarity table ranking matrix.
After the group discussions, guide the class in a discussion to show that transdisciplinary working is not always appropriate or desirable, and when appropriate, can be achieved to different degrees of success. Have learners discuss when it is best to have high levels of transdisciplinary working or low levels, and when interdisciplinary working or disciplinary modes of working might be more appropriate and useful.

Activity 3

Discussion of research processes involving a transdisciplinary approach.

Learning Objective:

- Recognize that different types of knowledge and expertise influence the way problems can be identified, defined, and acted upon.
- Understand why well-developed cooperation and communication among scientific disciplines and between science, communities, and society are required for Ecohealth, and for complex and uncertain societal matters.

INSTRUCTIONS

Discuss the research processes that involve a transdisciplinary approach with different phases of disciplinary research, interdisciplinary research, and societal discourse.

Lead a discussion about how different types of disciplinary integration can be relevant at different phases of research. Figure 5.1 provides a good talking piece.

- Transdisciplinary approach: The shaded “wave” in Figure 5.1 represents a possible sequence of different phases of integration over time.
- Level of societal discourse: The research process begins with a societal discourse of negotiating research questions and hypotheses among researchers and other actors involved (1). At regular intervals, scientists and non-academic actors meet (2) to exchange knowledge and identify collective action (to solve the problem under consideration). Further exchange opportunities occur informally during fieldwork (3). After the program ends, a final workshop can be conducted to share results and implementation, and prepare future collaboration (4).
- Interdisciplinary level: Joint development and continuous adaptation of an integrative conceptual framework and methodology (5), and joint fieldwork (6) help build mutual understanding and ease synthesizing the findings at the end.
• Disciplinary level: At this level individual researchers conduct their specific experiments or studies (7).

Figure 5.1 Interlinkage of disciplinary research, interdisciplinary research and societal discourse in a transdisciplinary approach (Herweg et al. 2010, adapted from Hurni et al. 2004).
Section Two: Collaboration

Activity 4

*Reading exercise or brief lecture on collaboration.*

**Learning Objective:**

- Explain why well-developed cooperation and communication among scientific disciplines and between science, communities, and society are required for Ecohealth, and for complex and uncertain societal matters.

**INSTRUCTIONS**

This section focuses on two aspects of working together:

- The conditions necessary for effective collaboration (using networks as an example)
- Ensuring effective teamwork.

This session is best achieved through a mix of individual work and group discussion.

Be prepared to hand out pens of various colours.

The first task is to provide the handout on Networks and allow time for learners to read.

Alternatively, you can provide a short lecture about collaboration and working together, based on the contents of the *Module 5 – Handout 2 – Activity 4: Networks.*

Activity 5

*Key features of successful collaboration.*

**Learning Objective:**

- Describe the features of networking successfully, as an example of working together through collaboration.

**INSTRUCTIONS**

This section is based on a case study and learners will need time to read it. Ideally refer to a case study that has already been covered in another module.

There is a risk that participants will only undertake the first two or three items on the list below. To overcome this problem, spread the work around the groups and ask each group to start off with one of structure, process, or resources.
Emphasise that participants should go into as much detail as possible and avoid restating the positive and negative versions of the original statement. So, for example, alongside the feature “roles are clearly defined” it is not helpful to write “roles are not clearly defined” as a hindrance. Participants should explore the case study and their knowledge and assess what might be a cause of roles not being clearly defined.

Suggest linking these discussions to the issue of interrelationships, perspectives, and boundaries identified in Module 4: Using Systems Concepts in Ecohealth and the issues raised in Module 3: Participation.

This section will need to conclude with a good plenary debriefing.

### ABOUT COLLABORATION

Collaboration is an expensive business. A lot of time and energy is needed to create and sustain effective collaboration. Therefore, like the point made earlier about transdisciplinary working, collaboration should be used under quite specific circumstances. If these circumstances are not present, then much less intensive means of “working together” should be attempted. Sometimes just staying in touch with each other is enough.

The three key features of a situation that require the collaboration option are:

- When the issue, situation, or problem is complex.
- When it is necessary to have vision and goals shared by key stakeholders.
- When it is necessary to share resources (i.e. people, knowledge, money, skills).
INSTRUCTIONS FOR LEARNERS

It has been decided that the intervention described in the case study requires a high degree of collaboration. The table “Key features of successful collaborations” in Module 5 – Handout 3 – Activity 5 features what research tells us are key conditions necessary for successful collaboration. These conditions may not be present at the beginning of the work and may need to be developed.

From what you know from the case study and your past experience, describe what might help and what might hinder the establishment of these conditions, and how you might make the hindrances weaker and the helps stronger.

Activity 6
What are the basic components of successful teams?

Learning Objective:
• Describe the features of networking successfully, as an example of working together through collaboration.

INSTRUCTIONS

This section is based on personal experiences.

Refer to Module 5 – Handout 4 – Activity 6: What Are the Basic Components of Successful Teams? for specific instructions. Ask the class to think of a time when they worked together with others successfully, and to use the diagnostic tool “Scoring your responses” in the handout to think through that experience.

If participants have worked together already in the course it is possible that they could choose that same process of working together as an example. This would need careful handling. If sufficient participants in the class have participated in the same team then their similar and different assessments of that team could be an important opportunity for learning (e.g. different motives and perspectives lead to different assessments of the team).

Alternatively, learners can choose examples of working together with others from outside the course.

Suggest linking these discussions to the issue of interrelationships, perspectives and boundaries identified in Module 4: Using Systems Concepts in Ecohealth and the issues raised in Module 3: Participation.

This section will need to conclude with a good plenary debriefing.
INSTRUCTIONS FOR LEARNERS

Ask the learners to think of a time when they worked together with others successfully and use the diagnostic tool in the Handout to think through that experience. (Refer to handout for more detailed instructions).

After the class has been through the table once, provide these subsequent instructions:

They should next think of a time when a team was going badly. The worst possible example. Choose a pen of another colour and go through the table again.

After the exercise, lead a discussion as follows:

As a whole group, add up the scores for each item and discuss these questions:

1. What are the three big differences between a successful and an unsuccessful team?
2. What can be done to ensure that the positive factors are most favourable in teams?

Activity 7

*Learning Objective:*

- Debrief and evaluation.

INSTRUCTIONS

This module has covered a lot of ground, dealing with two substantial topics: transdisciplinarity and what the module terms “working together.” It is important that participants have time to process what they have learned, in particular the relationship between the parts of the module and their own work. There is no single best way of doing this; it will depend on the time available, the energy of the participants, and the size of the group.

Allow time for learners to reflect on what they have learned. They could do this through personal reflection and writing in their learning journals. You could also give them time to talk in pairs or to contribute to a plenary discussion.
INSTRUCTIONS FOR LEARNERS

Explain to the learners that the module has covered some important ground in a few hours. Ask them to spend some time reflecting on what has been covered and its implications for their work. You will find the following questions useful:

- What are the implications for my own work in adopting a transdisciplinary approach? When would it be appropriate to work in this way, and when not? What are the opportunities for transdisciplinarity and how can I develop them? What are the barriers and how can I reduce them?
- How can I further develop transdisciplinary skills and learning opportunities?
- In terms of the networks that are useful to me, how can I make sure they have the appropriate balance of purpose, structure, process, and resources?

Sample Timetable: Module 5

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 minutes</td>
<td>Introduction to module Section One  Activity 1: What is transdisciplinarity and when do we need it?</td>
</tr>
<tr>
<td>30 minutes</td>
<td>Activity 2: Determining the degree of transdisciplinarity using a case study</td>
</tr>
<tr>
<td>10 minutes</td>
<td>Activity 3: Discussion on research processes involving a transdisciplinary approach</td>
</tr>
<tr>
<td>15 minutes</td>
<td>Break</td>
</tr>
<tr>
<td>15 minutes</td>
<td>Section Two  Activity 4: Reading exercise or brief lecture on collaboration</td>
</tr>
<tr>
<td>30 minutes</td>
<td>Activity 5: Key features of successful collaborations using case study</td>
</tr>
<tr>
<td>60 minutes</td>
<td>Activity 6: What are the basic components of successful teams</td>
</tr>
<tr>
<td>20 minutes</td>
<td>Activity 7: Debrief and evaluation</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3 hours, 30 minutes</strong></td>
</tr>
</tbody>
</table>
Evaluation

Refer to Module 1: Approaches to Designing and Teaching Ecohealth Courses and Module 2: Introduction to Ecohealth.

Terminology

**Collaboration Network**
A network with the primary purpose of achieving joint and mutually agreed goals

**Communication Network**
A network with the primary purpose of exchanging information or resources

**Cooperation Network**
A network with the primary purpose of preventing duplication and promoting individual and shared goals

**Coordination Network**
A network with the primary purpose of ensuring that decisions are taken with some degree of synchronicity

**Discipline**
A specific branch of knowledge

**Interdisciplinarity**
The integration of more than one discipline in a particular task or situation

**Multidisciplinarity**
The application of more than one discipline to a particular task or situation

**Network**
A structure that exchanges information or resources

**Resources**
People, money, skills, time, and other artefacts that enable things to be achieved

**Transdisciplinarity**
An approach that integrates the social and natural sciences in a common approach (interdisciplinarity), and simultaneously includes nonacademic knowledge systems as well to understand and solve socially relevant problems. This approach considers what exists? (the disciplines), what are we capable of doing? (multidisciplines), what is it we want to do? (interdisciplines), and finally what we must do, or rather, how to do what we want to do? (Max-Neef 2005).
Key References


Additional References

Additional background reading. These can be general and are not essential reading. If possible, please provide at least one reference which relates to the Southeast Asian context.


Determining the Degree of Transdisciplinarity

EXPLANATIONS:

- Table 5.1 provides you with a list of (proposed) criteria and ranking categories to analyze the degree of transdisciplinarity in the case study; discuss the criteria and adapt or improve them as necessary. Note: a worked example for the Dengue Case study is available.
- Evaluate the degree of transdisciplinarity as “high,” “moderate,” or “low” in the selected study, if possible for each criterion and for each phase of the study; if you consider it impossible or not meaningful to evaluate (rank) selected criteria or phase combinations, explain why.
- Optimizing the degree of transdisciplinarity means involving other actors in a meaningful way, depending on the theme and the purpose of the study; it does not mean letting everybody interfere at any time and at any cost!
- Note that these four phases of research are depicted as if they occur in linear sequence, but they rarely do – if reality the phases are iterative, with steps “back” and “forward” continuing from start to finish of the research.
Table 5.1 Ranking matrix of transdisciplinarity in a research project

<table>
<thead>
<tr>
<th>Transdisciplinarity criteria</th>
<th>Categories</th>
<th>Phases of a research project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Defining the research question or hypothesis</td>
</tr>
<tr>
<td>Involvement of societal actors (negotiation of what problem will be the focus)</td>
<td>Low: Involvement of &lt; 25% of all key actors  Moderate: 25-50%  High: &gt; 75%</td>
<td></td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>L: only natural or social sciences (disciplinary)  M: social &amp; natural sciences separately (multidisciplinary)  H: social &amp; natural sciences integrated through joint objectives &amp; methodologies (interdisciplinary)</td>
<td></td>
</tr>
<tr>
<td>Worldviews (“realities”) involved (philosophical background of knowledge)</td>
<td>L: no consideration of any epistemology  M: different scientific epistemologies/ontologies considered (social &amp; natural sciences, qualitative &amp; quantitative approaches)  H: explicit dialogue between scientific and other epistemologies/ontologies</td>
<td></td>
</tr>
<tr>
<td>Transdisciplinarity criteria</td>
<td>Categories</td>
<td>Phases of a research project</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------</td>
<td>----------------------------</td>
</tr>
</tbody>
</table>
| Knowledge of other key actors considered | L: not explicitly considered  
M: at least one other key actor’s knowledge explicitly involved  
H: explicit consideration of > one other key actor’s knowledge | Defining the research question or hypothesis  
Determining the objectives & methodology  
Fieldwork  
Experiences, results, analysis, outputs, interpretation |
| Type of knowledge involved in knowledge sharing | L: systems knowledge (“how the system works”)  
M: systems and target knowledge (“where to go,” development visions)  
H: systems, target and transformation knowledge (“what to do and how,” searching for solutions) | |
| Mutual learning orientation  
1. Bilateral  
2. Focus groups  
3. Workshops with 2/3 of key actors | L: option 1 only  
M: options 1 & 2  
H: options 1, 2 & 3 | |
Table 5.1 Ranking matrix of transdisciplinarity in a research project. Worked example

<table>
<thead>
<tr>
<th>Transdisciplinarity criteria</th>
<th>Categories</th>
<th>Phases of a research project – Dengue Case study</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement of societal actors (negotiation of what problem will be the focus)</td>
<td>Low: involvement of &lt; 25% of all key actors</td>
<td>High</td>
<td>Low – unless results suggest problem needs renegotiation – moderate or high</td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>Moderate: 25-50%</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>High: &gt; 75%</td>
<td>Low</td>
<td>Medium → High</td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>High: only natural or social sciences (disciplinary)</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>M: social &amp; natural sciences separately (multidisciplinary)</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Involvement of academic disciplines (degree of interdisciplinarity)</td>
<td>H: social &amp; natural sciences integrated through joint objectives &amp; methodologies (interdisciplinary)</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Worldviews (“realities”) involved (philosophical background of knowledge)</td>
<td>L: no consideration of any epistemology</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Worldviews (“realities”) involved (philosophical background of knowledge)</td>
<td>M: different scientific epistemologies/ontologies considered (social &amp; natural sciences, qualitative &amp; quantitative approaches)</td>
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<td>Low</td>
</tr>
<tr>
<td>Worldviews (“realities”) involved (philosophical background of knowledge)</td>
<td>H: explicit dialogue between scientific and other epistemologies/ontologies</td>
<td>High</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experiences, results, analysis, outputs, interpretation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low – unless results suggest problem needs renegotiation – moderate or high</td>
<td></td>
</tr>
<tr>
<td>Transdisciplinarity criteria</td>
<td>Categories</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
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</tr>
</tbody>
</table>
| Knowledge of other key actors considered | L: not explicitly considered  
M: at least one other key actor’s knowledge explicitly involved  
H: explicit consideration of > one other key actor’s knowledge | High                                           | Moderate                                       | Low-Moderate | High |
| Type of knowledge involved in knowledge sharing | L: systems knowledge (“how the system works”)  
M: systems and target knowledge (“where to go,” development visions)  
H: systems, target and transformation knowledge (“what to do and how,” searching for solutions) | High                                           | Medium                                        | Low-Moderate | High |
| Mutual learning orientation 1. Bilateral 2. Focus groups 3. Workshops with 2/3 of key actors | L: option 1 only  
M: options 1 & 2  
H: options 1, 2 & 3 | High                                           | Medium                                        | Low                     | High |
Interpretation: “Determining the degree of transdisciplinarity”

- In case you have ranked the degree of transdisciplinarity as “low” or “moderate” for several criteria, list possible reasons for this.

- It is not always possible or meaningful to increase the degree of transdisciplinarity in every phase of the study or for every criterion. Discuss where in the selected study it would be useful to increase the degree of transdisciplinarity. Develop some ideas about how to do this.

- Identify key skills/competences required of researchers and other actors for practising successful transdisciplinarity research (you can conduct a small role play simulating a typical working situation in which researchers, extension workers, and local actors meet).

- On the basis of this analysis, identify ways of further optimizing transdisciplinarity at two levels:
  
  - List factors that support or hinder transdisciplinarity work at the individual level
  
  - Based on your own experience, propose how to optimize the preconditions for successful transdisciplinary work at the organizational level (university, municipality, etc.) by describing the prevailing challenges and limitations of transdisciplinary research.
Networks

Transdisciplinary approaches rely heavily on people being able to work together effectively, over time, and with the highest degree of collaboration. This part of this module will help you identify what conditions need to be established for effective collaboration in networks.

What does research tell us about high-level collaboration?

First, let’s step back a bit. The degree of working together can vary from just keeping in touch with people (basic communication) to the kind of high-level working together that we describe as collaboration. In between there is coordination (where you keep in touch and respond to what you hear and see) and cooperation (where you work together more actively, but in a limited way). Here are some key findings from research about these ways of working together (Williams 2003), using “networks” as an example.

- Different kinds of networks are best for different kinds of tasks and need different kinds of strategies. In particular, the strategies for establishing and supporting networks that primarily share information are very different from partnerships that undertake joint projects and work.
- All forms of networks usually take longer than expected to establish themselves.
- A critical part of building a network is managing the positive expectation of that network.
- Networks’ tasks must reflect their constituency. Therefore, local networks are most effective in dealing with local issues, local agendas, and local priorities. Local networks cannot be expected to deal with national issues, agendas, or priorities, unless they have local relevance.
- One of the big challenges in establishing networks is to move them beyond information sharing. A critical part of building more ambitious networks (e.g. cooperation and collaboration) is the articulation of a clear mission, guiding purpose, and agreed shared values.
- Network participants need the active support of the organizations they represent, especially when the network starts taking decisions about projects and resources. Indeed networks rarely operate effectively when their participants do not have the active support of their own agencies.
- Networks are not organizations, they cannot be expected to do what organizations do.
• Networks that are made up of a wide range of different perspectives and knowledge are likely to be more creative than networks that have few differences.

• Not everyone has to be involved all the time. Typically networks tend to have core and peripheral members, who participate at different levels in the overall task.
### Key Features of Successful Collaborations (in “Networks”)

<table>
<thead>
<tr>
<th>Feature</th>
<th>What helps this to happen?</th>
<th>What hinders this happening?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All players in the network are capable of making decisions on behalf of their organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roles are clearly defined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Links between members are formal and written into agreements</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High levels of leadership and trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideas and decisions equally shared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly developed communication, adapted to needs and communication styles of different participants (community members, policy-makers, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No significant conflict between goals of network and goals of members or member agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability of network members to “champion” the network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network members’ authority to take decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended time horizons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High support from external bodies, participants’ management, and professional agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible financial arrangements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability of members to get resources for the network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Collaboration Strategies
How can the factors that help be strengthened and the factors that hinder be reduced?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
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<td></td>
</tr>
<tr>
<td>Ability of members to get resources for the network</td>
<td></td>
</tr>
</tbody>
</table>
What Are the Basic Components of Successful Teams?

A major feature of collaborative working is through teams. What are the basic components of a successful team?

Here is one way of identifying those basic components as well as a way to identify well and poorly performing teams.

Think of a time when a team you were working in was working really well. It felt great to be part of it. This could have been at your work, or with a sports team, or with a group of neighbours or in your family. Set this experience very clearly in your mind. Make some brief notes of what happened.

The table provides a diagnostic tool for you to complete.

**INSTRUCTIONS**

If you totally agree with one of the statements and disagree totally with the other, circle the number nearest the statement you agree with (either 1 or 5).

If your agreement is partial or “somewhat” rather than “total,” circle the number next to the end (2 or 4).

If you feel divided because each of the statements is true about half of the time, circle the number in the middle (3). If you feel that the question is not applicable then you should also choose this option.

Respond to all 20 pairs of statements. As you record your ratings, think of the full range of your experience in the team, not just the most recent activities. You may wish to note in the margin the reasons for your rating.

<table>
<thead>
<tr>
<th>1</th>
<th>I was unclear about the goals or performance standards we were trying to accomplish in our team.</th>
<th>I understood our mission and the goals and performance standards our team was expected to meet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Our members were more concerned with personal goals and roles than with the team’s.</th>
<th>We learned to put personal agendas aside and work cooperatively to achieve team goals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>We were not very effective at dealing with problems that came up in our team’s work.</td>
<td>We were able to reduce or eliminate most of the problems that arose in connection with our work.</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>We were not very good at dealing with conflict and differences of opinion among our members.</td>
<td>We valued differences of opinion, explored reasons, and made better decisions because of the differences.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>We were hindered by organizational barriers that blocked our work effectiveness.</td>
<td>We were free of organizational barriers that might have blocked our effectiveness as a work team.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Team decisions were made without full input of all members so commitment was sometimes lacking.</td>
<td>Decisions were discussed, issues were understood, and we attempted to get consensus whenever possible.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>We were often side-tracked and had a hard time sticking to the tasks we had to perform.</td>
<td>Our activities were productive and focused on the tasks we had to perform. We did not let distractions derail us.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Our communication with one another tended to be guarded rather than open and honest.</td>
<td>Our communication with one another was open and honest. We talked freely, and shared our true feelings about issues.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>A lot of time that we spent in team meetings was wasted and not used productively.</td>
<td>Our meetings were highly productive and were conducted in an efficient and a time-conscious way.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Our team was not very well respected or thought of by others with whom we interacted.</td>
<td>Our team was held in high regard and respected by others with whom we interacted.</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11</th>
<th>Our team could have functioned more effectively if we’d had a different mix of members and skills.</th>
<th>We had a very effective mix of members and skills in our team – the right faces in the right places.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12</th>
<th>We did not listen to one another or respect other’s views and suggestions.</th>
<th>We listened to one another and respected the viewpoints of others, even when they didn’t agree with the group.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13</th>
<th>We could have functioned a lot more effectively in our team if the leadership were to change.</th>
<th>The leadership of our team was very effective in helping us to work together in achieving our goals.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14</th>
<th>We rarely took time to review progress and discuss how we could improve as a team.</th>
<th>We often reviewed progress and agreed on actions to improve the way we functioned as a team.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15</th>
<th>As a team we rarely heard from management. Sometimes we wondered if they knew we existed.</th>
<th>We got feedback or support from management on a regular basis, and knew that they were aware of how we were doing.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16</th>
<th>Membership in the team has not done much to develop my skills and growth.</th>
<th>My personal growth and skills have benefited from my membership of the team.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>17</strong></td>
<td>We were so busy with tasks that we neglected to improve our teamwork.</td>
<td>We had a good balance between getting the work done and improving our teamwork.</td>
</tr>
<tr>
<td><strong>18</strong></td>
<td>Our productivity would have been the same or higher if we’d worked as individuals and not as a team.</td>
<td>Our members were far more productive as a team than they would have been if they had worked as individuals.</td>
</tr>
<tr>
<td><strong>19</strong></td>
<td>I’m not very proud to have been a member of that team.</td>
<td>I’m proud to have been a member of that team.</td>
</tr>
<tr>
<td><strong>20</strong></td>
<td>For me, job satisfaction was no better in this work team. I’d have been just as happy working alone.</td>
<td>My job satisfaction was greater because of my membership in that team. The work was more satisfying.</td>
</tr>
</tbody>
</table>
Scoring your Responses: Exercise: What are the basic components of successful teams?

The odd numbered items describe organizational issues relating to the effectiveness of your group.

The even numbered items describe interpersonal issues that affect the members of your group.

Place your scores for each item in the tables and total them.

<table>
<thead>
<tr>
<th>ORGANIZATIONAL ISSUES</th>
<th>INTERPERSONAL ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odd Item</td>
<td>Even Item</td>
</tr>
<tr>
<td>1. Mission /goals</td>
<td>2. Cooperation</td>
</tr>
<tr>
<td>5. Barriers</td>
<td>6. Decision making</td>
</tr>
<tr>
<td>7. Focus</td>
<td>8. Open communication</td>
</tr>
<tr>
<td>9. Meetings</td>
<td>10. External relationships</td>
</tr>
<tr>
<td>11. Skills/mix</td>
<td>12. Listening/respect</td>
</tr>
<tr>
<td>15. Management support</td>
<td>16. Personal development</td>
</tr>
<tr>
<td>17. Task/process balance</td>
<td>18. Collective productivity</td>
</tr>
<tr>
<td>19. Pride</td>
<td>20. Job satisfaction</td>
</tr>
</tbody>
</table>

Total (A)                  Total (B)

Add Total A and Total B to get Total C

I.e., Total A ………. + Total B ………. = Total C ……….

To achieve a team score: average the totals A and B for the team.

I.e., Team Score = Average Total A ……….. + Average Total B ……….. = ……….. Out of 100