

USYS TdLab – transdisciplinary laboratory at the D-USYS

Concept, short version in English – February 1, 2013

1 Motivation and goals of the TdLab

Climate change, energy, food security, biodiversity, urbanisation, etc. represent multidimensional and complex issues requiring scientific approaches that go far beyond disciplinary research.

For access to their systemic analysis and solution, we need teaching approaches that promote inter- and transdisciplinary expertise. Students need to learn how to integrate knowledge from different disciplines, i.e. natural and social sciences, as well as from different perspectives. Thus, they should be better prepared for their possible future role as decision makers in the fields of environment and food security.

Transdisciplinarity (td) represents a strategic goal and collaborative endeavour of the whole department. However it is currently underdeveloped at the D-USYS and its expertise is concentrated in a few people/groups. By creating a platform for transdisciplinarity (a TdLab), D-USYS aims at strengthening its influence. The purposes of the TdLab are to:

- Provide continuity and strengthen td teaching as well as td research at the D-USYS;
- Promote and stimulate interdisciplinary (id) research dialogues between the D-USYS institutes as well as with other ETH departments, particularly between natural, technical, and social sciences;
- Increase the visibility of td, inside as well as outside of D-USYS;
- Increase integration of the D-USYS institutes and establish synergies between the two curricula Environmental Sciences and Agricultural Science;
- Establish a platform for reflexion and further development of td teaching in the two curricula as well as for reflexion and further development of concepts and methods in inter- and transdisciplinarity;
- Develop a network for outreach activities;
- Initiate / stimulate inter-institutional inter- and transdisciplinary research projects.

2 Tasks of the TdLab

The area of responsibilities of the TdLab starts with a focus on td teaching at the D-USYS. In a stepwise process the tasks of the TdLab may be expanded. The following taught courses build up the core of the basic module: CCES winter school; transdisciplinary case study; introduction to the handling of environmental systems; EUUS; interdisciplinary excursions; integrated field courses; analysis and assessment of environmental sustainability; interdisciplinary training week¹.

Activities of the TdLab are planned to start 1 January 2013 with a pilot phase of five years. The following modules are planned for the TdLab (see Figure 1):

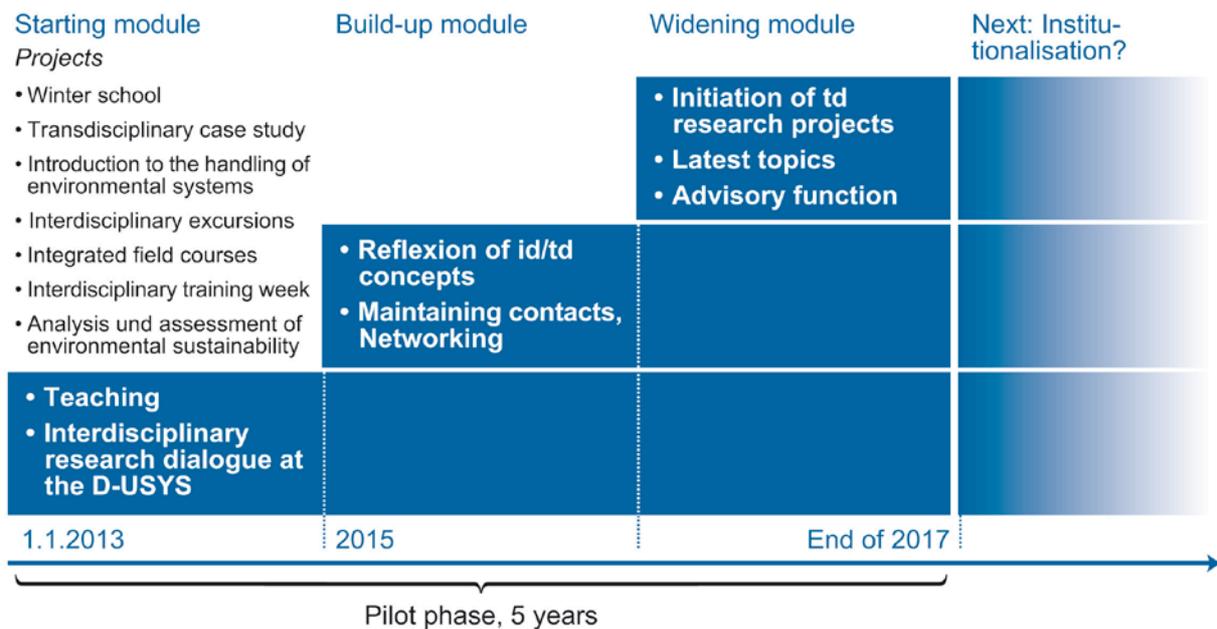


Figure 1: Modules of the TdLab.

Basic Module

1. *Focus on teaching.* The TdLab represents a platform for lecturers in td courses. It promotes coordination of td teaching as well as exchange and mutual learning between the lecturers.
2. *Interdisciplinary research dialogues.* The TdLab represents a platform for interdisciplinary dialogue between researchers of the D-USYS institutes. It organizes workshops on issues that require an interdisciplinary perspective (e.g., climate modelling, integration of social and natural science concepts in models, “ecological novelty”²). The TdLab also collaborates with existing research centres and offers its methodological expertise (e.g., for outreach activities).

¹ This course is conducted in collaboration with lecturers from Food Science; USYS coordination could be carried out within the framework of the TdLab.

² See for example workshop “Towards an interdisciplinary understanding of ecological novelty” (27 - 29 Aug 2012, organized by Christoph Küffer, IBZ) at the Center for Interdisciplinary Research at the University of Bielefeld, www.uni-bielefeld.de/en/ZIF/AG/2012/08-27-Kueffer.html (11.09.2012).

Advanced module

3. *Reflexion on TD concepts.* The TdLab offers a platform for reflexion on concepts of inter- and transdisciplinarity (e.g., evaluation, knowledge transfer, generalizability of inter- and transdisciplinary approaches, further development of inter- and transdisciplinary methods).
4. *Networking.* The TdLab develops a network with partners for practice and thereby enables concrete td research and teaching projects. A further goal is to establish a closer collaboration-network with other departments of the ETH (D-ARCH, D-BAUG, D-MAVT).

Expansion Module

5. *Initiation of td research projects.* The TdLab initiates research projects between the different USYS institutes. It offers its unique expertise regarding research and outreach activities.
6. *Current subjects.* The TdLab anticipates current topics in sustainability.
7. *Consulting.* The TdLab offers consulting, e.g., regarding synthesis of inter- and transdisciplinary research projects.

3 Organisation

Td represents a strategic goal and a collaborative endeavour of the D-USYS. Therefore, the TdLab is closely linked to the USYS institutes and is directly subordinate to the head of the department, the directors of the curricula and the study coordinators. Figure 2 provides an overview of the organisation of the TdLab.

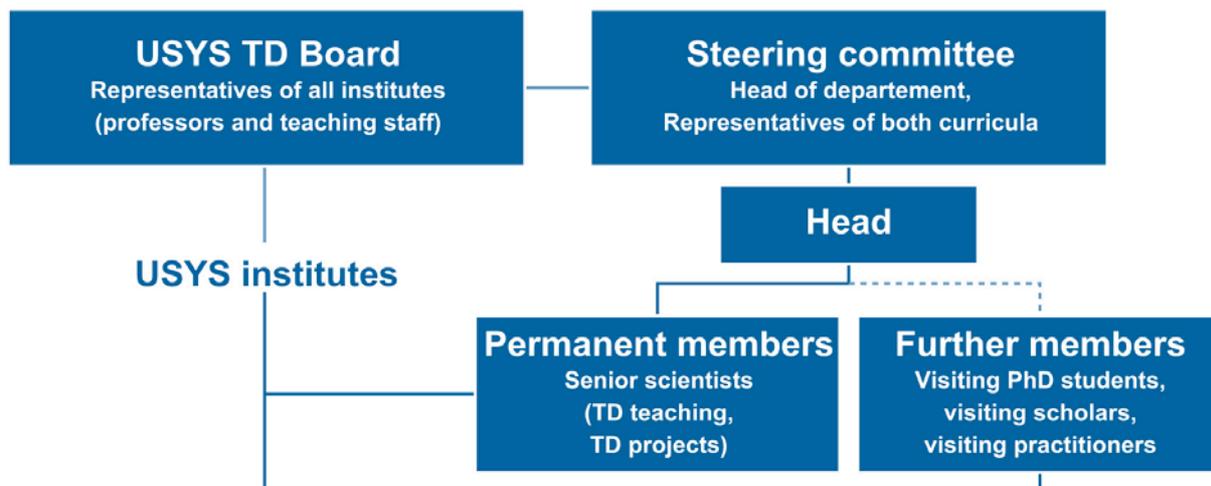


Figure 2: Organisation of the TdLab.

- The **USYS TD Board** is represented by delegates from all USYS institutes³. It meets twice a year and consults the head of the department, the directors of the curricula and the study coordinators as well as the management of the TdLab. It takes over a monitoring function and guarantees the connection between the TdLab and the USYS institutes.
- The **steering committee** is represented by the head of the department and one delegate from each curriculum (director of studies or study coordinator). It decides together with the management of the TdLab on tasks, goals, and content issues. It takes over a monitoring function and guarantees the strategic connection between the TdLab and the D-USYS.

³ If requested, other delegates may be invited (e.g., students, research institutes).

- The **management** of the TdLab is responsible for implementation and decides together with the steering committee on the strategic and content development of the TdLab. It initiates new projects and cooperation between the members of the TdLab. It represents the interface for collaboration with other ETH departments and institutions as well as with external partners.
- The **permanent members** of the TdLab are senior scientists / research fellows and their transdisciplinary research and teaching projects. They are partly employed by the TdLab and their USYS institute and thereby guarantee a connection between the TdLab and the USYS institutes (this is further established by supervision of their PhD students by USYS professors). If possible, permanent appointments will be established in the TdLab.
- Potential **further members** of the TdLab are visiting PhD students, visiting scholars and practitioners.

Box 1: Inter- and Transdisciplinarity.

Inter- and Transdisciplinarity (Id / Td) – Terms

Interdisciplinarity refers to a research approach that integrates data, methods, concepts and theories of two or more scientific disciplines in order to better understand problems whose solutions are beyond the scope of single disciplines.⁽¹⁾ In contrast, multidisciplinary means that different disciplines work in parallel on a specific research question without integration. *Transdisciplinarity* refers to an approach to understanding the complexity of societally relevant problems.^(e.g., 2) It integrates non-academic knowledge and knowledge from different scientific disciplines into a mutual, problem-oriented learning and research process (co-production of knowledge).^(e.g., 3, 4, 5) Thus, transdisciplinarity is based on interdisciplinarity in most cases. Both approaches are functionally motivated and goal-oriented. This means that those scientific disciplines or stakeholders are involved that are needed in order to analyse and solve the problem.⁽⁶⁾

References

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