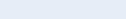# Two decades of transdisciplinarity in Switzerland: Past, present, future

Switzerland has been a stronghold of transdisciplinarity in the past decades, thanks in particular to saguf and td-net. td-net's *20 years anniversary is an opportunity to recall the past and look ahead.*

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The *Network for Transdisciplinary Research (td-net)* of the *Swiss Academies of Arts and Sciences*[1] celebrated its 20th anniversary on 24 August, 2023 at the National theatre in Bern (National Bern) (figure 1). We take this opportunity to review the history of inter- and transdisciplinarity (ITD) in the past 20 years in Switzerland and, inspired by the discussions at the anniversary symposium, we look ahead: what is the current state of ITD and what are new challenges and opportunities?

The beginning

td-net was formed in 2003 by the *Swiss Academy of Natural Sciences* (SANW at the time, now SCNAT in partnership with its sister academies). In 2006, *td-net* became an integral part of the new umbrella organization of the four academies – the *Swiss Academies of Arts and Sciences* (a+). It grew out of a saguf working group called the

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sagufnet (Zingerli et al. 2023, Hirsch Hadorn 2002). The birth of *td-net* benefited from the momentum of an international transdisciplinarity conference in 2000 in Zurich (Klein et al. 2001) and from the intellectual climate at the time.

td-net and its community have their roots in the 1990s, a period marked by the institutionalization of the environmental sciences. At ETH Zurich and the universities of Zurich, Bern and Basel new departments or cross-departmental units were established to address pressing environmental issues. A national mission-oriented research programme – the *SPP Umwelt* – promoted systemic and interdisciplinary research oriented towards environmental issues (Häberli and Grossenbacher-Mansuy 1998). An expert report coordinated by SANW formulated key elements of the vision of environmental research (ProClim 1997): a systemic understanding of complex socioenvironmental issues (including the concept of *syndromes of global change*), a normative orientation of research towards sustainability, and the coordination of research about the causes *(systems knowledge)*, goals to reach *(target knowledge)* and solutions *(transformation knowledge)* in relation to environmental problems. These ideas drew from theoretical discussions in *GAIA* (Mittelstraß 1992, Hirsch 1993, 1995) that extended earlier considerations of interdisciplinarity (e.g., Klein 1990) and transdisciplinarity (e.g., Jantsch 1972).

Science and Technology Studies (STS), championed by the Collegium Helveticum under the leadership of Helga Nowotny, were another influence on ITD in Switzerland. STS explores how social, political, economic, and cultural factors shape the production and consumption of scientific knowledge. Nowotny and her colleagues emphasised the wide distribution of knowledge in society and the importance of involving experts and stakeholders from outside academia *(co-production of knowledge)*. They questioned the role of scientists as neutral experts in society and asked for alternative strategies for evidence-based decision-making in situations characterised by uncertain facts and conflicting interests *(post-normal science,* Funtowicz and Ravetz 1993). Many Swiss contributors to transdisciplinarity were associated with the Collegium Helveticum or STS.

Also, *Technology Assessment (TA)* built extensively on transdisciplinary and participatory processes at the time (Bechtold et al. 2007). TA Swiss, another Swiss Academies competence center, actively participated in *sagufnet* initiatives, and held a position on *td-net's* scientific advisory board from the beginning. This is also true of other institutions, such as the Institut Universitaire Kurt Bösch (IUKB) in Sion, which explicitly focused on ITD teaching in the 1990s.

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FIGURE 1: Christian Pohl, former co-director of *td-net*, gives a brief overview of *td-net's* history at a session of the 20th anniversary symposium.

The development

The main focus of *td-net* over the past 20 years was to promote a professional and well-networked community of ITD experts. In the beginning, activities aimed at making visible what transdisciplinarity is and documenting the state-of-the-art in this diverse and growing metadiscipline. Kueffer et al. (2007) compiled a bibliography of ITD literature and drew a conceptual map of the field. An expert-based compilation of relevant new publications continues to be published annually[2]. The core of *td-net's* conceptual and methodological approach was documented in guidelines (Pohl and Hirsch Hadorn 2007), and state-of-the-art applications were compiled in a handbook (Hirsch Hadorn et al. 2008). For several years, an award highlighted best practices. Based on these fundamentals, the methodological competences in the field were further strengthened through a toolbox of methods and tools[3] and a free online course (*Partnering for Change MOOC*[4]). To network experts, *td-net* publishes a newsletter[5] and organises an annual conference, which alternates between a location in Switzerland and one abroad in collaboration with an international partner (ITD Conferences[6]). *td-net* also took a lead in forming a global alliance for inter- and transdisciplinarity (ITD Alliance[7]).

The strong position of the Swiss ITD community is now recognised worldwide and its consulting expertise is in high demand. *td-net* aims to strengthen these capacities, contributes its own expertise to pilot projects, and in line with the mission of the Swiss Academies, is involved in early detection of new developments and the strengthening of ITD through science policy and lobbying.

Current situation

The current situation of ITD in Switzerland was the subject of the anniversary symposium. Currently, the demand for ITD expertise is growing rapidly with the complexity of pressing societal issues, while overall ITD has unfortunately not received substantial institutional and financial support over the past 20 years. Especially, the environmental sciences in Switzerland have lost much of their inter- and transdisciplinary vision, and the promotion of ITD careers and projects has not increased significantly. Nevertheless, at most universities some ITD experts have found an institutionalised home (e.g., ETH Zurich[8], University of Bern[9], University of Basel[10], University of Geneva[11]) as well as at research institutes such as Eawag[12] or the Swiss Tropical and Public Health Institute[13] (see also Darbellay et al. 2016). In

particular, cooperation and development research has been a stronghold of transdisciplinarity[14], and geography is also innovating ITD approaches at different universities[15]. The institutionalization of sustainability has been promoted through a national programme run by *td-net* (*U Change*[16]).

A creative proliferation of ITD developments increasingly diversifies the community. Universities of Applied Sciences expand their research beyond a narrow understanding of applied research and consultancy (Kaschlik et al. 2020), and arts schools bring forward alternative understandings and methodologies of transdisciplinarity[17]. *Citizen science* renews the interest in citizens' involvement in scientific practices while *education for sustainable development* broadens the toolbox in teaching to enable transformative learning[18]. Civil society also employs ITD methods, for instance in social entrepreneurship and societal transformation processes, and to enable social innovations. Last but not least, ITD has also reached the humanities, for instance in gender studies or environmental humanities (Kueffer et al. 2018)[19].

A main challenge for *td-net* at present thus is to embrace the full diversity of ITD perspectives, while supporting decision-makers and funders with straightforward and applicable advice and tools. Indeed, there is a growing recognition that transdisciplinarity must become a cornerstone of the academic system, both internationally (OECD 2020)[20] and nationally. In Switzerland, both the *Swiss National Science Foundation* and *Innosuisse* are in the process of broadening their understanding of fundamental research and research and development (R&D), respectively. Research supporting a societal transformation towards sustainability is gaining momentum (Bornemann et al. 2023). And government bodies at national to municipal levels experiment with new forms of evidence-based policy-making – be it real-world laboratories, citizen panels or integrative, cross-thematic and cross-sectorial consultancies (e.g., Kueffer et al. 2023). These growing demands require that transdisciplinary expertise can be operationalised, for example, to support the evaluation of projects

and careers, and becomes widely available (Hoffmann et al. 2022).

The future

The academic system is facing at least three interconnected crises.

First, the grand challenges facing society are systemic and complex and cannot be solved by single disciplines or academic knowledge alone. They are also often post-normal problems characterised by ambiguity, and thus require a high degree of reflexivity. This is where ITD research and education come in.

Second, trust in the sciences in society is eroding and the social contract of academia with society must be renegotiated. This requires social innovations and new transdisciplinary approaches at the science-policy interface.

Third, academia must better reflect the diversity of a multicultural and globalised society. Diverse socioeconomic, personal, and cultural backgrounds must be better represented in academia, and power inequality reduced by attending to gender and postcolonial issues. The ontological, epistemological, and methodological diversity in research must also increase. Transdisciplinarity, in essence, is a movement for diversity in academia – at the level of research practices, careers, and institutions.

Given these challenges, there is no doubt that ITD scholarship is of pivotal importance to the future of academia and society. *td-net,* as part of the Swiss Academies and its other competence centres and member organisations including saguf, is committed to contributing theoretically sound but directly applicable solutions.

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