COMMENT | Transdisciplinary research

10 steps to transformation

Creating the knowledge we need most demands a more proactive approach to funding

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Why should we bother studying, ask climate-striking school children, if the overwhelming evidence of planetary crisis goes ignored? The question is aimed at political leaders, but it might also be a call to researchers for more engaged science that supports a transformation of society from the grassroots to the halls of power.

Many researchers are ready to respond, with transdisciplinary research that emphasises collaboration between scientists, policymakers, citizens and others. They seek to shed light on thorny, contested issues, set out joint goals, and create roadmaps for achieving them.

Such ambitions require equally progressive funders. With this in mind, a group of Swiss researchers and funding-agency staff recently set out to clarify how funding programmes can maximise the potential of transformative research. They identified 10 overlapping stages and their key ingredients.

1. Preparation
From the start, programme leaders should speak with all those concerned, including decision-makers and affected communities. Only then should they create a formal programme description and announce a call for proposals. Even then, they should leave room for grantees to adapt the framing of problems and goals.

2. Proposal elaboration
Next come the proposals. As well as academics, transformative research teams need societal collaborators from diverse backgrounds. They need time to build trust, identify knowledge gaps and change priorities. Ideally, teams will include senior scientists versed in collaborating beyond academia, despite such people being rare.

3. Interactions with applicants
The competitive nature of research funding often leads programme staff to keep applicants at arm's length. But in a young field such as transformative science, programme staff need to take a hands-on approach. This could include organising training in transdisciplinary methods and preproposal advice for applicants.

4. Project selection
This crucial stage selects the parts—projects, subtopics, approaches, and budgets—that will build the greater whole of the research programme. Those chosen should contribute to both scientific and societal aims. A mix is crucial, with projects taking a narrower disciplinary approach complemented by others involving an exchange with society.

5. Research activities
Finally, the projects can begin. Their leaders may need to adapt studies in light of local people's concerns or the realities of working with collaborators from diverse disciplines and backgrounds. Programme staff can aid this process and ensure wider coherence.

6. Joint agenda setting
Programme leaders should hold early workshops to fine-tune and coordinate their goals. Researchers can be encouraged to maximise synergies, for example by addressing different parts of the same global value chain. Overall programme goals can also be adapted accordingly.

7. Networking and synthesis
As research progresses, programme heads can periodically convene staff to ensure communication and relationship building. 'Synthesis projects' can be launched to implement transformation-oriented activities at the programme level. These might include public information campaigns or the creation of tools for disseminating results.

8. Interactions with projects
Programme leaders can enhance ongoing projects. Annual reports can monitor activities and progress. Training can be offered to foster skills in areas often overlooked, such as communication and public engagement. Visits by programme staff can clarify concerns.

9. External communication
Transdisciplinary research is ideally suited to accessible knowledge products, including decision-support tools, policy briefs, apps and videos. Programme leaders should strive to bring together scientists, policymakers and the public in spaces for mutual learning. Finally, successor structures should be created to carry on the programme's work.

10. Impact evaluation
Societal transformations take time. As well as mandating final project reports, programme leaders should fund longer-term, programme-level evaluations to discover what works, or not, to effect transformation.

Transformative science demands transformative science policy. Funding programmes, and other science institutions, must be redesigned to support research that prioritises societal impacts as much as—or more than—academic prestige. We owe as much to the next generation of scientists, many of whom are demanding rapid change in response to ecological threats.

> "Transformative science demands transformative science policy...we owe as much to the next generation of scientists."