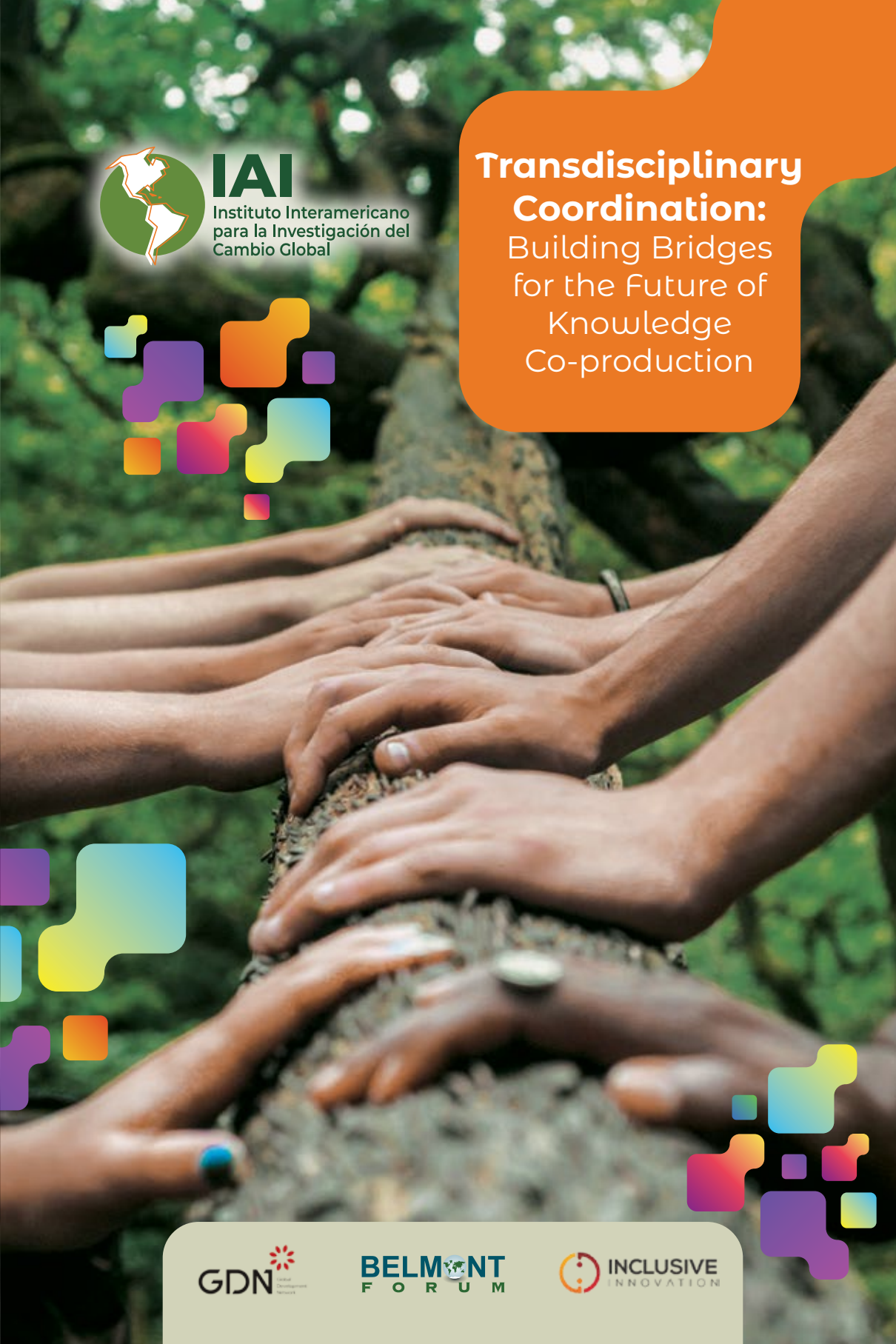

IAI
Instituto Interamericano para la Investigación del Cambio Global

Transdisciplinary Coordination:
Building Bridges for the Future of Knowledge Co-production

GDN
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INCLUSIVE INNOVATION

Transdisciplinary coordination: building bridges for the future of knowledge co-production

IAI
Inter-American Institute for Global Change Research

Executive Director:
Anna Stewart Ibarra

Authors:
Laila Sandroni
Ismet Mamnoon
Anna Stewart Ibarra

Design and Layout:
María Luisa Bermeo

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Preface

Human activity has triggered profound and accelerating changes to Earth's systems, driving a triple planetary crisis of climate change, biodiversity loss, and pollution. Addressing these intertwined challenges requires more than traditional scientific approaches. Too often, research remains siloed and academic, falling short of offering inclusive, actionable solutions for real-world problems and policy needs.

Transdisciplinary (TD) research offers a promising alternative. By integrating diverse forms of knowledge and fostering collaboration between scientists, funders, policymakers, and civil society, TD research aims to co-produce solutions that are grounded, equitable, and impactful. Recognizing this, many research institutions, funding agencies, and knowledge brokers are embracing TD approaches as essential to advancing sustainability.

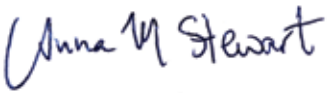
Yet, TD research is not without its complexities. It demands thoughtful coordination to align varied expectations, perspectives, and expertise—especially in multinational teams where cultural and institutional diversity adds both richness and challenge. In this context, coordination is not a technical afterthought but a core enabler of TD impact. From project design and implementation to monitoring and evaluation, effective coordination strengthens collaboration and supports the delivery of meaningful outcomes.

This report emphasizes the importance of coordination practices in TD research, centering on the Global South. This focus is anchored on the belief that current research collaboration practices reflect larger inequities and power imbalances

between North and South, and that embracing a Southern perspective is vital to global transformation.

Now is the time to invest in new mechanisms, tools, and partnerships that support TD coordination and elevate diverse voices. We hope this report contributes to that effort and helps move the global research community toward more transformative, effective, and just scientific practices—aligned with national priorities, the Sustainable Development Goals, and the urgent needs of our planet.

Nicole Arbour
Executive Director
Belmont Forum



Anna Stewart Ibarra
Executive Director Interamerican Institute for Global Change Research

Francesco Obino
Director of the Research Programmes
Global Development Network

Maggie Dugan
Founder & Executive Director
Inclusive Innovation

Executive Summary

To enhance transdisciplinary (TD) coordination, we identified three core goals described in detail in this report: to shift culture, transform funding, and build capacity.

Goal #1: SHIFT CULTURE

TD approaches require a shift in how science is done, perceived, and used. Achieving this objective requires mobilizing diverse communities and inspiring cooperation across multiple sectors to shift the narrative of success in science away from narrow academic measures and toward transformative change.

Actions include:
Strengthening TD Communities by finding new allies and connecting existing TD networks.

Supporting Diversity and Inclusion by implementing and strengthening diversity policies in scientific institutions.

Encouraging Multilingual Activities to include groups that have been excluded by the over-reliance on English as the language of international science.

Empowering Communities to be Changemakers by offering identifying specific roles in research to community members, especially people who bridge diverse groups, as well as capacity building and widening access to data.

Sharing Narratives of Success with coordinated communications that increase the visibility of TD projects and show how important they are for society.

Goal #2: TRANSFORM FUNDING

Changing the way that TD science is funded can increase democratic engagement and align research with the most pressing societal problems. Activities in this goal include working within current funding structures and creating new structures to diversify, improve and increase funding sources for TD.

Actions include:
Identifying and Engaging Funders including non-traditional resources and a broader range of traditional scientific funders, and revise funding rules to address imbalances between donors and recipients.

Updating Frameworks for Monitoring, Evaluation and Learning to include non-traditional measures such as societal impact and engagement with wider audiences.

Extending Research and Reporting Guidelines to include both standard academic outcomes and non-academic coordination outputs.

Exploring New Funding Mechanisms to provide long-term support for TD projects, embrace collaboration and compensate societal actors for their contributions.

Enhancing Coordination Management by providing mentorship, creating open platforms for sharing data and tools, and establishing clear roles and expectations.

Goal #3: BUILD CAPACITY

TD research requires special skills, making capacity building an especially important and unusually broad endeavor. The activities we identify under this goal will sharpen skills in facilitation, communication, and impact-focus.

Actions include:

Training for Impact, helping researchers align their work with the most pressing problems in society and environment.

Developing Facilitation Skills to encourage innovation and dynamic engagement within teams.

Promoting Practice Exchange to spread hands-on experience through the TD community.

Embracing Open Science while recognizing the ethical implications of freely sharing data coproduced with local communities and indigenous peoples.

Fostering Communication by identifying and training able communicators and providing them with tools to fulfill their role.

Preparing for Conflict with techniques for active listening and mediation, and for guiding a group in building pathways forward.

1. Introduction

Current debates on sustainability highlight the urgent need to co-produce scientific knowledge that can drive real-world change. Traditional research methods have struggled to offer viable solutions for sustaining Earth's social and natural systems (Fazey et al., 2020). Since the 1980s, interdisciplinary research has grown steadily, gaining institutional support, increased funding, and long-term impact (Van Noorden, 2015). Today, there is a strong push for science to engage directly with society—producing knowledge in collaboration with those affected by the issues to create practical, actionable solutions (Bursztyn & Purushothaman, 2022). Transdisciplinary (TD) research plays a key role in this shift. It not only brings together multiple academic fields but also includes non-academic actors and diverse knowledge systems, including non-Western and practical expertise. This inclusive approach fosters mutual learning and is better suited to tackling complex, real-world sustainability challenges (Brandt et al., 2013; Hadorn et al., 2008; Lawrence et al., 2022).

Coordination is essential for effective TD research, but it is usually downplayed or not even accounted for in current TD processes. This report synthesizes insights from a workshop held in 2024 that aimed to identify training, networking, assessment tools, and best practices that can enhance TD coordination activities.

1.1. Definitions

Transdisciplinarity

As institutions that foster and support a TD approach to scientific knowledge production, we adopt a broad definition of the field.

We understand TD research to be any scientific endeavor that does all of the following:

1) Aims to produce actionable solutions for concrete problems, especially those related to global environmental change (GEC)
2) Encompasses diverse scientific disciplines including natural and social sciences
3) Includes relevant societal actors from the outset. That means people affected by the problem and those otherwise invested in producing a solution, including affected communities, private companies, governmental institutions, NGOs, and local associations.

This real-life approach and plural perspective enable scientific research to move beyond the fragmentation of disciplinary perspective and relate to the innovative solutions emerging from practice, generating new capacities, innovative ideas and new partnerships (Jeder, 2013). Due to the connection to actual demands, prioritizing TD approaches can enhance the capacity for better decision-making and stronger public policies on issues related to GEC (Watson et al, 2022).

Tropical Forests CRA
Applying a transdisciplinary approach to call scoping

The IAI and the São Paulo Research Foundation (FAPESP) led the development and implementation of the Belmont Forum Collaborative Research Action entitled: "Tropical Forests: Global Implications and Pressing Actions". The intitutions that proposed the call to the Belmont Forum plenary understood that it could be highly benefitial for it to reflect priorities seen by the stakeholders involved with tropical forests, and implemented a participatory strategy to collective indetify the scope and themes of the call. The strategy encompassed six scoping workshops with participants worldwide, each with a specific regional focus and targeted audience, including scientists from different field, indogenous and local communities, and policymakers. The workshops yielded approximately 300 statements, which were then grouped into general categories. Analysts and workshop participants iteratively expanded and refined these until the three thematic areas named in the call emerged: 1) : Reduce deforestation, and promote sustainable development and locally-led economies; 2) Ecosystem Function, Connectivity, and Climate Change Science; 3) Environmental Justice and Governance. The high degree of participation of non-academic actors in the consortia that applied for the first phase of the call reflect this engagement.

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Similar work with different names, such as engaged science, integrative science and post-normal science might satisfy all three minimum requirements, while other knowledge-production endeavours such as evidence-based policy and citizen science meet some aspects of them. TD is not the only scientific trend seeking to overcome scientific isolation from the real world. It is one of a few names for a change in scientific culture, opening opportunities for partnership building to generate knowledge to tackle global environmental change.

TD Coordination

This means all the non-academic activities that enable complex collaborations, allowing meaningful co-production among different disciplines and with non-academic knowledge holders. Under this umbrella fit all activities related to bringing together diverse societal actors, science-policy interface, broad audience communication, development of partnerships among institutions and funding organisms, development and dissemination of protocols for evaluating projects and reports, etc.

Science Technology and Policy (STeP) FellowshipTraining Science-Policy Leaders in The Americas

Over the last 6 years the IAI has hosted four generations of Science, Technology, Policy (STeP) Fellows from 14 countries across the americas. The program places scientists with diverse background at host government or private organizations to engage first-hand with policy and decision-makers and facilitate the uptake of scientific knowledge into policy processes. Each cohort receives training and mentorship over two years in relevant themes for the use of science to planning and decision-making, such as: science diplomacy, transdisciplinary approaches, international negotiations, leadership and scientific communication. The fellows work toghether on science diplomacy projects of interest to their home countries, learning-by-doing while they enlarge and stregthen their networks with other early career researchers and practitioners invested in sustainability issues.

STeP
Science Technology Policy Fellowship

1.2. TD Coordination Workshop

In June 2024, a workshop on TD coordination was hosted by the Inter-American Institute for Global Change Research (IAI) in partnership with the Belmont Forum, the Global Development Network (GDN), and Inclusive Innovation (II), with support from the US National Science Foundation (NSF). It brought together institutions actively partnering to develop regional and global TD coordination activities (see boxes).

This workshop grew out of a 2023 review by The Belmont Forum Secretariat, which assessed coordination practices in their proposal calls, known as Collaborative Research Actions or CRAs (Belmont Forum, 2023). The review found (1) a shortfall between current practice and resources and the aspirations of the Forum to advance TD research, and (2) the need to enhance the ability of teams applying for funding to meet the Belmont Forum requirements and to conduct research that is socially and ethically responsible and best serves the needs of society. This has demonstrated that Belmont Forum projects require a higher level of coordination to achieve optimal effectiveness. The Belmont Forum report generated an opening for further exploring the role of coordination in TD science, and the workshop is part of the effort to fill this gap.

The dynamics of the workshop were proposed and co-developed with Inclusive Innovation in close contact with the hosts. The workshop was designed with an emphasis on facilitating co-creation, following the "five Ps":

- **People** - the collaborators who come together to co-create.
- **Purpose** - the larger vision or goal that all collaborators are aligned around.
- **Product** - the tangible outcomes resulting from the creative process.
- **Press** - the environmental and emotional factors that affect creative output.
- **Process** - the methods and steps taken to arrive at solutions.

Through this model, Inclusive Innovations helped the people (IAI, GDN, Belmont Forum and Inclusive Innovation) come together to work on the purpose of fostering TD coordination and co-create a product – this public-facing report. By establishing a place based on an environment welcoming to difference they led a creative process, using tools and techniques to facilitate co-creation. A complete description of our journey can be found in the annex.

Workshop participants identified the above-mentioned concept of TD coordination and possible ways to improve coordination of TD funding schemes, the scoping of new funding calls, proposal writing, and project implementation and assessment.

Africa Science Leadership Program (ASLP)

Creative thinking for skillful leadership in transdisciplinary science

The (ASLP) capacity building program, running annually since 2015, has created a pan-African community of inspired early career and mid-career researchers who are galvanized to create systemic culture change in how research is conducted on the continent of Africa. Inclusive Innovation (II) was involved in the inception of the program, developing the original design and delivery, and has continued working with the ASLP Steering Committee to refine the program over the last 10 years. The program involves two workshop experiences, at the start and end of each fellowship year, during which researchers are inspired to discover and develop their leadership skills. Using a framework of Collective Leadership and Creative Problem Solving (CPS) methodology, the program provides a robust toolkit of creative, collaborative tools they can appropriate as leaders working across boundaries within their institutions and communities. The ASLP has proven to be sustainable: in addition to the continent-wide program, more than a dozen regional science leadership programs (SLPs) have taken place across the African continent, sharing the methodology and tool kit with researchers at local and regional institutions.

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1.3. Focus on coordination

While other efforts have been made to analyze TD experiences and funding mechanisms[1], this workshop and report look specifically at coordination. Coordination activities in TD are often neglected. At the project implementation level, for example, proposals for TD research do not usually account for or plan for the intense process of developing partnerships in the first year of a project. Early career researchers, usually PhD candidates or post-docs, are thrown into complex political contexts without any kind of training and face those challenges at the expense of planned activities. At the call development level, funding institutions do not incorporate inclusive initiatives into the call due to a lack of time, resources, or qualified personnel. Coordination activities are often ignored by funding agencies (issuing, managing and evaluating TD calls) and at the project implementation level, led by academic and non-academic researchers.

We hope to broaden and deepen TD practice worldwide by identifying the coordination activities needed for TD success, from the perspective of institutions working to support TD research. This is not a comprehensive report on TD coordination practices, but rather a compilation of tasks that could improve the coordination aspects of TD.

[1] Much of the needs identified elsewhere could be seen as needed coordination activities, such as: to elevate the TD practices that were already implemented (Moser, 2024); to implement a cross sectoral approach not just to TD project implementation but also to call development and funding processes (Mukute et al, 2024); to recognize – and compensate – the body of people working behind the scenes to improve TD (Schneider, 2024); to match science needs and science funding for co-production (Kaiser and Gluckman, 2023).

GDN Policy Labs

Shaping Research Agendas through Research–Policy Dialogue

GDN's Policy Labs are innovative spaces designed to foster early and meaningful interaction between researchers and a broad spectrum of policy actors around shared issues of concern—at the crucial moment when research agendas are still being formed. Unlike traditional models of research-policy engagement, which focus on post-research dissemination, Policy Labs prioritize co-creation of research priorities that are immediately relevant and usable. The labs enable researchers to engage directly with potential users of their work, gaining insight into the knowledge needs of policymakers, practitioners, and other decision-makers. This process generates research agendas grounded in the real-world demands of policy and practice and creates early demand and ownership among policy actors for future research outputs. These Labs also serve as a diagnostic tool for GDN and its partners to better understand the evolving needs and aspirations of Southern researchers and policy communities.

2. Framework for TD Coordination

Two key outcomes from the workshop were to identify the different groups of people involved in the TD community, and three overlapping goals for enhancing coordination activities.

2.1. TD Community

The workshop identified three categories of people in the TD community, all involved in fostering, supporting and/or implementing TD approaches to science.

1) **TD champions** are institutions and people working actively to promote and fund TD and to make it more impactful and efficient, such as funders opening TD calls on GEC, institutions that foster TD networking, and groups that support training on TD approaches.
2) **TD change-makers** are academic and non-academic researchers and other knowledge brokers who apply a TD approach to develop innovative solutions to GEC issues.
3) **TD coordinators** are the people that connect TD champions and TD change makers. Coordinators are border agents, capable of moving between diverse sets of knowledge.

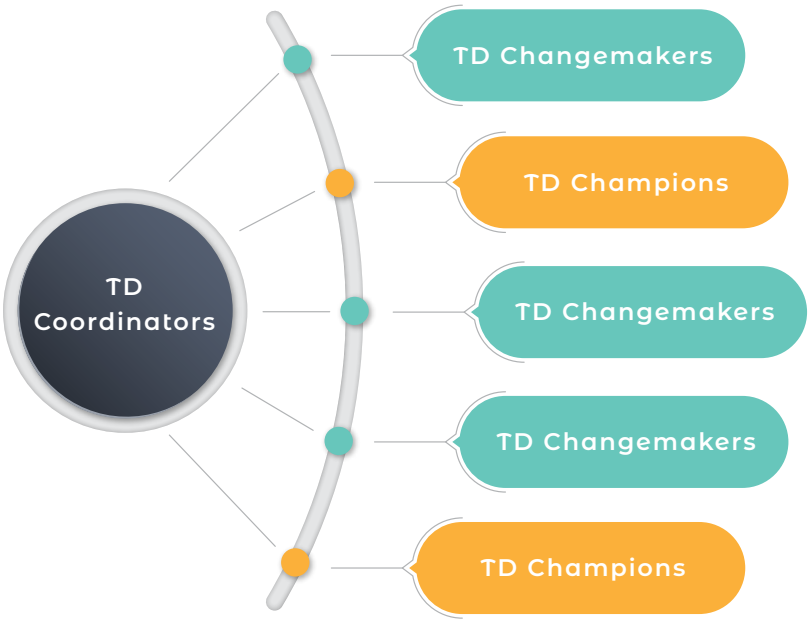

Figure 1: *TD Community System Representation*

Ideally, TD programs and projects should have designated coordinators. But as the need for TD coordinators is still not universally accepted, and the role is not yet fully defined, coordination activities today are usually spread between people working on funding call development and project implementation.

Specialist coordinators would be involved in a large number of activities, from scoping a new call text to implementing and evaluating projects. These activities go beyond conventional forms of call development and scientific project implementation and evaluation, because effective TD research requires changes in how science is called upon and done and used. Therefore, there is a high degree of innovation in coordination activities and much of what has been done is experimental.

2.2. TD Coordination Activities

To better understand what changes are needed to improve TD coordination, the workshop grouped activities into three overlapping goals: Shift Culture; Transform Funding; Build Capacity. These goals are archetypes, to organize ideas for deepening TD practices through enhanced coordination.

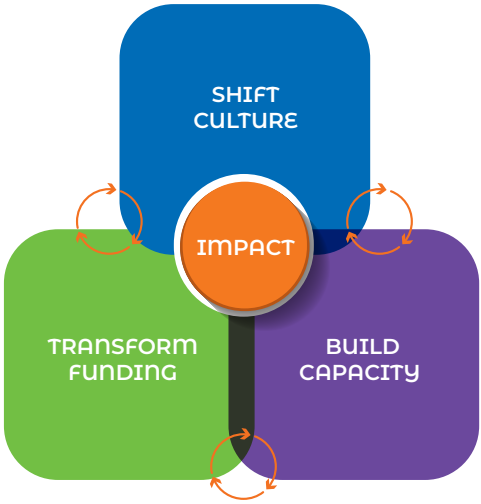

Figure 2: *Goals to improve coordination in TD research*

Goal #1 SHIFT CULTURE

Mobilize diverse communities and inspire cooperation across multiple sectors to bring about a change in the narrative of success in science toward real impact

Advancing TD research requires a culture shift in science, as has long been acknowledged (Lang et al, 2012; Lawrence et al, 2022). TD approaches call for some profound changes in how we perceive, do, fund, and evaluate science (see below in section 3). Also, there is a need for science to welcome other narratives, so societal actors can incorporate their role in actively producing knowledge to tackle GEC issues.

The overarching goal of TD research is to foster a transformative vision of science aimed at achieving equity and action to deal with GEC. Through creative collaboration and communication, TD is an instrument to realign global goals, reshape societal narratives, and address policy challenges. The coordination activities in this cluster have a wider reach and broader targets than those in the other 2 goals.

Goal #2 TRANSFORM FUNDING:

Diversify, improve and increase funding sources for TD, working within current funding structures and creating new ones.

In this cluster, coordination activities relate to bridging the gap between the current funding mechanisms and TD aspirations for democratic engagement and societal impact. Funding constraints are repeatedly mentioned as a challenge to TD projects (Sandroni et al, 2023). The most important ones are:

1) Inequitable budget division among partners, especially non-academics. Nonacademic researchers or societal actors involved in TD research are often expected to donate their time to the research, while academic researchers are compensated for their time. There is a need to better distribute resources among team members.
2) Difficulties in budget and management planning due to the dynamic character of TD practice.TD research projects often need to adapt to social and political circumstances as they evolve and also need room to re-evaluate activities and objectives according to the participation of the diverse actors involved. Because of that an initial budget or set of activities might need to be altered according to the development of the project. Funding agencies should have the means to deal with these adjustments.
3) Inadequate short-term funding, given the great amount of time and effort needed for actors' engagement.

Other challenges include outdated promotion and tenure criteria for academic researchers and the need to measure non-traditional academic outcomes, which are most likely to be used by non-academic societal actors. In conventional research, the number of papers and the ranking of journals tend to be the most important components of research impact. TD research, on the other hand, employs most time and effort to produce other outcomes such as policy briefs, videos, public-facing websites and other communication pieces, that are not accounted for in mainstream evaluation protocols.

Goal #3 BUILD CAPACITY

Help project implementers build trustful collaborations to co-create science and provide the most meaningful impact possible.

This cluster encompasses two sides of capacity-building: bringing new skills and tools to diverse actors involved in TD (including academics and societal actors) and making visible existing capacities, so they can be expressed and pursued.

1) TD practices require training that is not available for most students. Non-academic actors involved in TD research also lack training in TD approaches and participatory decision making. This is especially true in the global South, where the democratic deficit is larger. Also, new capacities are needed for research funders, administrators and managers to comply with the specificities of TD calls and projects, relating this goal to the #2.

2) A wide range of capacities can be as critical for TD as rigorous scientific training, including community engagement, facilitation skills, policy design skills, and communication skills. These capacities are already present in diverse societal actors who are usually not called to develop research proposals.

Toolkits and training materials for transdisciplinary approaches have been developed over the past decade, and some TD champions have made efforts to systematize available training tools[2]. Much work still needs to be done to increase the use of such materials, reaching beyond researchers to policy makers, local communities and others. There are also important gaps to fill in content.

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All three goals help foster the spirit of TD science, from the design of projects, programs and calls to the implementation and delivery of the desired impact, as well as monitoring and evaluation. Of course, these activities and goals overlap, and constant assessment of how parties are engaged will refine the relationships between activities.

[2] C.f. the ITD alliance Tool Kit Inventory; the TRansImpact TD Toolbox; and the IAI TD Library and Open-source Curriculum “Advances in Transdisciplinary Research on Global Environmental Change in Latin America and the Caribbean”.

3. Improving Coordination Activities

The workshop developed detailed ideas to enhance activities in all three goals.

3.1. Shift Culture

Our overarching goal is to shift the focus of science practice from positivist research questions to co-defined societal challenges. One aim is to move away from models that position science above traditional knowledge systems, and towards equitable partnerships rooted in trust and mutual benefit.

The shift starts with cultivating a culture of collaboration among researchers, funders, and societal actors, moving away from traditional disciplinary science towards more cooperative practices. TD coordinators could mobilize communities to become changemakers and increase the visibility of TD efforts.

These changes will require addressing governance issues, influencing political decisions, and identifying key policy priorities.

Specific actions to encourage this culture shift include the following:

Strengthen TD Communities

It is important to mobilize TD allies and build and enlarge a community that acknowledges past efforts while pushing for new collective engagement. There is a need for open, inclusive spaces where creativity, listening, and shared practices can thrive. These spaces can foster cooperation among TD champions, while encouraging active participation from societal actors, creating a shared spirit of cooperation, articulating new goals, and redefining success. Much of this community building process is already happening, and part of the effort would be to transfer and adapt learning from other networks

with similar interests and goals, such as development research, sustainability research and socio-ecological systems resilience. Even more importantly, there is a need to engage and connect existing TD-focused networks and enhance discussions about coordination initiatives. Existing TD networks and alliances could improve their bonds with societal actors and institutions invested in producing non-academic outputs, such as communications agencies interested in GEC, and policymaking spaces for the environmental agenda.

Support Diversity and Inclusion

A major pillar of the culture shift is supporting equity, diversity and inclusion (EDI) by ensuring that TD communities of researchers and practitioners have diverse perspectives. TD research is an open door for deepening EDI considerations in science, as it puts the complexities of engagement with varied academic and non-academic actors at the forefront. TD research also aims to ensure that projects are directly influenced and co-created by those impacted by the problems being addressed. A key activity to aid TD coordination is further implementing EDI policies across scientific institutions.

Encourage Multilingual Activities

English has become the most used language in science for international exchange. This language bias restricts the engagement of scientists and societal actors from non-English speaking communities. Furthermore, much of today's cutting-edge science and innovative solutions to GEC is produced in other languages, especially when it relates to territorially based effects, and if TD projects are coordinated exclusively through English there is a risk that this could be ignored. If projects documents are only written in English, that undermines the openness for engagement from the start. Instead, coordinators could encourage discourse in a wide range of languages. New AI tools and dedicated personnel for language coordination in call development and implementation can help foster multilingual environments with increased participation from diverse actors.

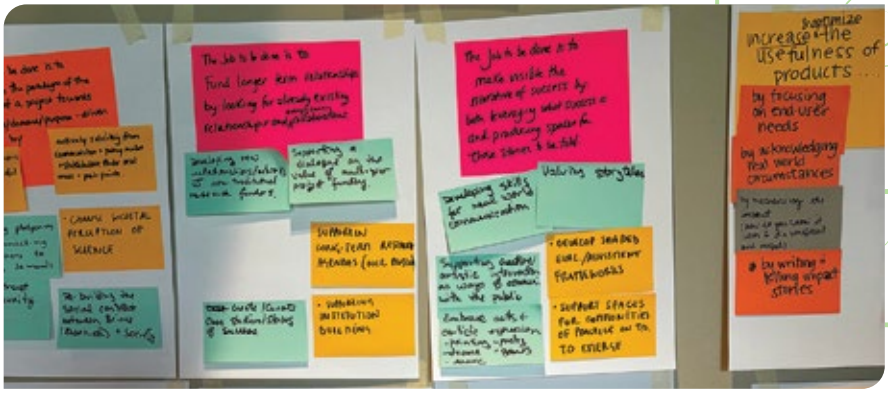
Empower Communities to be Changemakers

Empowering local communities is central to the group's vision, with a focus on elevating collective work. A leadership shift is necessary, identifying and offering coordination roles in research to boundary spanners (people who bridge diverse groups) and empowering individual local changemakers through access to data and capacity building. Especially in the global south, communities need to believe they can drive change in their own territories, and TD research can help them do so, for instance by connecting them with public policy and knowledge for decision making.

Share Narratives of Success

The group recognizes that real impact depends on clear communication strategies. A coordinated communications strategy would include advocating for TD values, translating messages into multiple languages, and collaborating with professional communicators, artists and journalists to create compelling narratives that increase the visibility and impact of TD projects. Showcasing successful projects and effective engagement with decision-makers would demonstrate the urgency and value of TD approaches for societal sustainability.

3.2. Transform Funding



We need to change the ways science is funded to promote democratic engagement, orient science towards real-life problems, support change-makers and aid the process of knowledge co-production. This involves working within existing imperfect research and funding structures as well as diversifying and increasing funding sources.

The TD cycle starts with establishing effective funding mechanisms and then securing funding. Promoting seed grants, offering smaller amounts for strategic planning are crucial to support the strategic phase of a TD initiative, to ensure that research activities align with broader goals and objectives, particularly those tied to creating meaningful societal impact. On the other hand, project implementation in TD requires larger funding and timeframes so that the specific challenges of TD can be tackled. This requires scientific funders to be open to change and reorganization on different levels.

Identify and Engage Funders

One focus should be on broadening the pool of financial resources, to enable more inclusive and innovative funding models. This includes identifying non-traditional resources and engaging with a broader range of traditional scientific funders, from the private sector to foundations and beyond. Interested funders might need encouragement and know-how to join the community of TD champions. Pioneer institutions working on TD calls and training programs can help implement these initiatives in other institutions by promoting technical exchange. Another priority is addressing imbalances between donors and recipients, especially those from the global south, by revising funding agency rules for eligibility.

Update Frameworks for Monitoring, Evaluation and Learning

It is important to update monitoring, evaluation, and learning (MEL) frameworks. Traditional research funding structures, with evaluation based on the number and ranking of publications, often fail to capture the true value and objectives of TD work. Valuable outcomes of TD research such as

policy briefs and public communication are often downplayed or not included in evaluation metrics. Frameworks should reflect new priorities to include metrics such as the societal impact of the knowledge produced, and the degree of engagement with societal actors and wider audiences. Additionally, tools must be developed to track the effectiveness of these processes and make necessary adjustments. Standardized frameworks could be developed at program level to assess progress, understand failures, and improve future efforts.

Extend Research and Reporting Guidelines

The transformation of research incentives for TD research must balance rigorous academic standards with the cultivation of strong trustful relationships with societal actors. We need to have wider reporting guidelines comprising both standard academic outcomes and non-academic coordination outputs. The balance between the two depends on the context, and rubrics should attend to that. Evaluations should assess TD research in a non-traditional way, at the individual, team, and donor levels, increasing the likelihood that all involved actors contribute effectively and that results serve the end users. Additionally, reviewers could be trained to assess the value and impact of TD proposals accurately, fostering a more collaborative and inclusive funding ecosystem. While change slowly happens, TD change makers need to navigate existing recognition and reward systems so that they serve as motivators rather than barriers, and supporting agencies should recognize non-academic efforts involved in TD projects.

Explore New Funding Mechanisms

We need new funding mechanisms to ensure sustainable funding and provide long-term support. These mechanisms should also compensate societal actors for their contributions, especially in terms of time and coordination services. Mechanisms should embrace long-term collaboration and seed-grant schemes to support the preparation of quality TD projects, and funds should also be directed to transnational consortia, because TD projects are implemented by complex transnational networks that need dedicated financial and human resources to develop and enlarge. New funding structures should include models that facilitate the decommissioning of projects and smooth transitions of leadership to societal actors, as ideally a TD project should have long-term impact that lasts well beyond the project's term. We should also test innovative forms of project selection, including participatory peer review by applicants and random selection of qualified projects. Selection criteria could include diversity, geographical distribution and number of non-academic actors involved.

Enhance Program Management

Existing TD calls and funding mechanisms need strong program coordination to ensure transparency and impact. This involves prioritizing actions within constrained funding environments, developing and curating necessary resources, and creating open platforms for sharing data and tools. By implementing improved coordination tools, providing mentorship, and establishing clear roles and expectations, teams can operate more effectively. The emphasis here is on ensuring that projects are well-structured and aligned with broader goals, while fostering collaboration through transparent practices and alternative knowledge systems, such as indigenous knowledge integration.

3.3. Build Capacity

Capacity building is particularly important in TD research because this approach requires special skills. In this section we explore several specific areas where these could be strengthened.

Train for Impact

The TD process involves creating and mobilizing strategies to implement impact-driven research at different levels. This allows for a cohesive approach to problem-solving, fostering collaboration across diverse teams, and driving the execution of socially beneficial research initiatives. Researchers need training on how to frame research questions and plan their methodology to aim at impact. Also, there is a need to improve capacity to frame results so that they are heard and used by decision-makers.

Develop Facilitation Skils

A crucial part of the implementation cycle is developing the necessary facilitation skillset. Facilitation in TD settings requires more than just technical expertise; it demands fostering innovation and encouraging participative, dynamic engagement within teams. It also involves actual professional interest and dedication from project leads to support and foster collaboration.

Skills such as making use of cognitive and emotional intelligence and resolving conflicts are integral to building strong, functional teams. Accommodating diverse learning and working styles also becomes essential for ensuring that all participants can contribute effectively to the research process. There is a pivotal role for boundary crossers, people who help to bridge different teams, knowledge domains, and communities. Boundary crossers are responsible for mobilizing knowledge, working across both horizontal and vertical structures, and ensuring that collaboration is facilitated across different spaces. Both TD champions and TD changemakers need these skills to navigate project and program coordination. Specialized institutions should be brought to the table, as academics and funding agencies usually don't have this skillset.

Promote Practice Exchange

TD practitioners could benefit enormously from practice exchange: hearing from other TD change makers about how they have overcome challenges to gain experience of similar projects. Nothing is more effective in TD research than actual hands-on experience of trying to solve the conflicts that inevitably arise. More than conventional research, TD processes benefit greatly from exchange with other projects that have similar framing. Promoting engagement among different projects in the same funding scheme or program could be made customary. Collaboration networks will not necessarily involve practice exchange, so dedicated coordination efforts are needed for that end.

Embrace Open Science

TD research poses specific questions over the sensitivity of data and the ethical implications of freely sharing the data produced, as TD projects should coproduce data with different actors including local communities and indigenous peoples that hold communal traditional knowledge. There is a strong need to incorporate open data requirements into TD reporting and FAIR data processes into capacity building for project implementers.

Foster Communication

Communication is a key aspect of TD practice, and it should be present at all levels of call development and project implementation. This could mean identifying selected communicators among TD change-makers involved in a project and providing them with the needed tools to fulfill this role, or training TD champions to support the development of a TD research call. Also, it could mean adding dedicated communicators to TD projects and programs. In either case, there is a need to budget at different levels to have experts in communication working on TD coordination.

Prepare for Conflict and Creativity

TD practice brings divergent perspectives to the table, often involving conflicting priorities. Techniques and tools for active listening and mediation are critical to respond to those situations. Academics are rarely trained in these skills, so that gap should be filled. Then, once conflicts become productive, TD changemakers need tools to guide a group in collectively building pathways forward. This requires creative thinking to spark innovation.

4. Conclusion

Coordination is a neglected but essential element of TD projects. We have identified three overlapping goals for coordination activities that can be improved to create a sustainable and effective TD process. We suggest a compilation of actions to make this happen – a list that is not exhaustive, but is a good starting point for improving the coordination of TD, especially in the global south. This approach can foster both individual and collective capacity, driving meaningful change through transdisciplinary collaboration.

As a concise summary of goals and activities that could improve Coordination in TD practice at different levels, this report can serve multiple purposes across academic, policy, and practitioner communities. For researchers and educators, it raises awareness about coordination skills essential for TD collaboration and maps best practices to make these processes more visible. Policymakers in science and technology and funding bodies can use the report to inform the design of support mechanisms and evaluation criteria that recognize the often-overlooked role of coordination in TD projects. For practitioners and community partners involved in sustainability initiatives, the report provides clues about what to look for to have good coordination within and among TD projects. Finally, the report also acts as a knowledge-sharing tool that bridges gaps between disciplines, institutions, and societal actors—ultimately contributing to more actionable, inclusive, and context-sensitive sustainability solutions.

ANNEX: Our Journey

The workshop provided an opportunity to explore how a transdisciplinary (TD) approach could shape the process of defining TD coordination. At its core, the process was rooted in creative problem-solving, while also incorporating tools and techniques from polarity thinking. This approach helped address the competing priorities that arise when bringing together diverse perspectives. The workshop organizers applied principles of TD coordination throughout the workshop itself.

Inclusive innovation proposed an adaptive agenda for the 3 days, when participants were embedded in a retreat-like experience. In all activities facilitated by the group, prioritizing the inclusion of all perspectives so solutions could be truly co-created.

According to inclusive innovation's vision and mission, the starting point of any productive conversation between diverse actors must be about a shared goal, in this case, the aspiration to foster transdisciplinary practice through coordination activities. This unifying purpose allowed people around the table to invest time and effort in working collaboratively to reach an outcome that serves the people involved and possibly other actor in the TD system, hence the will to share the insights in this public facing report.

As mentioned in the introduction, the workshop design was based on a systems model for collaboration. This model references 5 elements that interconnect, each playing an important part in the outcome. The 5 elements include:

People - The collaborators who are coming together to co-create.
Purpose - The larger vision or goal that all collaborators are vested in and aligned around.
Product - The tangible outcomes resulting from the creative process.
Press - The environmental and emotional factors that affect creative output.
Process - The methods and steps taken to arrive at solutions.

People

Representatives of the IAI, Belmont Forum, GDN, and Inclusive Innovations participated in this workshop, which was conceptualized and led by the IAI in partnership with Inclusive Innovation, the Belmont Forum Secretariat, and the Global Development Network (GDN).

The workshop organizer, the Inter-American Institute for Global Change Research (IAI) is a regional intergovernmental organization that encompasses 19 member states across the Americas and promotes scientific research and capacity building to inform decision-makers on GEC issues. The IAI is a pioneer in generating research funding calls and supporting capacity-building to foster transdisciplinary knowledge. The agreement

that established the IAI in 1992 explicitly recognized the need for the promotion of regional cooperation for interdisciplinary and transboundary research on aspects of global change related to the natural, physical, and social sciences generating and curating knowledge that can be useful for better policies and decision making according to the priorities of the IAI member states (Ehlers et al 2021). Over the 33 years of its existence, the IAI has implemented research, capacity-building, and networking activities involving researchers and policymakers from over 500 institutions across the Americas, through programs such as seed grants and small grants, collaborative research networks, and science-policy fellowship programs. The IAI currently hosts the Belmont Forum directorate.

Inclusive Innovation had the double role of facilitating and participating in the workshop. The institution designs and facilitates workshops experiences at the intersection of science and economic/social development and sustainability. Inclusive Innovation hosts a diverse team of facilitators, made up of creativity practitioners and researchers who've been trained in facilitating collaborative tools, more than half of whom live and work in Global Majority countries. For nearly a decade Inclusive Innovation has been helping people collaborate across boundaries. They facilitate interactive, hands-on workshops designed to bring people together, harnessing their diversity as a creative problem solving superpower against our most urgent challenges.

The Global Development Network (GDN) is a public international organization established in 1999 that supports high-quality, policy-oriented, social science research in Low- and Middle- Income Countries (LMICs), to increase well-being. GDN promotes research on the premise that contextualized and locally driven research leads to more informed policies, increased policy ownership, better-informed implementation, and more sustainable and inclusive development choices amidst GEC. Over the past 25 years, GDN has worked with a wide variety of bilateral and multilateral development donors interested in supporting impactful local research, developing tools, refining processes, and accumulating practical know-how to support links between research, policy, and practice across the Global North and the Global South. GDN is committed to transferring the experience and advances made in the development research and funding space into the sustainability research space, in collaboration with key organisations in the field leading sustainability transitions.

The Belmont Forum was established in 2009, when a group of major funders of environmental change research and international science councils met at Belmont House, USA, to consider how best to align their actions to improve sustainability science. Recognizing the need and value of international cooperation and coordination, the science funding agencies and scientific councils attending the meeting created the Forum to meet the Belmont Challenge: "To support international transdisciplinary (TD) research providing knowledge for understanding, mitigating and adapting to global environmental change (GEC)." The Belmont Forum offers an

international platform for coordinating resources to advance GEC research through joint funding calls for TD research projects under multi-project thematic funding windows called Collaborative Research Actions (CRA's). Over 14 years, more than 21 Collaborative Research Actions (CRAs) have been implemented. There are currently 31 institutional members (largely science funding agencies) - including the IAI and the NSF - and 12 partner organizations from across the globe - including GDN. Over 180 projects have been developed, involving more than 4000 academic and over 1600 non-academic actors working on varied environmental change-related themes from a TD approach. Topics span human mobility to biodiversity, soils, oceans, and health, forests among many others.

Each institution has significant experience developing activities to facilitate TD research and deepen its effectiveness and inclusion at diverse scales.

The main supporter of the workshop was the US National Science Foundation (NSF). NSF has identified transdisciplinary science and collaboration as a key approach at the cutting edge of science globally, due to its ability to bring together diverse disciplinary and multi-actor perspectives to support convergence research (NSF, 2024). NSF occupies a leadership role in advancing TD research as an active partner or member of the Belmont Forum, IAI, START, Future Earth, and other institutions from the global TD community. This report contributes to these efforts and aims to expand our understanding of the critical role of transdisciplinary coordination across the lifecycle of TD projects.

The workshop was hosted following the Sustainability Research and Innovation Congress 2024, in Helsinki, Finland from June 16-18, 2024. The workshop took advantage of this gathering convening Belmont Forum members and partners to fertilize and continue the conversation, to identify needed next steps to deepen TD practice worldwide. The participants of this workshop reflect diverse geographic regions and areas of expertise. The IAI works across the Americas and elevates TD capacities and science-policy-society networks. Global Development Network (GDN) has strong European connections and supports research and transdisciplinary activities in Africa, Asia, and Latin America. The Belmont Forum encompasses partners and funders from all continents. Inclusive Innovations is based in Europe and has worked in many parts of Africa and the Americas. This highly internationalized group can help foster the diversity of perspectives that is, in fact, the core aspect of transdisciplinary practice. Given that the workshop used the Belmont Forum funding mechanism as a case example of TD coordination, workshop participants were selected from organizations that are already deeply engaged in the Belmont Forum grant development processes. Workshop participants were involved in the co-design of the workshop itself, through regular monthly Zoom meetings since June 2023. On May 15 2024 Inclusive Innovations hosted a 3-hour virtual session in preparation for the workshop where the collective concept of TD coordination was collectively produced and validated and the in-person workshop goals and processes were detailed.

Purpose

The participants in this workshop were in agreement that a transdisciplinary approach to global challenges not only merges insights from various fields but also emphasizes the value of diverse knowledge systems, including indigenous knowledge and traditional practices. These systems offer unique perspectives on sustainability, resource management, and community resilience, which are often deeply rooted in long-term coexistence with nature. By honoring these ways of knowing, we could create more inclusive and culturally relevant solutions that respect local contexts and draw on centuries of wisdom, ultimately fostering a richer, more adaptive response to global challenges. This was the unifying purpose for this group.

The workshop aimed at producing information needed to strengthen transdisciplinary coordination and practice worldwide. Drawing upon the experiences of the Belmont Forum and related TD activities, workshop participants will collectively identify lessons learned and methodologies to develop research funding calls and support their implementation. The workshop will explore pathways to foster TD science and its impact, including funding schemes, models of training and networking, and connections to multilateral science policy frameworks. Our common goal is to identify the TD coordination activities that are most needed to enhance the capacity of dialogue within and between research consortia and the impact of research projects' processes and outcomes on society.

The workshop key specific objectives were:

- Define collectively the concept of transdisciplinary research coordination.
- Identify existing and needed training, networking and assessment tools and best practices that can enhance such coordination activities.

Product

The desired goal from this workshop was to list the jobs to be done that are not accounted for in current funding mechanisms both at the research call development and evaluation (funding agencies) AND project implementation levels (academic and non-academic researchers). By identifying and naming them from the perspective of people trying to support and promote TD, rather than implementing it on the ground) we could walk another step toward widening and deepening TD practice in research worldwide. This report is the key product of the workshop.

Press

In a workshop setting, the "press" comprises physical, emotional, and interpersonal dynamics that can either facilitate or obstruct collaboration. To establish an environment conducive to co-creation, interactive icebreaker activities were introduced during a virtual event held before the in-person sessions. Additional engaging exercises throughout the in-person event

helped build trust among participants. The FourSight assessment, used to identify individual problem-solving preferences, was debriefed virtually and revisited in person to explore how different thinking styles might enhance or challenge the collaborative process. The physical venue, a nature preserve aligned with sustainable principles, further supported a dynamic, adaptable workshop environment, emphasizing thoughtful transitions and group interactions to foster productivity.

Process

The Creative Problem Solving approach is a structured thinking process with four stages: Clarification, where we define the vision, goals, and gaps; Ideation, where we generate various ways to address those gaps; Development, where we refine these ideas into feasible solutions; and Implementation, where we create a plan for action. Each stage involves a cycle of divergence—generating diverse options—and convergence—making creative, thoughtful decisions to move forward. This process can be adapted and modified to meet the needs of the group.

Clarification

In preparation for the in-person workshop, participants engaged in a virtual activity to diverge on various definitions of "TD Coordination," creating a mind map of terms related to the concept. This activity aimed to clarify terminology and establish a shared understanding of the workshop's goals by developing definitions based on these terms.

During the in-person event, participants used these definitions as a foundation to explore the components essential for creating an enabling environment, selecting processes, engaging people, accessing resources, and achieving transdisciplinary outcomes in TD coordination. The group was also asked to consider what else needed to be added as a result of insights they may have gathered either from their prescribed reading materials or from the SRI Congress that some of them had just attended in Helsinki. This divergent exercise provided a broad starting point for identifying the necessary tasks and responsibilities involved in effectively managing TD Coordination.

Ideation - Divergence

Using the components identified as part of the previous activity as a prompt, the group was invited to diverge around answering the questions "What are the jobs to be done for effective TD Coordination?" and "How?". The group was encouraged to consider how they might complete the prompt:

> "The job to be done is to increase/ decrease/ start/ stop/ keep/ change... by overcoming/ leveraging/ engaging/ doing/ etcetera..."

This activity generated a long list of "jobs to be done."

Before the end of day one, the group was invited to play with the IAI TD Game cards and to use the cards which list the challenges and opportunities

that arise from TD work as a stimulus for generating additional responses to the "What are the jobs to be done?"

On day two, the group was introduced to the concept of polarities which are choices that cannot coexist and yet they are interdependent to the degree that choosing one to the exclusion of the other is detrimental to the system. Polarities that were explored in depth to unpack their possible impact on the outcome of TD approaches include:

- short-term focus and long-term focus,
- top-down and bottom-up,
- focus on details and focus on the big picture,
- team and individual,
- standardization and customization,
- TD coordinator as an individual and TD coordination as a team effort.

This exploration was used as an additional stimulus for answering the prompt "What are the jobs to be done?"

In a final push for adding to the list of "jobs to be done", each participant was asked to select from a collection of 150 images, a single image that represents an unexplored challenge around TD coordination. The participants then took turns sharing the image with three other participants without offering any explanation about why they chose it. The other participants were asked to interpret the image and offer their insights into what they perceived as the unexplored challenge contained in the image. The person who provided the image captured all insights in writing. Once all images had been shared and interpreted, the participants paired off and went for a walk where they discussed the challenges that their images had contained. The pairs generated additional jobs to be done that would address the challenges that had been listed.

Ideation - Convergence

On Day 3 of the workshop the group was invited to review all the jobs to be done that had been generated in the divergent ideational phase of the workshop. They were asked to see if there were any emergent themes and connections between the listed jobs to be done. The group worked collaboratively to cluster, organize, sort and refine the themes until they had arrived at three primary overarching themes. The themes were:

1. Culture Shift
2. Transforming Research Incentives
3. Capacity Surprising

Three subgroups formed organically as they worked together to flesh out the details of each of these themes, using the "jobs to be done" and the tactics generated for these jobs to create a skeleton framework for each theme.

The small groups presented their thinking around the theme they had fleshed out and that output is the summary output included in this report.

Development

In an effort to consider how these emergent themes might be refined into implementable solutions, the group was invited to refine the statements identified across the ideation phase already aiming at a summarized version of the key collective outcomes.

Implementation

In a closing activity, the group summarized the next steps that would emerge from this workshop, which included this public-facing report and planning for follow up joint activities related to the identified tasks that could contribute to the deepening and widening of the global Td landscape especially in the global south.

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IAI

Inter-American Institute for Global Change Research

Edificio #104, Ciudad del Saber, Clayton, Panama

iai@dir.iai.int

www.iai.int