

# TRANSDISCIPLINARY APPROACHES TO INTEGRATING POLICY AND SCIENCE FOR SUSTAINABILITY

Gabriela Alonso Yáñez (University of Calgary),  
Kathleen Halvorsen (Michigan Technological University),  
Marcella Ohira (Inter American Institute for Global Change Research)

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## 1 Overview

In Canada and in many other countries, there is a clear commitment to environmental sustainability through meaningful, effective collaboration between discipline specialists, resource-users, communities, and funding agencies. Recognising that effective cross sector collaboration and transdisciplinary (TD) integration is rare, the workshop overarching goal was to train future leaders in transdisciplinary approaches for policy and science for sustainability in the Americas. The workshop enabled 25 participants to be part of several educational and training activities designed to teach elements for successful teamwork; multi-disciplinary method and methods to engage stakeholders; project management and criteria for teamwork evaluation; science communication to different audiences; and revising and finalizing transdisciplinary team proposals.

## 2 Recent Developments and Open Problems

A growing body of scholarship identifies obstacles that hinder truly transdisciplinary collaborations. For instance, the lack of active and sustained interaction of scientists with stakeholders, the absence of collaboration for framing problems and setting shared agendas and goals, and a shortage of effective communication pathways among researchers and policy-makers serve to negatively impact the transfer, dissemination, and use of scientific knowledge ([1], [2], [3], [4]). This is particularly relevant for teams currently addressing global socioecological problems, which feature high diversity of team membership and high task-interdependency.

## 3 Presentation Highlights

1. Members of First Nations communities led several discussions and support participants in better understanding the perspectives and views of non-academic actors in transdisciplinary projects.
2. The Improvisational workshop to help participating scientists better communicate their findings.
3. Parks Canada staff led discussions on innovative strategies for protecting natural resources informed by a socioecological approach.

4. In collaboration with the Calgary Public Library and the Latin American Research Center, the seminar included a multidisciplinary seminar on Global Change and cross sector collaboration with representatives from various sectors of Canada's First Nations, Academics, Calgary legislative and private sectors.
5. Session on traditional land and indigenous ways of knowing including a visit to two Sacred sites (Sundial Hill Medicine Wheel and Women's Buffalo Jump) of the Black Foot First Nation led by First Nations contrasting with Latin American indigenous communities.

## 4 Scientific Progress Made

Recent research concludes that training interventions offer a promising opportunity to improve performance of international TD teams by teaching skills and competencies necessary to enable multi-cultural and multi-institutional collaborations ([5],[6]). These training interventions are particularly relevant for a variety of audiences working on practicing and promoting TD "namely, those who make policy, who fund science, who carry out research and who organize and implement institutional systems" ([7], p. 62). Professional development designed specifically to improve and sustain TD work such as the one that took place in BIRS Banff are just beginning to emerge ([8], [9], [10]). However, these capacity building initiatives are critical for addressing policy relevant global change issues of the 21st century.

## 5 Outcome of the Meeting

Four transdisciplinary project proposals developed at the Seminar are now in the early stages of advancement and implementation. They include 25 participants from 14 countries representing universities, various tiers of government, NGOs, and the private sector.

Group 1. One group project concerns work to identify and characterize features of community governance that affect water provision in four locations in the Latin American countries of Chile, Brazil, Colombia and Argentina. The team's main goal is to gather information about the ways in which people organize themselves and make decisions about water provision at a local scale in four different Latin American sites. Knowledge about water provision at local scale is central to plan for strategies to address extreme droughts in the region.

Group 2. Another team is focusing on developing a framework to manage temperate grassland ecosystems in Argentina, Brazil, Canada and Uruguay. Working in close collaboration with scientists, government staff, NGOs and farmers, the team plans to create a framework that identifies and considers the ways in which various social groups and sectors currently adopt sustainable practices in temperate grasslands to design policy strategies that responds to local needs.

Group 3. By researching influences of livelihood and governance mechanisms on resource management, this team hopes to provide concrete recommendations that could help strengthen conditions in which people address stressors affecting coupled-human natural systems, particularly in smallholder contexts. Through this project, they aim to assess the influence that smallholder livelihoods and governance mechanisms have on the management of both Peruvian small-scale shark fisheries and the Bolivian smallholder agriculture. In each, they will identify main livelihoods and sources of income within target communities, reliance on common-pool resources, main formal and non-formal governance mechanisms and develop recommendations to enhance the management of common-pool resources in regards to local livelihood and governance structures. Their project will use mixed methods, combining quantitative and qualitative methodologies specific to each case study.

Group 4. This project will carry out a comparative case study in two countries in the LAC region: Colombia and the Dominican Republic. In addition to the case studies, secondary information comes from another three countries in the region: Jamaica, Cuba and Guatemala. This will allow a better understanding of the general situation in the region, in order to identify the best solutions and alternatives for cocoa producers to adapt to the adverse effects of climate change. Besides capacity building for cocoa producers to address climate change, the project will contribute to the literature and practice of the measure and value of ecosystem services. In addition; an important outcome is the modelling of future climatic scenario within the cocoa production cycle. Using systems dynamics to integrate the different variables involved, such as the production,

climate, social and economic variables. This will allow integrating an innovative transdisciplinary perspective to the results of the process a perspective.

The outcomes of these projects go beyond developing reports and scientific journal articles, and include direct involvement with communities in an effort to co-produce knowledge that is applicable to real-world current situations.

As a result of the seminar, the IAI has offered to provide US\$ 5,000 to three teams, which received positive proposal reviews from the seminar steering committee. The four teams are in the process of submitting their transdisciplinary proposals to national and international funding agencies to raise additional funds.

For further information about the seminar program, participants, lectures and outcomes, please access <http://www.iai.int/?p=24364&lang=en>

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