Transdisciplinarity "Around 2°C"

Thierry Lebel,
UMR IGE, Grenoble, France

Background

The climate change issue is being raised in a growing number of calls for tenders, to such an extent that an ever-larger proportion of researchers are being encouraged to adopt a position in this thematic field, the boundaries of which are constantly expanding. Initially the preserve of physicists, research on the climate issue now involves life sciences and social sciences and humanities. This cross-cutting approach calls for investment in systemic and transdisciplinary science. At the same time, many researchers are examining their civic engagement and the need to improve the relationship between science and society. In response to these needs, the "Around 2°C" summer school combines training and dialogue on the emergence of this systemic and engaged science.

Contact
thierry.lebel@ird.fr

Further reading

MATHY *et al.*, 2021 – Les enjeux de l'interdisciplinarité de la recherche et des parcours de formation sur le changement climatique : l'école d'été « Autour du 2° C ». *Natures Sciences Sociétés*, 29 (1) : 68-76.

Strengthening systemic approaches in the French community

In 2015, at the many conferences and speeches held in the run-up to COP21, climate physicists began to stress the need for scientists to go beyond just warning of the looming climate emergency, encapsulated in the symbolic 2°C threshold. It is true that the planet's habitability will be drastically altered in the event of significant warming, but this warming will be accompanied by a whole series of environmental disturbances, the mechanisms or effects of which interact with the dynamics of climate change. Understanding how the different facets of global change interact requires systemic visions and approaches. However, two workshops organised by the French National Committee on Global Change with the French authors who contributed to the three cross-cutting reports of the IPCC's Sixth Assessment Report have revealed a lack of input from the French community on these systemic approaches. We are therefore faced with a particular need within the French academic community to encourage and strengthen systemic research on climate change mitigation and adaptation, over and above very generic scientific issues.

"Around 2°C" summer school

The "Around 2°C" summer school was instigated by Grenoble-based researchers from various thematic backgrounds who were aware of the wealth of questions raised by the climate issue in various disciplinary fields, but also of the wide range of approaches used by these communities. The title "Around 2°C" was intended to make it clear that the climate issue was the core focus of the summer school, while emphasising that all aspects of this issue must be considered. The week-long summer school, supported mainly by CNRS, INRAE and IRD, brought together a very varied spectrum of scientists of all ages and from a wide range of disciplines, leading to some very lively debates, particularly on mitigation and adaptation strategies and on the limits and unthought-ofs associated with the "solutions" they give rise to. They also led to an awareness of the lack of integration between certain issues (e.g. the effects of agricultural practices on climate on the one hand and on the quality of the environment on the other). The programme was structured into four stages:

1. The mutual knowledge stage requires each participant to give a 180-second presentation on their research problem and motivation for enrolling in the school. This provides a broad overview of the current issues facing different communities and ensures that everyone has the opportunity to speak.
2. The ex cathedra presentations provide an opportunity to identify the knowledge, questions and uncertainties of different research communities. These presentations often focus on "macro" issues (general circulation models, socio-economic trajectories, integrated assessment models), but also try to change the scale of analysis by looking at local

issues (the question of the survival of snow-based activities in medium-altitude mountain resorts, or the impact of short supply chains or organic food on greenhouse gas emissions, for example).

3. Working in sub-groups is at the heart of the summer school's transdisciplinary approach. The aim is to encourage group-based cross-disciplinary learning by breaking down barriers and discussing ways of co-constructing scientific problems or dealing with questions posed by society to scientists. To do this, groups are formed, each reflecting a cross-section of disciplines, and work on formulating scientific questions in a manner similar to preparing a call for tenders (French National Research Agency or European model). Then, different groups work on how they plan to respond to these calls for tenders, reformulating the questions if necessary if one discipline considers that they are not relevant from its own perspective.

4. The round tables are usually held on the last two days, after the participants have had time to get to know each other and are more willing to engage in discussion. The round tables provide a much-needed insight into the relationship between science and society and the position of researchers. In 2021, the closing round table brought together a member of the French High Council on Climate, two women from the Citizens' Convention for Climate and an elected regional official for an enlightening and fascinating discussion on the need to rely on scientists to help steer mitigation and adaptation policies and the difficulties this entails.

Conscious of the issues surrounding the relationship between science and society

During round-table discussions attended by elected officials and members of the public, the scientists realised that policymakers, who are unfamiliar with the scientific investigation process, are more likely to be looking for immediate expertise to solve their problems of adapting to climate change than for systemic insights that will help them understand and deal with the root cause of the problem, in other words, how to mitigate global warming itself. These meetings, in a setting free of power struggles or representation issues, provide a forum for addressing key issues that are increasingly shaping the thinking in laboratories: the gap between government rhetoric on the climate emergency (or the loss of biodiversity or environmental degradation more generally) and their actual response; the observation that researchers' words carry little weight when their discoveries run counter to socio-economic or electoral interests; the emergence of societies where people more readily listen to an expert rather than to someone who questions the world, and where belief takes precedence over reason; the existence of deep-seated divergences of interest, value hierarchies and practices within society, which often carry more weight than rational arguments based on facts. When confronted with the sometimes contradictory expectations of their interlocutors, it is not always easy for scientists to clearly identify how far they can

simplify the formulation of knowledge, its limits and uncertainties to draw attention to the societal implications of their discoveries, thereby turning them into de facto whistleblowers.
While they are fully aware that they need to keep knowledge away from being exploited by certain groups of people, many scientists are now claiming that, when the results of their research have such far-reaching and immediate implications, strict neutrality is no longer an option in environmental sciences. The summer school has also helped to revitalise the dialogue between scientists and policymakers by generating various follow-on initiatives: researchers' residencies in rural communities, involvement in local referendums, participation in the operational committee of the Grenoble-Alpes Metropole Citizens' Climate Convention, which starts in January 2022, and the formation of a political ecology workshop in the Paris region, bringing together academic and social stakeholders.

KEY POINTS

Compartmentalised in their disciplinary silos and facing the competitive pressure of responding to calls for tenders and from an increasingly bureaucratic research organisation, it is difficult for scientists to find any breathing space to reflect on the major changes required to carry out systemic studies on multi-factorial environmental issues. The "Around 2°C" summer school provides a week-long opportunity for transdisciplinary thinking and practice, helping to break down barriers and encourage risk-taking. The sense of urgency to do something that really transcends pure science has been clear at each year's summer school, and the resulting commitment of many participants shows how motivating this type of experience is, where discussion is more important than the top-down passing on of knowledge.

SUSTAINABILITY SCIENCE

UNDERSTAND, CO-CONSTRUCT, TRANSFORM

Collective thinking coordinated
by Olivier Dangles and Claire Fréour

French National Research Institute for Sustainable Development
Marseille, 2023

Cover photo: Rock painting, Cueva de las Manos, Argentina.
© IRD/O. Dangles – F. Nowicki/*Une Autre Terre*

Photo p. 14: "Understand": Survey work, Kenya.
© IRD/S. Duvail

Photo p. 40-41: Observation and sampling, Burkina Faso.
© IRD/M. Barro

Photo p. 62: "Co-construct": Participatory mapping workshop on coastal cultural heritage, Marquesas Islands.
© IRD/P. Ottino

Photo p. 88-89: Participatory work with local people, Madagascar.
© IRD/M. Léopold

Photo p. 110: "Transform": Schoolchildren's fresco on the theme of the Pachamama, Ecuador.
© IRD-CNRS/S. Desprats Bologna

Photo p. 136-137: Children playing on a beach in Salango, Ecuador.
© IRD/O. Dangles – F. Nowicki/*Une Autre Terre*

Editorial coordinators: Corinne Lavagne and Marie-Laure Portal-Cabanel
Cover, design and layout: Charlotte Devanz

IRD, Marseille, 2023