Briefing note: Transdisciplinarity, co-production and co-exploration: integrating knowledge across science, policy and practice in FRACTAL

The aim of this briefing paper is to summarise the three concepts and approaches of transdisciplinarity, knowledge co-production, and co-exploration and how they are being operationalised in FRACTAL. This is a summary of the associated FRACTAL working paper, which should be referred to for further information.

Transdisciplinarity

There is no single universal theory, method or definition of transdisciplinarity. Rather ideas and methods are being drawn from across a wide range of fields and perspectives to create a plurality of definitions[1]. Common across these is the view that, in order to better understand the complexities and uncertainties of contemporary society and to address the problems or challenges emerging within this complexity, various types of knowledge and ways of creating knowledge from across academic disciplines and from sources outside of academia need to be brought together. The problems of society, as conceptualized and expressed by various actors or knowledge-holders operating outside of academia, are valued equally to research problems articulated by academics and are used to jointly co-frame and co-design the pursuit of new, additional knowledge to address complex challenges[12]. Therefore, transdisciplinarity entails the integration of other forms of knowledge outside of academia to address the complexity of contemporary problems in society. It thus unsettles the conventional binary understanding of the relationship between science and society, which views the two as separate realms.

Knowledge co-production

Like transdisciplinarity, ideas and practices of co-producing knowledge challenge the top-down binary models of transferring knowledge from academia to 'end users'. Processes of co-producing knowledge require that no one actor or discipline claims superior knowledge of the question, issue or problem being addressed[3] [4]. A dialogue based on

[1] Klein, J. T. (2013). The transdisciplinary moment(um). Integral Review, 9, 2, 189-199.
[2] Austin, W., Park, C. and Goble, E. (2008). From Interdisciplinary to Transdisciplinary Research: A Case Study. Qualitative Health Research, 18 (4), 557-564.
[3] Pohl, C., Rist, S., Zimmermann, A., Fry, P., Gurung, G.S., Schneider, F., Speranza, C.I., Kiteme, B., Boillat, S., Serrano, E., Hadorn G.H. and Wiesmann, U. (2010). Researchers' roles in knowledge co-production: experience from sustainability research in Kenya, Switzerland, Bolivia and Nepal. Science and Public Policy, 37(4), 267–281.
[4] Oldfield, S. and Patel, Z. (2016). Engaging geographies: negotiating positionality and building relevance. South African Geographical Journal, 98 (3), 505 – 514.

mutual respect is required between people and groups of people with different knowledge types and ways of thinking. Co-producing knowledge is about finding ways to foster collaboration between scientists, decision-makers and practitioners (in the public, private and civil society sectors) resulting in tangible outcomes. This collaboration needs to enable the decision-makers involved to better solve problems they are tasked with addressing and be more influential in shaping the outcomes of contested decision-making processes. In turn, researchers need to be able to satisfy their curiosity, be published and progress their scientific field through the collaboration. In FRACTAL, transdisciplinarity and knowledge co-production are being operationalised in unison.

Co-exploration

Partly in reaction and resistance to the output orientation of knowledge co-production, which has new knowledge as the focal point, co-exploration of knowledge and decisions has emerged as a pragmatic approach in recent years within the climate change field. Co-exploration currently refers to a participatory relationship-building process that brings climate scientists, policy-makers and practitioners together to ask questions of each other, share knowledge, and develop a joint understanding of what is potentially needed from climate science by decision-makers. This process also provides a space for conversations about what is scientifically feasible and defensible in terms of meeting these needs. In some instances, co-exploration may be a pre-curser to knowledge co-production in that it builds the foundation needed for co-production activities, e.g. building trust and understanding each other's needs and framing of the issues, thus 'blurring' the boundaries between science and society. However, the process of co-exploration does not have the primary intention of using the engagement to inform research and the (co)production of new knowledge. Co-exploration does not begin with the assumption that climate data, information or knowledge is necessarily needed. Rather it begins by exploring the development and resource management context in which the decision-makers are operating, and then whether climate data, information or knowledge is needed, and if so what information is specifically relevant to the decision(s) and how can it be most effectively provided.

Operationalising these terms in FRACTAL

A primary objective of FRACTAL is to produce climate knowledge that meets societal goals in each of the cities in which the project is working. It is not expected that all knowledge output will be co-produced in a transdisciplinary way in the project. Rather, space is provided in the project for traditional disciplinary research to co-exist alongside, and regularly interact with, transdisciplinary efforts at co-producing new knowledge that is both scientifically and socially robust.

Mechanisms for transdisciplinary co-production in FRACTAL

To facilitate team structures that lend themselves to co-exploration and transdisciplinary knowledge co-production in FRACTAL, clusters of collaboration have been established that cut across boundaries, between disciplines, organizations, sectors, and work packages to focus on particular research themes. Additionally city task teams have been set up to facilitate engagements between the FRACTAL team and the city partners.

Much time and effort has been invested in developing appropriate mechanisms and processes to foster transdisciplinarity. For instance, city learning labs and dialogues provide the space for learning that allows for a deeper understanding of shared 'burning issues' of each city. Central to the design and operations of FRACTAL is the deployment of embedded researchers in each city to operate as intermediaries between researchers, city officials and politicians. Finally, FRACTAL emphasizes regular reflection and looping lessons learned back into project activities to address challenges, thereby enhancing research and practice.