Exploring Case Examples: What is TD?

You will need this handout to facilitate the Exploring Cases activity.

Example 1: Ethiopian "church forests"

What on earth was I, a midcareer conservation biologist, and an Ethiopian research colleague, forest ecologist Alemayehu Wassie Esthete, doing in a leaky shed outside Debre Tabor, Ethiopia, frantically jerry-rigging my generator, sparks flying, to show Google Earth images of the last tiny forest fragments in the north of the country to 200 Coptic priests? Despite our disparate ways of knowing through religion and science, the priests and we researchers have a common passion: to save forests. Our mission was to conserve biological diversity. Theirs was to protect the human spirit and all living creatures, a vision that extended to saving the last small fragments of forest surrounding their churches. It is these "church forests" that brought us together around the balky generator to learn from each other and discuss what to do.

After completing our first biodiversity surveys on insect and tree biodiversity in 2010,[1] we estimated that many Ethiopian church forests would be gone by 2050. Given the accelerated pace of land clearing, a phenomenon easily measured through Google Earth images over time and interviews with local people, we determined that there is not much time remaining before these irreplaceable genetic libraries will disappear forever. In addition, many of the fragments are destined to shrink over the next decade unless their destruction can be reversed from cattle grazing, firewood gathering, excessive plowing around the edges, illegal hunting, and the loss of native canopy to invasive eucalypts.

Alemayehu determined that we should host a workshop for all the regional priests and explain the full range of ecosystem values of their forests. None of the priests had ever heard an ecology lecture about what forests do for humans. We produced handouts on this topic, tailored for each participant with images from Google Earth showing his specific church forest. Alemayehu rented a church hall, a generator, and a four-wheel drive. Our goal was to speak to all the regional priests, including stewards of the 28 most biodiverse church forests identified by Alemayehu as the highest priorities for conservation. As Alemayehu translated, I shared slides explaining the ecosystem value of forests. They gasped when they saw the Google Earth images and realized how much of the forests had been replaced by expanses of teff, millet, and corn. On learning that eucalypts use four times more water than native trees and are already crowding out native tree species, they understood the folly of the government's plan to grow eucalypts in the region.

They became engaged, and the discussion that followed centered on solutions that ranged from building walls to removing eucalypt seedlings and regulating tree removal. Most importantly, the priests pledged to work together to save their remaining forests and ended with the conviction that church stewardship was critical for the future of all life. They were empowered to transform their local landscapes, using their new knowledge of the ecosystem values of these small tracts of trees. They have brought about the cultural transformation of the church as a conservation stakeholder.

This shift became clear on my second visit to Ethiopia, when they showed me the walls they had built around their church forests using stones they had hauled from their fields. These gorgeous structures are a brilliant conservation solution. They keep cattle out, define boundaries for farmers, minimize firewood collection around the edges, preserve the seed bank and biodiversity, and offer a point of pride on the landscape for the local people. They do not need maintenance and are usually built many meters out from the existing

[1] The survey had two major objectives: (1) to survey insect and tree biodiversity within 28 church forests located in the South Gondar Administrative Zone of the Amhara National Regional State; and (2) to create survey protocols that were both inexpensive and easily replicable so that they could be taught to and utilized by anyone, with a special emphasis on school children. Local partners were not involved in creating or testing the survey.

forest edges to compensate for the shrinkage of the last few decades.

Source: Lowman, M. & Wassie, A. E. (2018). *Saving the Forests of Ethiopia, One Church at a Time.* Leopold Leadership Program. Retrieved from https://www.earthleadership.org/post/saving-the-forests-of-ethiopia-one-church-at-a-time.

Example 2: Food systems in Kameoka, Japan

A group of researchers affiliated with the Research Institute for Humanity and Nature, Kyoto, Japan explored ways to address sustainability problems of the food system which is driven by over-production and consumption. Informed among others by research on the role of new networks of actors driving "niche" innovations in support of the transition towards a sustainable food system, they embarked on transdisciplinary research to experiment with the formation of food policy councils in several locations in Japan. One of these locations was Kameoka, a medium-sized city within commuting distance of large urban centers of Kyoto and Osaka, but also with a substantial agricultural sector producing rice and vegetables.

The research in Kameoka was undertaken by a team of researchers from multiple institutions and included a range of disciplinary perspectives such as rural sociology, agriculture, and management. The researchers had extensive experience in socially-engaged research in rural settings. The project consisted of "conventional" research elements, such as questionnaire surveys, but also transdisciplinary research involving the facilitation of social experimentation. The surveys provided interesting background insights, for example showing that, while supermarkets dominated food provision, considerable numbers of consumers bought produce at farmers' outlets, produced food themselves, or received food as gifts.

The transdisciplinary research initially aimed to establish a Kameoka food policy council with a range of organizations as a forum for discussing local food issues. A key stakeholder workshop was organized, but contrary to expectation, is did not catalyze spontaneous networking towards the establishment of a policy council. Instead, a fruitful collaboration emerged with young urban migrants who had moved to Kameoka to set up organic vegetable farms. The researchers and farmers co-organized a major farmers' market event, building trust and fostering further discussion. School lunches came up as a new focal topic and the collaborators embarked on the establishment of a new NGO "Kameoka Organic Action" (KOA). Core members of KOA include the organic farmers and researchers, but also city government staff and food and agriculture planners. The NGO initiated a collective organic rice production project as well as a school lunch study project, which have now converged in the regular provision of the project's organic rice to a number of local schools.

The project experience demonstrates how trust is essential to fruitful transdisciplinary engagement and that, at the same time, trust is generated by different actors collaborating on specific activities. It also illustrates the need to regularly reflect on the work, revisit, and revise, if needed, the plans in a spiraling process of reflexive and adaptive action.

Source: Hein Mallee, personal communication (based on written sources in Japanese).

Example 3: Conservation futures in Columbia

A diverse team of researchers, civil society, local practitioners, and conservation advisers came together to develop new ways of understanding and managing Colombian protected areas in the face of ongoing ecological change. Project goals were co-developed over a one-year period, building on the existing work of individuals and organizations within the team. This created a co-dependency within the project goals, whereby policy and research objectives could not be realized in isolation. The project would have been designed very differently were it simply a policy project or solely a research project and at times there were challenges for both researchers and practitioners to appreciate the complexities of each other's worlds.

There followed a two-year process (2015–2017) where the team developed and piloted a methodology in two landscapes. Some elements of interaction were made difficult by the dispersed locations of the project

team (Colombia, United Kingdom, Switzerland and Australia). Regular conference calls helped to support dialogue and biannual face-to-face meetings in Colombia built shared understandings, addressed tensions, and supported progress towards project goals. On reflection, these goals required a degree of interaction and iteration that would be more suited to a project team that was co-located (or at least on the same continent or time zone). Collaborators learned that teams should carefully consider project goals in relation to resources and capacities required to develop shared perspectives and activities. The process was catalyzed by the Luc Hoffmann Institute, a boundary organization that partners closely with World Wide Fund for Nature (WWF) offices around the world.

The project was situated within the context of the REDPARQUES Declaration, a commitment made by 18 Latin American countries at the 2015 United Nations Climate Change Conference in Paris to integrate protected areas into climate mitigation and adaptation. This provided a political window of opportunity, together with national processes such as the development of Colombia's Nationally Determined Contribution (NDC) and a process to revise the Colombian protected area planning and management framework (PAMF). The project built on a longstanding relationship between WWF Colombia and the Colombian protected area agency around climate change. The close collaboration with WWF enabled an international research team who did not speak Spanish, nor had prior history of working in Colombia, to participate in this project.

The project attempted to utilize participatory evaluation scorecards to facilitate dialogue and learning. While this tool was often successful, it was sometimes difficult to dedicate sufficient time to complete the scorecard. This points to a tension between the need for reflection, and continuing progress within short time horizons of a project. An external evaluation (that drew on project documentation and interviews) was conducted prior to the project's completion, and missed some of the broader impacts because they had yet to take effect.

While this project faced challenges, it is widely heralded by partners as a success. The methodology has been completed, and elements of it are now being used, adapted, and further developed by project partners. Four factors were critical to the project's success: (1) alignment between project goals and the individual motivations and organizational incentive structures of participants; (2) the political window of opportunity created by Colombia's NDC and the REDPARQUES Declaration and the revision of the PAMF, i.e., the opportune timing of the project vis-à-vis policy-making; (3) an iterative and flexible methodology; and (4) the commitment and respect for diverse perspectives within the team.

Source: Norström, A.V., Cvitanovic, C., Löf, M.F. *et al.* (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability,* 3, 182–190. https://doi.org/10.1038/s41893-019-0448-2.

Example 4: Swiss regional planning

The main concern of the "Netzstadt" ("net city") project was the development of a region in the Swiss central lowlands that is a typical agglomeration. The concept of the "net city" offered the researchers a new way of perceiving this agglomeration: as a city organized like a net, with no center but with many knots or nodes connected to one another.

The researchers who worked together in the "Netzstadt" project came from material flow analysis and settlement planning. In both disciplines, it is common to perceive regions from a bird's eye perspective and divide them for analysis and development into areas according to activities (leisure, work, living etc.). The expert knowledge from both disciplines was combined so that a material flow analysis was made of the drafts developed by settlement planning, and suggestions were made to improve material flow, which planning then took up.

The bridge concept of the "net city" introduced a way of perceiving things that was new for both disciplines and harbored potential for development. The settlement planners used it as a regulatory idea for their draft. Their challenge was to transform the agglomeration into a net city. For the material flow analysts, the challenge was to improve material flow in a region by giving it a net structure.

Source: Pohl, C. and G. Hirsch Hadorn (2007). *Principles for Designing Transdisciplinary Research Proposed by the Swiss Academies of Arts and Sciences*, Translated by Anne B. Zimmermann. (Case example #5, p.50). Munich, Germany: oekom Verlag.

Oswald, F., P. Baccini, Mark Michaeli (2003). *Netzstadt: Designing the Urban*. Basel, Boston: Birkhäuser.

Example 5: Livelihoods in Papua New Guinea

The borderland region of the South Fly, Papua New Guinea (PNG) is one of the poorest regions in the world. This project wanted to understand how sustainable fisheries and community well-being in the region could be assured while at the same time reducing illegal and unsustainable activities, such as illegal trade in fisheries supply chains. Community leaders and non-governmental organizations (NGOs) were instrumental in connecting a multi-cultural, multi-disciplinary group of researchers (from Australia, Indonesia, and PNG), to managers (mainly from the PNG fisheries agency), local translators and interviewers, actors in the fisheries sector and supply chain (fishers, middlemen/women, buyers, and exporters), and community members. Project ownership was partly achieved through early involvement of local grassroots NGOs and community leaders in collaboratively designing the research and developing agendas for meetings and workshops.

Situating this project was not straightforward, given the remote and economically disadvantaged nature of PNG, where education levels and literacy rates are very low, and local cultural traditions are strong. The project benefitted from prior relationships; the continuity in the researchers returning to the area multiple times per year over at least five years (for different projects and purposes) meant they became familiar faces and led to more trust and consequent engagement. Because the project focused on the sensitive issue of illegal trade, this trust also reduced the fear of being prosecuted or being exposed to adverse project consequences. Aside from familiarity, support for the project was created through productive and respectful connections to key individuals (community 'gatekeepers') which was essential for gaining representative community interactions.

A diverse team with a good mix of ages, seniority, gender, and cultural backgrounds was key to encouraging a similar level of pluralism to be reflected in the actors involved in co-production. For instance, in a traditional society like PNG some aspects of decision making are gender specific, and females may not traditionally participate. They are nevertheless key to ensuring the workability of a co-produced solution. Access to societal groups which are more difficult to engage was facilitated by female researchers connecting with females in the community who subsequently transferred the perceived trustworthiness of project team members to local community members. On the flipside, the initiative could have been derailed if trust was broken by inadequate knowledge of local customs and taboos. Sensitivity around getting the right mix of people in the room was facilitated by having meetings in gender safe spaces. Taking a gender-sensitive approach revealed some important gender-related consequences in marine product trade. In the process, it was also important to be sensitive to different learning methods. Simple printed infographics provided important leverage points for discussion and results.

Ultimately, solutions to local fisheries and supply chain issues were co-produced with local PNG fishermen and women, middlemen/women and traders. Twelve solutions were identified drawing on different knowledge systems, perspectives and understanding of the key issues. This approach has led to increased local understanding of complex supply chain links and present trade dynamics. The belief that the project could bring tangible changes to the communities (in the long term), such as poverty alleviation, development, and improved trade relations meant continued and enthusiastic participation. Moreover, the lengthy and continuous involvement of project proponents with local people in the communities, their connections to several institutions and local NGOs meant they were well informed of extant local issues and potential points of conflict.

Source: Norström, A. V., C. Cvitanovic, M. F. Löf, ... & H. Österblom (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability*, 3, 182-190. Available at: https://www.mdpi.com/2071-1050/10/11/4200.

Busilacchi S., Butler J.R.A., Van Putten, I., Maru, Y., & Posu, J. (2018). Asymmetrical development across transboundary regions: The case of the Torres Strait Treaty Region (Australia and Papua New Guinea). *Sustainability*, 10, 11, 4200. https://doi.org/10.3390/su10114200.

Example 6: Adolescents with HIV in South Africa

The project involved a group of researchers investigating the level of non-communicable diseases (NCDs) among adolescents and youth living with HIV (AYLHIV) in Cape Town in South Africa. They were interested in knowing the extent to which AYLHIV had access to services that could screen for, prevent, or manage NCDs, given that the psychosocial challenges of having HIV, as well as the management of the HIV itself increases the risks of developing NCDs.

The researchers proceeded by reviewing the medical records of 491 AYLHIV across nine primary care health facilities in Cape Town, and then followed this up with interviews and clinical observations of 92 out of these adolescents to ascertain their health profiles, as well as social and environmental risk factors for NCDs.

What the researchers found was that there was very low attention to NCD screening, prevention, or management of NCDs within this population, and yet a significant number of the AYLHIV observed were found to have various NCDs; further, many exhibited were at as high risk of developing NCDs, given their health profiles and psychosocial environment.

In conclusion, the researchers recommended that multi sectoral interventions were needed to prevent NCDs in AYLHIV, since most of the social and environmental factors responsible for NCDs lay outside healthcare systems.

Example 7: Land use planning in Quebec

The Montérégie Connection project focused on improving land use management for the provision of multiple ecosystem services in the Vallée-du-Richelieu Municipalité Régionale de Comté (MRC), a regional governance body involving 13 towns southeast of Montréal. The project was developed by a pluralistic collaboration of researchers from multiple departments at McGill University, including ecologists, conservation biologists, geographers, bioresource engineers, as well as members of the boundary organization Centre de la Nature de Mont Saint Hilaire (CN) and a variety of local actors, including farmers, mayors and other government representatives, land-use planners, and NGOs.

The process was situated in a context in which political action, including Montréal's commitment to the Aichi target of preserving 17% greenspace, was pulling towards recognition of the value of greenspace. Local land-use planners recognized that the science needed to make good decisions about which 17% to preserve was not as coherent as they had wanted it to be. This provided an entry point and a policy window that eased the process of agreeing on an overarching goal, despite the pre-existing divergence of goals and objectives of partners. However, coming to an agreed-upon set of goals required the whole first year of the project to be dedicated to working interactively with the community to determine project goals that were both scientifically compelling and useful for them. Most of those interactions were spearheaded by the CN, who served as a boundary organization, helping researchers understand how land-use planning decisions were made in the region, and identifying key actors to engage in the process. Actors were asked about their concerns for the future of the region during small workshops or one-on-one meetings.

The project continued with four years of field research, and research into historical land-use change and provision of ecosystem services in the past. This was followed by community-based scenario development and modeling of future ecosystem service provision under each set of scenarios. Researchers interacted frequently with landowners on whose property they were undertaking fieldwork, met with other formal partners (co-signatories on the grant that funded the work) annually or semi-annually, and convened a larger group of local actors at least annually. At those meetings, feedback on the project progress was collected, helping to adjust the project as it progressed to make sure it was meeting contextual needs and goals. The Montérégie Connection project received the Alice Johannsen award for contribution to the protection of local nature, and many participants spoke about a change in their attitude towards landscape sustainability and ecosystem services as a result of having participated in the project.

One of the critical factors in the success of the Montérégie Connection project was the strong relationship with the boundary organization CN. For 15 years prior to the start of the project, the CN had worked to raise public awareness of the importance and vulnerability of the local natural heritage, focusing on the Mont Saint Hilaire Biosphere Reserve and surrounding communities. The CN had also been working with researchers at McGill and understood both the scientific process and needs of the scientists working on the project, in addition to the needs of the community. This allowed the CN to bring both together around a common set of goals. The CN was also able to foresee many potential issues such as power differentials or political roadblocks which could have stalled the project.

Source: Norström, A. V., C. Cvitanovic, M. F. Löf, ... & H. Österblom (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability*, 3, 182-190. Available at: https://www.mdpi.com/2071-1050/10/11/4200.

Example 8: A participatory agroecological rice network in Italy

In this study a group of researchers investigated the questions of how and why Italian rice farmers convert from conventional methods to organic 'agroecological' farming methods, including the role of their participation in an agroecological network. The network included farmers, scientists, public officials, and private companies, and exists to enable discussion of agricultural techniques and results, needs, and paths of innovation. The network also "stimulates and takes part in research projects, following a participatory process based on co-learning and mutual responsibility", however, this project was driven by the researchers alone. They asked the questions:

- Why did the farmers, researchers, and other actors join the participatory research network?
- What and how do they learn within the participatory network?
- Which are the limits and opportunities for the future of the network?

The collaborative network facilitates research through identifying shared questions, conducting on-farm experimentation, and collective data collection, analysis, interpretation, and reflection.

The researchers interviewed 20 network members from different sectors, where participants were invited to share their stories related to the network, including moments of change and motivation towards agroecological farming methods. Data were analyzed using grounded theory methodologies, and organized into the categories: objectives, structure, and functioning of the network; processes in the network; values shared; and relations, power, and inclusion.

The study found that the network operates in a collaborative way that demonstrates trust and emphasizes relationships and ongoing connections. Despite variety in the knowledge bases and authority across actors in the network there was little hierarchy and the range of experiences were valued. Participation in the research projects enabled by the network increased all participants' awareness and commitment to agroecological methods. Although the network included public officials, as yet, there were no clear avenues or demonstrations of influence in public policy or regulation.

Source: Pagliarino, E., Orlando, F., Vaglia, V. et al. (2020). Participatory research for sustainable agriculture:

the case of the Italian agroecological rice network. *European Journal of Futures Research,* 8, 7. Available at: https://doi.org/10.1186/s40309-020-00166-9.

Example 9: Urban climate adaptation planning

An interdisciplinary group of researchers in southern Africa has obtained some philanthropic funding for a project they called "The Engaged City." Their proposal was to undertake a co-designed project with city officials to develop a climate action plan. Once they got their funding, they in fact get word that the city is needing a climate adaptation strategy to be prepared. So, the research group is eager to assist. They approach the city and prepare to engage. The researchers are very mindful of the capacity constraints and the pressures city officials face with day-day service delivery and other developmental challenges.

As a starting point, they provide the city with the latest climate models highlighting areas of certainty and uncertainty in the projections. They then proceed to advise city officials on sectoral applications, tailoring the model outcomes to various sectors in the city (e.g., water services, housing, health). When completed they share the outcomes in a series of workshops where they validate what they have done in the city with a range of stakeholders and actors. They also report back to the funder, as required, but the program manager at the foundation is not sure the project fulfilled its promise.

Source: The project description is fictitious, but based on extensive experience of similar situations.