CARIAA
Collaborative Adaptation Research Initiative in Africa and Asia

Designing Knowledge Co-production for Climate and Development

CARIAA Working Paper #21

Blane Harvey
Logan Cochrane
Marissa Van Epp
Pete Cranston
Pier Andrea Pirani

Harvey, B., Cochrane, L., Van Epp, M., Cranston, P., Pirani, P.A. 2017. Designing Knowledge Co-production for Climate and Development. CARIAA Working Paper no. 21. International Development Research Centre, Ottawa, Canada and UK Aid, London, United Kingdom. Available online at: **www.idrc.ca/cariaa**

ISSN: 2292-6798

About CARIAA Working Papers
This series is based on work funded by Canada's International Development Research Centre (IDRC) and the UK's Department for International Development (DFID) through the **Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA)**. CARIAA aims to build the resilience of vulnerable populations and their livelihoods in three climate change hot spots in Africa and Asia. The program supports collaborative research to inform adaptation policy and practice.

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Contact
Collaborative Adaptation Research Initiative in Africa and Asia
c/o International Development Research Centre
PO Box 8500, Ottawa, ON
Canada K1G 3H9
Telephone: (+1) 613-236-6163; Email: cariaa@idrc.ca

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Abstract

Climate change poses significant global challenges. Solutions require new ways of working, thinking and acting. Knowledge co-production is often cited as one of the innovations needed for navigating the complexity of climate change challenges, yet how to best approach co-production processes remains unclear. In this working paper we explore the ways in which climate and development researchers are approaching the co-production of knowledge and grapple with the extent to which the modalities used are reaching their stated potential. Using a diverse array of case studies, we outline a range of approaches to co-production, from technical to transformative. Drawing on literature on co-production, we propose a heuristic that maps out a spectrum of approaches to co-production and offers an assessment of the relationship between processes and outcomes of co-production in order to enable more informed planning and decision-making. In so doing this paper provides lessons and insights that CARIAA and similar adaptation research initiatives can apply in determining the potential of knowledge co-production as a means to influence policy, practice and behaviour.

Key words

Climate change, international development, knowledge co-production

Resumé

Les changements climatiques posent d'importants défis à l'échelle de la planète. Pour relever ces défis, il faut changer notre façon de travailler, de penser et d'agir. La coproduction de connaissances est souvent citée comme l'une des innovations permettant de saisir la complexité des défis que présentent les changements climatiques, mais il demeure difficile de définir la meilleure méthode à adopter. Dans cet article, nous étudions comment les chercheurs en changements climatiques et en développement abordent la coproduction de connaissances, et nous tentons de déterminer dans quelle mesure les mécanismes utilisés remplissent leurs promesses. En nous servant de diverses études de cas, nous présentons un éventail d'approches de la coproduction, de la démarche technique à la méthode transformatrice. En nous appuyant sur la littérature traitant de la coproduction, nous présentons une heuristique qui recense de multiples approches de la coproduction et fournit une évaluation de la relation entre les processus et les résultats de la coproduction, afin d'éclairer la planification et la prise de décisions.

Mots clés

Changements climatiques, développement international, coproduction de connaissances

About the authors

Blane Harvey is an Assistant Professor in the Department of Integrated Studies in Education at McGill University in Montreal, Canada, and a Research Associate at the Overseas Development Institute in London, UK.

Contact: blane.l.harvey@gmail.com

Logan Cochrane is a Banting Fellow at Carleton University in Ottawa, Canada.

Contact: logan.cochrane@gmail.com

Marissa Van Epp is an independent consultant based in New York.

Contact: msvanepp@gmail.com

Pete Cranston is a Co-Director of Euforic Services based in the UK.

Contact: pete.euforic@gmail.com

Pier Andrea Pirani is a Co-Director of Euforic Services based in the UK.

Contact: pier.euforic@gmail.com

Acknowledgements

The authors would like to thank all of the case study contributors who shared their experiences of co-production for this study: Alejandro Argumedo (ANDES), Max Blanck, the Climate Change and Social Learning (CCSL) Sandbox team, David Ellis (International Potato Center), Rene Gomez (International Potato Center), Sigmund Kluckner (Renewable Energy & Energy Efficiency Partnership), Maria Jose Pacha (Climate and Development Knowledge Network), James Smith (Renewable Energy & Energy Efficiency Partnership), Margot Steenbergen (Red Cross Climate Centre), Tammy Stenner (ANDES), and Krystyna Swiderska (International Institute for Environment and Development). This paper is based on work commissioned by the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) and funded by Canada's International Development Research Centre (IDRC) and the UK's Department for International Development (DFID). The views expressed in this work are those of the creators and do not necessarily represent those of DfID and IDRC or its Board of Governors.

Contents

1. Background and introduction

It is increasingly recognized that addressing the challenges posed by climate change requires new approaches and modalities for research (De Souza et al, 2015; Cochrane et al, 2017). Though changes are occurring on a global scale, impacts are felt most directly at local scales, and decisions are largely made nationally. Further, the drivers of climate change, its impacts and the responses needed cut across sectors, academic disciplines and social groups, making it especially challenging to mobilise collective responses. One of the solutions proposed to address the need to produce research in transdisciplinary ways at multiple scales is co-production (Mauser et al, 2013; Lemos and Morehouse, 2005). Co-production is seen as a means to generate more inclusive and robust research results as well as to integrate key audiences, such as decision makers and impacted communities, into research design, implementation and analysis.

The initial case analysis contained in this report was commissioned by the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), a seven-year, CAD $70 million program studying climate change "hotspots" in three distinct socio-ecological systems across sixteen countries (De Souza et al, 2015). CARIAA is comprised of four transdisciplinary consortia, which collectively include over 450 researchers and practitioners. The nature of CARIAA's scope, design, and objectives mean that knowledge co-production is of clear interest – and there is therefore an interest in learning from the experiences from similar programs. Our experience planning, supporting and scoping options for co-production activities with the CARIAA program prompted a broader reflection about the assumptions behind the interest in such processes, and how decision making around the design and implementation of co-production processes was undertaken. We posited that analysing case studies of successful co-production could facilitate more purposeful choices and better align assumptions with the process, outputs and impacts.

While we are in broad agreement with Moser (2016) that co-design and co-production offer potential to transform the way research and decision making occur, in this paper we argue that, in practice, co-production processes suffer from a limited conceptualisation of how process meets outcomes. This is not for a lack of research and critique on knowledge production (Gibbons et al, 1994; Nowotny et al, 2001; Ostrom, 1996). However, much like the concept of participation, which gained favour in development research in the 1970s and 80s - then faced critique in the 1990s and 2000s (Chambers, 1983; Cooke and Kothari, 2001) - there is frequently a normative use of the concept of co-production which fails to take into account the wide-ranging potential outcomes it could contribute to, from largely instrumental (or even extractive) processes that entrench norms of practice, to transformative ones.

In this paper, we take a closer look at co-production processes in climate and development using a review of recent literature and a sample of case studies of self-identified "successful" co-production processes that engaged researchers, policy makers and practitioners to ask:

1) What kinds of questions or problems are successful co-production approaches being used to answer or resolve in climate and development?

2) In these successful cases, how does the co-production context and process influence its outputs and outcomes?

3) How do success factors vary across different co-production approaches or problem types?

As we discuss below, the sample of cases of self-described "successful" instances of co-production in the area of climate and development reviewed in this paper reveals a strong emphasis on more bounded, output-oriented processes. While the bounded nature of these outcomes does not represent a shortcoming per se, it does call into question whether such approaches significantly contribute to the "transformational understanding of a sustainability problem" (Schuttenberg and Guth, 2015) that some theorists have stated as the process's potential. By establishing a more nuanced understanding of the range of possible processes and end-points that co-production offers, researchers will be able make better-informed decisions about which approaches to adopt, and better understand the extent to which co-production is being used to its stated potential.

Having examined how research projects in the sphere of climate and development are currently seeking to support co-production, and drawing upon a sample of six case studies, we propose a heuristic that maps out a spectrum of approaches to co-production and offers an assessment of the relationship between processes and outcomes of co-production in order to enable more informed planning and decision-making. Our case study analysis suggests that, while some discussions of co-production point to its transformative potential to disrupt or transforming norms of thinking and practice, uses in the context of climate and development practice tend to be more focused upon the aim of creating "useable knowledge" (Dilling and Lemos, 2011). Furthermore, we argue that while co-production offers the potential for transformative processes and outcomes, the investment and transaction costs required for such approaches are such that projects and programmes should be strategic in deciding where these approaches are most important. They may even question whether such approaches are feasible within the context of a time-bound project or programme. Drawing on the literature and on knowledge management and co-production experiences in climate change and development, the heuristic supports thinking about processes and products to determine which modality and processes are most appropriate for a given objective.

Before presenting the case studies, the following section reviews some of the main definitional and conceptual aspects of co-production, outlining what co-production is and

why it has been argued as crucial for climate change research. The third section presents a diverse array of case studies that have successfully utilized co-production in the context of climate and development. Drawing on our analysis of these case studies, and of the wider academic literature, we then propose the use of a "pathways approach" as a concept for linking co-production process to outcomes in a strategic manner, and offer a design heuristic to this end. We also call for critical reflection on the intended ends of co-production in climate and development, inviting those working toward these ends to reflect on how well our current practices meet our ambitions.

2. Knowledge co-production in climate and development

2.1 The promises of co-production

Knowledge co-production is seen a critical aspect of understanding and acting on complex global challenges like environmental change and sustainability. This is due to its perceived ability to draw in knowledge from across disciplinary and epistemic communities; promote shared learning based on collective experience; increase the perceived legitimacy, relevance and usability of the knowledge being generated among non-academic stakeholders; and for some, challenge entrenched norms of knowing and doing (Lang et al, 2012; Moser, 2016; Campbell and Vanderhoven, 2016; van Kerkhoff and Lebel, 2015). As such, it has garnered considerable attention as a means of addressing the gulf between research, policy and practice in the fields of climate change adaptation and sustainable development (Dilling and Lemos, 2011), and as a tool for more fundamental, or transformative, types of change (Schuttenberg and Guth, 2015).

While interpretations vary, as we explore below, Armitage et al define co-production as "the collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem" (2011: 996). The boundaries where co-production processes begin and end are understood differently within the literature. Mauser et al (2013) propose that co-production sits within a broader, iterative process of co-creation where co-design precedes co-production, and a dissemination of results follows. Elsewhere, co-production is seen to include co-design, collaborative planning and co-implementation, co-analyses, and collaborative advocacy for change, all of which are often enabled by a host of intermediaries, including knowledge brokers, facilitators and boundary agents (Harvey, Lewin and Fisher, 2012; Reyers et al, 2015). Beyond the question of the boundaries of co-production processes, there two other significant areas of divergence in interpretations of the concept which we explore below.

First, two contrasting interpretations of the value of co-production can be found in the literature (van Kerkhoff and Lebel, 2015; Wyborn, 2015). We term these two interpretations emergent and instrumental. The emergent interpretation, which has been

dominant in the field of science and technology studies, sees co-production as an idiom that offers new ways of knowing and representing the world across social and natural orders (Jasanoff, 2004). In this interpretation, the key contribution of co-production is its capacity to challenge the hegemony of particular ways of knowing and to invite a more conscious reflection on how science and society constitute one another (Pohl et al, 2010). This value emerges from people's engaged participation in the co-production process.

The instrumental interpretation of co-production's value focuses instead on its role in creating "useable knowledge". Here co-production is seen as an instrument for addressing the pressing need to get knowledge into accessible formats and relevant contexts to inform decision making on major challenges like the impacts of climate change on the livelihoods of the poor (Dilling and Lemos, 2011; Clark et al, 2016). This means, for Dilling and Lemos (2011: 681), bridging interpretations of what is understood to be "useful" from a scientific perspective and what is "useable" from a practical perspective, and establishing a shared vision of what knowledge is useable in particular decision making processes.

While there are complementarities between these interpretations there are also tensions. The first interpretation (e.g. Jasanoff, 2004) challenges the universalising position of science-driven knowledge and its perceived distinctness from localised social contexts while the second (e.g. Dilling and Lemos, 2011) tends to leave these unchallenged, taking a more prescriptive stance on how these relationships can be better managed to address the priorities of decision makers at a range of levels (van Kerkhoff and Lebel, 2015). Further, the two interpretations reveal a potential tension between valuing the outputs or outcomes of co-production (new knowledge or solutions, as captured above in the definition from Armitage et al (2011), versus seeing the process of co-production as a good in and of itself. Jasanoff (2004), for instance, suggests that knowledge co-production is better thought of ontologically and normatively: not as a means to a specific, desired result, but as a process that represents how knowledge creation ought to be - emergent, and focused on the right questions (rather than the right answers; see Table 1). These distinctions are reflected in the case studies that follow, and may have a bearing on what kinds of outcomes can be expected from processes labelled as co-productive, as we explore below.

Table 1 – Instrumental and emergent co-production ends

Emergent (from interactions between actors)	Instrumental (knowledge that is useable for practical purposes)
Co-production as a process that represents - and transforms perspectives on - how knowledge production ought to be. Process *as* an end.	Co-production as a vehicle to get knowledge into accessible formats and relevant contexts to inform decision making.

2.2 The process of co-production

Much as its expected ends vary, the process through which co-production is undertaken is interpreted differently across the literature, from the actors involved to the ways in which they engage with one another. An important dimension of co-production processes is the nature of the interface between actors from different domains. Here Pohl et al (2010) propose two main approaches, the first being through the use of intermediaries or brokers who help to mediate across boundaries, and the second being through direct interaction between these actors in a space of confluence they term "the agora" (see Table 2). In this approach, they suggest, "boundaries between the classical epistemological realms and corresponding roles of academic and non-academic actors are blurred" (Pohl et al, 2010: 269). In contrast, Cvitanovic et al (2015) see intermediary or brokered approaches as separate to co-production, with co-production being a process wherein equal participation occurs from the idea development until the dissemination of outcomes. We see these different interfaces as a spectrum rather than fully distinct approaches. Brokered approaches may still offer direct interaction between scientists and non-scientists, while "agora" approaches may be facilitated, for instance. The distinction lies, in our view, in the extent to which participants are deliberately called upon to deal with the social and cognitive challenges of accommodating contrasting worldviews and potentially conceding aspects of their own. Further, we also argue that the role of facilitation may (and does, in the case studies below) feature in both brokered and agora framings, but that the facilitation function may be distinctly different in each.

Table 2 – Brokered and "Agora" Co-production Processes

Brokered co-production	"Agora" framing of co-production
'Boundary organizations' help to stabilise interactions between science and non-science actors. (Pohl et al, 2010) Design, convening and facilitation by a third party with a mandate to help establish agreed objectives and generate shared understanding.	Collaborative endeavour of academic and non-academic actors where these communities "confront one another's worldviews in a purposefully open intellectual and social space." (Pohl et al, 2010) Co-production occurs when interactions between actors minimize differences in their cultural backgrounds and emphasize the collective nature of the endeavour. (Schuttenberg and Guth, 2015)

2.3 Challenges to practice

As outlined above, there are strong reasons to advocate for the co-production of knowledge in climate and development. Yet, there are many challenges and barriers to doing so. Knowledge co-production poses different sets of challenges: heterogeneous groups of stakeholders have diverse worldviews, cultural backgrounds, interests, objectives,

motivations, relationships, institutional structures and resources (Huppe, Creech and Knoblauch, 2012; Cvitanovic et al, 2015). Pohl et al (2010) highlight the structural and power-related dimensions of co-production in defining it as "a simultaneous production of knowledge and social order." The diversity of knowledge that is required may therefore also be the root of some barriers to collaboration. The basis for successful collaboration, many argue (e.g. Huppe, Creech and Knoblauch, 2012), is creating an environment wherein relationships are established, common vision is determined, and shared objectives are clear. Pohl et al (2010: 270-271) note that "an overall challenge for sustainability researchers [is] that of structuring the agora during the co-production of knowledge." Even in cases where co-production develops from an existing community of practice where social capital is high, the transaction costs and time demands for co-production are high. This paper will not explore how these challenges can be mitigated or overcome generally, as Cvitanovic et al (2015) and others do. Rather, we focus on the implementation of knowledge production processes within the intersecting spaces of climate and development.

While we agree with Moser (2016: 107) that the "case has been made, convincingly, why engagement of scientists and users of scientific knowledge is superior to research conducted in isolation from its practice context", we are concerned that the conflation between divergent ends and means of co-production reviewed above can lead to instances where co-production processes fail to deliver what they are seen to promise. Some recent scholarship has avoided taking a stance on the contrasting interpretations of the ends of co-production. Van Kerkhoff and Lebel (2015) for instance, seek instead to identify concepts and approaches that can draw connections between these interpretations and their respective points of focus. We would challenge that, in fact, more work is needed to tease out the distinctions between these differing ends and means, and to better understand the opportunities and limitations of each in practice. A similar process emerged from the explosion of attention on participatory approaches to development after criticism of their increasingly utilitarian or depoliticised use (Cooke and Kothari, 2001).

Building on Moser (2016) and others' consideration of how best to undertake co-production, research on co-production should also interrogate whether co-production is the best approach for particular problem types, which modes of co-production are most appropriate to the aims that have been set out, and which pathways of action effectively link approaches and outcomes. The case studies explored in this paper help us begin to address these questions. They offer examples of knowledge co-production that can support the development of a heuristic for co-production design. Our aim here is not to debate the merit of co-production, but to recognize how the different framings play out in practice, and call for more informed decision making about when, where, how and for what knowledge co-production may be the most effective and appropriate process.

3. Case study evidence

3.1 Overview and methodology

To better understand how co-production processes are applied in climate and development practice we undertook a study of six case studies of self-identified "successful" co-production (see Tables 3 and 4). The case set was identified through a combination of "snowball" sampling as well as an invitation for submissions circulated on relevant email listservs. Cases were selected from those that met a standard set of criteria designed to fit with the types of contextual factors found within the CARIAA programme, which this review was designed to inform, and which are commonplace in a high percentage of climate and development research programmes, namely: That the actors involved are geographically distributed; that they span different disciplinary or epistemic boundaries; that they face competing priorities or demands for their time; and that the outputs or outcomes of these processes were not solely academic in nature. The assessment that the co-production process qualify as a "success" was left to those putting forward the cases, in line with the criteria outlined above. It was not evaluated any further by the authors beyond reviewing supporting documentation related to the case.

A common interview protocol was used to ensure similar data was collected about each case study. The six selected case studies were then developed based upon in-person and remote interviews with the participants involved, which were semi-structured and guided by key questions to ensure consistency. The data was input into a common case template allowing for similar information to be easily compared and contrasted, resulting in six brief summary documents (see Appendix 1). Each draft case study was then validated by inteviewees to ensure accuracy. In one case, the CIP Potato Park, the case study was derived from ongoing research that was examining similar questions (Van Epp and Garside, 2016) and therefore did not require additional interviews. Comparative analysis across the case studies was then conducted by the authors, who sorted the data, and from which key themes were drawn using an open coding approach. In other words, the authors did not pre-determine key indicators for assessment, but instead derived themes based on what respondents identified as most significant. While this presents some limitations for comparability across the data set, doing so allowed for a more exploratory research process.

In this paper, we focus on results emerging from knowledge co-production processes via the selected case studies. Additional detail on the context and features of each case is available in Appendix 1. Due to the heterogeneity of case studies, the scope for direct comparison is limited and we focus instead upon the features and learning each case study identified in line with the dimensions of co-production laid out above, and assess these in the aggregate. A further potential limitation is that the case studies were explicitly sought as examples wherein co-production was successful. We did not seek cases from those that did not work well for contrast, but recognize much can be learned from exploring such instances. Tables 3 and 4 summarise these results, first looking at the aims, means and ends

of these instances of successful co-production in climate and development (Table 3), and then at the drivers and barriers to success identified by respondents (Table 4).

Table 3 – Summary of Six Cases of Co-production on Climate and Development			
Case	**Objective(s) of co-production**	**Co-production approach**	**Outputs and/or outcomes**
Climate Knowledge Brokers Group (CKB): Climate knowledge brokers' manifesto	**Instrumental**: Production of a set of joint principles on the role of knowledge brokering for climate change	**Brokered**: The CKB secretariat approached a range of potential contributors to the manifesto, who collectively undertook a process of gathering viewpoints from a wider set of actors. The group then analysed the findings and crafted the results into the manifesto through a two-day facilitated workshop.	Primary: The primary output was the Manifesto book and an accompanying summary. Complementary: The process also provided a networking and "bonding" experience as the team collaborated on topics that drew group members together. It helped to push the CKB group forward in its thinking about its role in the wider climate change community and how best to play it. Finally, the process connected climate knowledge brokers to climate knowledge users.
Red Cross Climate Centre Writeshop process	**Instrumental**: Documenting experience from practice and collective learning through a facilitated peer editing and review processes.	**Brokered**: Interdisciplinary teams of authors, editors, reviewers and facilitators come together to develop case studies of experiences on a common theme over the course of a week. Through the process participants refine their understandings of their own cases and expand their learning through the reviews of others' experience. In some instances a joint synthesis output is also produced to bring together the shared perspectives.	Primary: Production of a set of peer-reviewed case studies from each of the participating author teams. Complementary: Identification of common lessons that can be learned and synthesised from across a range of related experience.
Climate & Development	**Instrumental**: Sharing and documenting the challenges	**Brokered**: The design of the agenda aimed to create a balance between	Primary: Participants co-created 30 lessons learned, around the design,

Knowledge Network (CDKN) and Fundacion Futuro Latinoamericano (FFLA): Latin American & Caribbean Learning Exchange Workshops	and lessons learned from a diverse (and often disconnected) range of programming activities on climate compatible development funded in Latin America and the Caribbean through CKDN.	creative and rational thinking, generating a suitable environment for dialogue, learning exchange and the collective construction of knowledge. Facilitation techniques aimed to create a space where participants could co-create a set of lessons learned across the different initiatives.	implementation, governance and priorities for future research on climate compatible development in Latin America and the Caribbean. The lessons were packaged into 1-page documents for each of the projects presented in the workshop, as well as in blog posts, a working paper, and a public webinar. Complementary: The process allowed participants to put forward recommendations for CDKN to improve project implementation in the region and to create a Network in Latin America and the Caribbean. Participants decided to set up a Facebook group continue to exchange ideas on climate compatible development in their region.
Global Forum on Food Security and Nutrition (FSN): 'Climate Change and Food Security and Nutrition' dialogue	**Instrumental or emergent**: A facilitated online forum that is used to either obtain stakeholder inputs into draft reports or policies for further development; or to host more open-ended dialogue around a theme, with the specific output or outcome of that dialogue left more open. In the case of the dialogue on climate change and food security and nutrition	**Brokered**: The FAO facilitates the forum using two approaches: (1) Consultations - A draft document (e.g. global guidelines, national policy documents) is shared for feedback; there are some instances of radical changes to drafts, in others not, and (2) Open discussions, with opening comments and key questions posed. Both are participatory processes to enhance knowledge sharing / dissemination. In general, FSN believes 50% of participation is for the input itself and 50% is for knowledge	Depending upon which of approach is used, the output varies. For consultations the output is a revised report/policy/set of guidelines which takes into account stakeholder priorities. For discussions the outcome is a synthesis or scoping of multi-stakeholder perspectives on selected themes. In the climate change dialogue, outputs included a webinar following the discussion, and summaries in three languages.

	objectives were more instrumental in nature.	sharing and learning for the community.	
CGIAR's Climate Change Agriculture and Food Security (CCAFS) programme: Climate Change and Social Learning (CCSL) Sandbox	**Emergent**: A facilitated online forum used to catalyze interaction and initiate new collaborations between CCAFS team members and external partners using a social learning approach.	**Agora**: The vision was that the Sandbox could evolve into a self-governing community of practice and act as a reflection of how social learning may work in practice. It focused on encouraging conversations and a slow, organic and sustainable growth of a community of collaborators.	A mix of outputs and outcomes that included: a collective narrative on the importance of social learning to climate change, agriculture and food; collective frameworks on social learning; gatherings of the members; innovation grants to ideas proposed through the sandbox; and a series of publications.
International Potato Center (CIP), Quechua-Aymara Association for Sustainable Communities (ANDES), and the Potato Park: Agreement for the Repatriation of Native Potatoes in Peru	**Emergent**: For the Potato Park communities, a key objective was to enable a reciprocal (two-way) exchange, and enhance the recognition of their rights over native potatoes collected from their communities.	**Agora**: Potato Park farmers work together with CIP scientists to repatriate and experimentally grow potato varieties native to the indigenous communities. *Asociacion ANDES*, an NGO which works closely with the Potato Park communities, plays an important role in capacity building and facilitation to enable indigenous farmers to engage in collaborative research with CIP scientists.	Primary: Increased crop diversity resulting from the agreement has provided more options in the face of increased pest infestation, and other changing climate conditions.

Table 4 – Drivers and barriers to success identified in the cases

Case	CKB Manifesto	RCCC Writeshops	CDKN Exchange	FSN Dialogue	CCSL Sandbox	IPC Potato Park
Drivers	**Relevance/ resonance:** Focus on a topic and content that resonated with the group **Facilitation**: Strong and experienced facilitation critical for dealing with fluidity and emergence. **Ownership:** Collective ownership of the process and content throughout the process.	**Efficient Format**: The writeshop process is a fast and efficient. It avoids drawn-out e-mail conversations and inevitable delays as teams collaborate over long distances amidst competing priorities. **Diversity** of expertise and skill sets. **Incentives:** It delivers a product for participants by the end of the workshop. **Design:** Provides a constructive platform for feedback, and a pleasant co-creation environment.	**Design:** Facilitators managed to ensure a good balance between creative and analytical/ reflective sessions The **facilitation** of the workshop. **Relevance/ resonance:** Captured the interest of participants. The **incentives** for the participants.	**Investment:** High-level, long-term support from FAO. **Relevance/ resonance:** topics reflect ideas and interests of the community. **Diversity:** in terms of themes and participants. **Accessibility:** Ensure the processes & technology are easy-to-use, clear and engaging. Strong **facilitation** – occurring at multiple levels. **Translation:** of process and output.	**Participants:** Identifying and engaging those with experience and interest in the area. **Relevance/ resonance:** Defining what are the new issues for investigation. **Design:** Modelling a social learning approach to the way that the activities developed and building connections between different disciplines and institutions **Incentives:** Supporting and promoting publications **Investment** in facilitation, Community of Practice development and support to small research and publication projects. **Design:** The mix of process and product	**Language**: The ability of a CIP scientist to speak Quechua was crucial for the integration of traditional knowledge. The **facilitation** role of ANDES ensured active farmer participation and an equitable partnership. **Participants:** Active participation of farmers ensured commitment to reaching the project goals. **Flexibility:** CIP scientists have learned to use an idea as a spark to build a project rather than presenting projects to the communities; and to not be blinded by conventional data collection methods /needs.

					orientation is important.	**Investment** in capacity building by both CIP and ANDES.
Barriers	**Time:** Difficult to find sufficient time for strategic conversations in a networked organisation. The consistency of structure and content among contributors. **Language:** The Manifesto was only produced in English.	**Time and guidance:** Sufficient preparation time and clear guidance for authors are critical at the outset. **Participants**: Challenging when participants are not those with direct experience of the subject matter. **Skills:** Not having the right skills in the room. **Time:** Challenges to securing the right participants amidst competing priorities and busy schedules.	**Keeping the momentum** Maintaining momentum and connections after the event ends is no simple task. **Participants:** Having the right people participate is critical to achieving the workshop objectives. **Comfort with sharing** - People don't necessarily know how to share their lessons learned, especially deep lessons.	**Focus:** Balancing specificity with inclusion/accessibility in exchanges. **Language** barriers: Translation presents significant cost and time barriers. **Time**: Some users feeling overwhelmed with communications.	**Time:** Over-busyness detract for collaboration; **Format**: Members aren't very interested in working online but who accept it as a 'necessary evil'. **Ownership:** Project was nobody's central focus. It was building into the interstices of people's lives.	**Time:** Regular communication supports information sharing and increased understanding, although CIP's time in the field is quite limited. **Documentation:** A more systematic process for documenting, storing and sharing information and results of collaborative research is needed.

3.2 Characterising the cases

One defining feature of all six case studies is that they were are all funded and programme-based. While the literature suggests that stable funding is one of the keys to successful co-production processes (FAO, 2012; Palmer et al, 2016), this distinguishes these case studies as being drawn from a subset of knowledge co-production types. As such, the majority of these initiatives were not completely emergent processes as one might find in social movement mobilisation or autonomous community based adaptation for instance, but rather operated in an environment influenced by political priorities and donor decisions, and are processes that set out with an objective to affect or support specific types of change. Cognizant of this, the case studies serve as examples of knowledge co-production within a particular type of context, albeit one that is nonetheless representative of a considerable amount of work in the field of climate and development.

This common feature (funding within the context of a time-bound programme) may have a bearing on the co-production activities - which tended toward more structured and brokered. Programmed interventions often struggle to reconcile slow, emergent processes with the time-bound and output-oriented management processes that tend to govern them (Harvey et al, 2017). In the two cases that tended towards more emergent outcomes using less brokering, the CIP-ANDES-Potato Park Agreement was grounded in a community partnership that dates back to December 2004 - far longer than a traditional project or programme cycle, while the CCSL Sandbox featured a large core set of collaborators who were part of, or long-time contributors in, the CGIAR system. That these two cases built closely on well-established relationships may have encouraged the design of co-production approaches that favoured emergence and deep interaction. Indeed, lessons from researchers in the Potato Park initiative (see Tables 3 and 4) highlight how adopting a commitment to allowing anticipated outcomes emerge from interaction rather than pre-defined questions or goals has been a key to effective engagement with the community. This view is supported elsewhere in the literature (Huppe, Creech and Knoblauch, 2012).

It is also possible that the more bounded nature of the co-production activities that emerged from these kinds of programmes led to an increased rate of perceived success, given that objectives were clearly defined and achievable within a fixed timeframe. Recent analysis of participatory processes for addressing policy problems ranging from structured to unstructured offers parallels here. Hurlbert and Gupta's (2015) study of a "split ladder of participation" revealed that cases of participation in policy processes tended towards more structured-to-moderately structured and technocratic problem-types, with fewer examples of unstructured or 'wicked' policy problems that they posit are the most appropriate contexts for expanding participation and adaptive governance. These unstructured problems, Hurlbert and Gupta (2015) note, are areas where values are likely to be in question and consensus may be out of reach. Thus, for the cases of co-production described here, it is perhaps unsurprising that such examples were less likely to be put forward as

instances of "success" in the case sourcing process. Cases within our sample where objectives are classed as emergent either featured participation from a pre-established community (CCSL Sandbox and Potato Park cases), or explicitly set out to take stock of differing perspectives (FAO's FSN Discussions).

3.3 Cross-cutting themes

Looking across the six cases at the drivers and barriers that shaped their success (Table 4), a number of common factors emerge. These factors align closely with the elements of co-production process set out by Schuttenberg and Guth (2015), namely:

- Focusing on meaningful issues, which we describe as relevance and/or resonance of the themes;
- Engaging representative stakeholders, which we termed participation;
- Facilitating shared, iterative learning;
- Using constructive decision-making and conflict resolution processes, which feature under facilitation and design factors in our table; and
- Producing a boundary object (often a co-produced knowledge product in the cases reviewed), which featured strongly as incentives within the cases here.

In addition to these factors, our review consistently highlighted the particular influence that language barriers and time constraints can have on the success of co-production across the contexts we have studied. These new features may stand out particularly strongly within the sample of cases due to their international and programme-based nature.

The coherence of drivers and barriers across this sample suggests that many pre-conditions span approaches to co-production, regardless of whether they are instrumental or emergent, brokered or representative of 'the agora'. Whether particular criteria are more critical to success depending on the approach was not assessed in this study but could be a useful area for future investigation. There were some criteria that differed across the sample, however. These include sustained investment in a process and a sense of shared sense of ownership.

- **Sustained investment:** The role of sustained investment, both in terms of financing and commitment from organisational leadership, was particularly highlighted in cases where co-production objectives were emergent. In contrast to more instrumental co-production processes that offer efficient means of reaching specific outcomes (for instance, the RCCC Writeshops), emergent approaches that do not feature pre-defined outcomes may depend more on demonstrated organisational commitment to the value of the co-production process. In contexts where investment in a co-production process cannot be maintained, it may therefore be

advisable to adopt more instrumental approaches, or to avoid using a co-production approach.

- **Ownership**: While ownership was highlighted across the set of cases, it varied from being a driver to a barrier, or, in the case of the Potato Park remained a key challenge that participants had to navigate by adjusting their approaches over time. The case evidence suggests that ownership of co-production may be more easily developed in instrumental approaches, at least within the context of the cases examined here. This may be due to the more clearly-defined and time-bound nature of these activities, in contrast with the challenges confronted by emergent processes with less focus on specific outputs towards which all members were collectively working. Co-production process design should consider the competing demands that participants will face in determining what kinds of co-production processes are appropriate, indeed if any.

4. Discussion and design heuristic

In reflecting on the results from this review, we revisit the three questions posed at the outset of this paper to structure our discussion. The responses may provide insights on how programs like CARIAA, and those examined through the case studies, can best approach future co-production endeavours.

1) What kinds of questions or problems are successful co-production approaches being used to answer or resolve in climate and development?

Drawing upon the case studies and the literature, we propose that the aims of co-production can be situated on a spectrum that range from more instrumental approaches aimed at improving the usability or relevance of particular knowledge sets, to more emergent aims related to changing the framing of problems, the nature of the questions, and the norms of knowledge production. The cases of successful co-production identified for this sample span this spectrum but tend to be more concentrated toward creating useable knowledge. As we have highlighted throughout the paper, the context in which these cases are operating is typical of much of the 'programmed' work in this field but excludes co-production activities initiated by social movements, citizens' groups, etc., which may influence the questions and aims set out for the process. We also considered whether the nature of the question that was asked has influenced the likelihood of perceived success insofar as more bounded and instrumental ends might be deemed more answerable or achievable. Many of the cases here also have a clear emphasis on producing collectively-owned boundary objects as a central aspect of the co-production. This may make reaching a specific endpoint where success can be declared more feasible (e.g. a co-production event is concluded; a question answered; or a product finalised). Further study is needed to understand how perceptions of success vary across this spectrum of questions/aims and

the extent to which that influences investment, engagement, or ownership of particular co-production approaches.

2) In these successful cases, how does the co-production context and process influence its outputs and outcomes?

Drawing upon the significant body of existing literature on approaches to co-production, we characterise co-production processes in two broad categories: In the first, brokered approaches, engagement across different stakeholder groups is mediated, preserving groups' respective epistemic cultures whilst enabling the production of new hybrid knowledge or boundary objects. Alternatively, through "agora" approaches interactions seek to minimize or disrupt these differences, yielding new perspectives on the collective nature of the challenge in question. While our sample of successful cases offered examples of both approaches, the use of brokered approaches was more prevalent, perhaps owing to their less disruptive and more easily structured nature.

Across all process types, despite the difference in anticipated outcomes, the generation of outputs (or boundary objects) was seen to contribute to the success of the co-production. The centrality of these outputs to the overall aims of the co-production activity differed however, ranging from being the anticipated "end" of the co-production itself to being an incentive that catalyses and sustains participation in the process.

These distinctions appear significant in terms of informing the design of co-production processes. When taken alongside the range of possible approaches we see the possibility of charting a "co-production pathway" that sets out the assumed relationship between processes, outputs and outcomes in ways that ensure coherence between means and ends, and that ensure the potentials of particular approaches to co-production are not overstated (on one hand), or under-equipped (on the other). In large, multi-actor collaborations such as the CARIAA initiative, there may well not be consensus on this relationship between process and outcomes, nor on which is more important. Thus, it seems important to define these, and ensure that such a "co-production pathway" enables a collaboration to address both ultimate and intermediate aims in ways that are clearly understood by those taking part.

3) How do success factors vary across different co-production approaches or problem types?

Across the case study set, we found high degrees of similarity in factors, as well as a few key distinctions. The common factors confirm and build on features of co-production set out elsewhere in the literature (Schuttenberg and Guth, 2015). Sustained investment and ownership, as discussed above, highlight unique features and present important learning about what questions ought to be asked when considering co-production. Yet, questions remain as to whether the constraints/realities imposed by development projects like

CARIAA actually allow for the full harnessing of success factors that can enable and sustain co-production with agora-style approaches and emergent outcomes (c.f. Harvey et al, 2017).

One of the observations on co-production processes that we shared at the outset of this study was that planning and design decisions are not as purposeful and informed as they could be, particularly about how and why particular co-productive approaches should lead to anticipated outcomes that projects or programmes set out. Our analysis has identified that there are different processes, outputs and outcomes along the spectrum of co-production. Based on the literature and the case studies analysed, we present a design heuristic (Figure 1) that can contribute to a shared understanding of process aims and determine which modality and process are most appropriate for their respective resources, timelines and objectives. This can then be complemented by a review of lessons on the drivers and barriers associated with each dimension of the heuristic. This would allow planning in co-production activities or larger programmes like CARIAA to be driven by fundamental questions related to the pathways envisioned for co-production activities to affect the type of change desired, and the approaches that are best suited the intended aims.

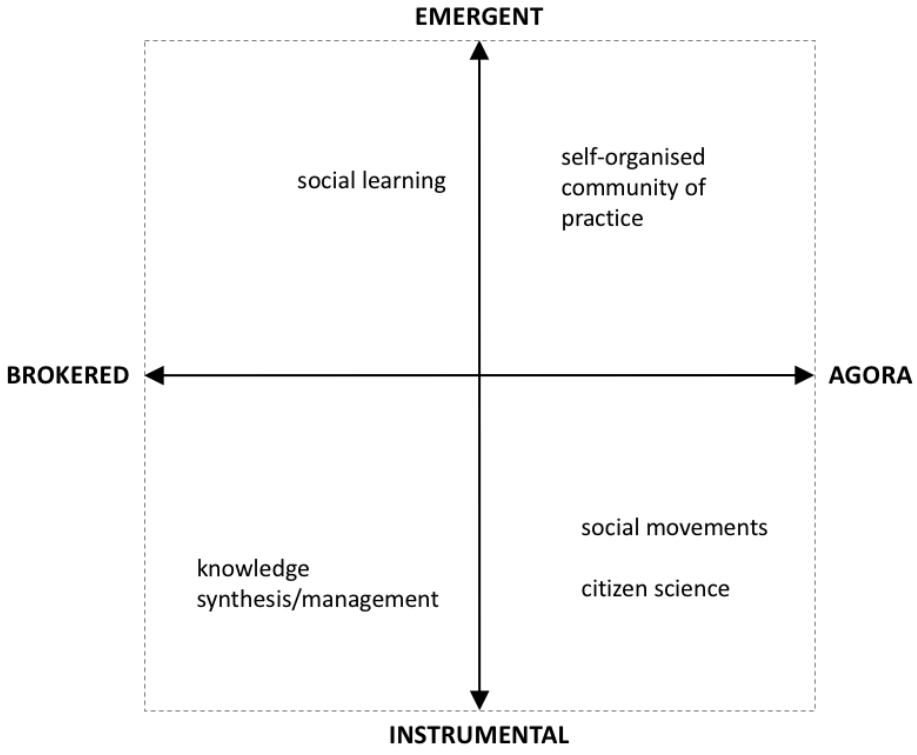

Figure 1. A design heuristic for knowledge co-production

This heuristic presents the two spectrums of co-production set out earlier in this paper around its aim/ends (from instrumental to emergent) and its approach (from brokered to "agora"). Drawing on the case evidence and the literature we posit that brokered and

instrumental approaches - where the intended "use" of the process outcome has been defined and interactions are mediated in ways that do not seek to disrupt stakeholder roles or identities - are more likely to yield tangible output-oriented knowledge products within limited timeframe. However, they are less well suited to more intentionally transformative aims, such as disrupting norms or worldviews on their own. Conversely, emergent "agora" approaches are suited to the disruptive and potentially transformational aims owing to their more evolving and intersubjective nature.

To illustrate this, we have situated types of activities or engagement that may be used towards co-production aims in these various guises. We have not plotted the cases reviewed here against this spectrum as they represent a much narrower range of approaches owning to their contextual similarities, as we have outlined.

5. Conclusion

The emphasis on co-production and similar models of collaboration across disciplinary and epistemic boundaries in responding to climate change and development challenges has grown considerably. While we agree that, in principle, co-production offers real benefits in addressing the 'wicked' nature of these challenges, we echo others in cautioning that the tangible outputs or more transformative outcomes that are frequently associated with co-production risk being overstated, or at least misunderstood (Lewis, 2015; Mitlin, 2008). The analysis of a series of successful co-production processes has facilitated the outlining of a heuristic to support decision making about what modality, when, where, how and for what knowledge co-production may be the most effective and appropriate process.

This paper has sought to better understand how the co-production approaches contribute to particular kinds of outcomes, advocating the concept of "co-production pathways" as a way of thinking more strategically about how particular framings and approaches to co-production can yield particular outcomes. We have also provided some cautionary observations about the potential limits to co-production within the context of time-bound and project-based climate and development initiatives like CARIAA.

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Annex: Good Practice in Knowledge Synthesis Case Studies

The six case studies in this annex showcase approaches to knowledge synthesis and co-production that have met with positive results. They include both traditional and innovative approaches that may serve as an inspiration for CARIAA.

The case studies were drawn from the authors' knowledge of relevant initiatives, as well as crowdsourced through platforms such as KM4Dev and Research2Action. A selection was made based on the following criteria:

- The case provides a novel/interesting example of synthesis or co-production that yielded a successful output/outcome;
- It features participation from a decentralised partnership (ideally global);
- Participants had competing priorities/areas of focus or demands;
- Collaboration crosses disciplines/sectors or draws in different knowledge types; and
- The output/outcome is in the public domain and not solely academic.

Based on these criteria, the six case studies selected for analysis are (in alphabetical order):

1) CDKN Latin America and Carribbean Learning Exchange Workshops
2) Climate Change and Social Learning Sandbox
3) The Climate Knolwedge Brokers Manifesto
4) FAO Global Forum on Food Security and Nutrition
5) Potato Park-International Potato Center-ANDES Agreement for the Repatriation of Native Potatoes
6) Red Cross Climate Centre Writeshop Process

Case 1: CDKN Latin America and Carribbean Learning Exchange Workshops

Contributor: Maria Jose Pacha (CDKN)

Edited by: Blane Harvey and Pier Andrea Pirani

Overview

- This case study describes learning and exchange workshops organized by Climate and Development Knowledge Network (CDKN) to share lessons learned from projects related in Latin America and the Caribbean. The workshop aimed at stimulating participants to reflect on their experiences, to distill successful practices and to codify their tacit knowledge in ways that could be easily shared and communicated to others.

- To achieve this objective, the workshop followed a participatory approach and was facilitated using innovative knowledge sharing methodologies. This stimulated participants' interest and active engagement.

- A set of lessons learned was co-created during the workshop. These lessons were then re-used and re-packaged into additional knowledge products.

- The workshop also set the foundation for an emerging network of practitioners working on Climate Compatible Development (CCD) at sub-national level in the region.

- The case study provides an interesting example of how to design and facilitate an effective face-to-face event to share experiences and co-create knowledge products that can be repackaged into additional outputs and used to inform subsequent work. For this to happen, the right people should be involved, and the appropriate participatory methodologies and facilitation techniques should be put in place.

Context

CDKN has been financially supporting projects that are testing new approaches to Climate Compatible Development in cities and regions in Latin America and the Caribbean. A lot of valuable "knowledge capital" is generated by these projects and a lot of lessons can be captured and learned from these experiences. However, most of the time key stakeholders don't have time (or don't have the habit) to reflect on their experiences and to distill useful lessons that can be shared and communicated to others, to scale up experiences and good practices.

Much of CDKN's work is carried out by "suppliers", or contracted groups who contribute for a limited amount of time. Without a dedicated process to document some of the lessons from these suppliers CDKN has struggled to consistently learn from the work they support.

To overcome these challenges and facilitate the exchange of experiences and lessons learned in the design and implementation of CCD projects, CDKN organized three regional workshops, bringing together representatives of institutions managing these projects as well as government representatives. The first workshop, co-organized by CDKN LAC and Fundacion Futuro Latinoamericano (FFLA), took place in Quito (Ecuador) in July 2015. Teams from ten projects working on climate compatible development in the Caribbean, Colombia, Ecuador, Lima, Bolivia and Argentina took part in the workshop. The main objective of the event was to enable participants to share their experiences, articulate challenges and capture the lessons learned from successful practices put forward by cities to advance in CCD in Latin America and the Caribbean.

The initiative

From the outset, the Quito meeting was conceived as a landmark for CDKN and the organizers wanted it to be a different event than a 'workshop as usual'. With around 40 people from ten different projects attending, the idea was to overcome the traditional PowerPoint-based approach to share contexts, achievements, challenges and lessons from the CDKN supported projects in the region. This was reflected in the overall workshop methodology and design, process flow and facilitation, which was conceived to be as participatory as possible. In the 2.5 days of the workshop, the facilitators guided and supported participants to collectively share their knowledge and experience, reflect on their work and, most importantly, draw out tacit knowledge and generate a set of lessons learned from their practices.

The design of the agenda aimed to create a balance between creative and rational thinking, generating a suitable environment for dialogue, learning exchange and the collective construction of knowledge. Examples of the participatory knowledge sharing techniques used to facilitate the different workshop sessions include:

- Group work, during which participants were asked to make a 3D design of their ideal city within a CCD framework
- Six thinking hats: "The Thinking Hats exercise is a kind of role-play in which different perspectives are represented by hats of different colours. When a participant is symbolically wearing a specific hat, they must seek to perceive the situation through the lens associated with that colour. This method shows how different aspects of one's personality can approach a problem differently."[1]
- Fish bowl: "Fishbowls involve a small group of people (usually 5-8) seated in circle, having a conversation in full view of a larger group of listeners. Fishbowl processes provide a creative way to include the "public" in a small group discussion."[2]

[1] Source: KS Toolkit.
[2] Source: KS Toolkit.

- Chat show: "The chat show encourages participants to share experiences in an informal, fun environment. The chat show's open circle layout encourages greater participation than a fishbowl and, due to its informal nature, is less intimidating than a panel discussion."[3]

- Chinese whispers: "Participants formed 2 lines, one for those speaking and understanding English and the other only Spanish. A long and complicated text was selected full of figures, dates and details that was read to the first person of the line. Then, he or she had to convey the message to the immediately behind fellow participant and the actions was subsequently repeated until reaching the end of the line. The final result was really different from the original in content and length. This dynamic was useful to understand how difficult it is to convey an original message without distortions from a prior personal knowledge."[4]

The flow of the meeting and the facilitation techniques used all aimed to put participants in the condition to co-create a set of lessons learned across the different initiatives. Specifically, participants prepared the lessons learned per project and they presented the two or three most important lessons to the rest of the group. Participants then voted for those lessons that were relevant for their projects, too. As a result of this process, thirty different lessons were generated and classified into different topics, from lessons learned while formulating a CCD proposal to lessons learned on project Governance to lessons learned on research and CCD.

Participatory workshops such as this one require people to get out of their comfort zone and this may not be easy for everybody. Some of the participants struggled to think differently and to communicate the lessons learned. However, they recognised the challenges they were working against and in general appreciated and enjoyed the overall process and approach.

Drivers and challenges

The following drivers of success are worth highlighting:

- The design of the workshop: Facilitators managed to ensure a good balance between creative and analytical/reflective sessions which was instrumental to reach the workshop objective and the co-creation of lessons learned.

- The facilitation of the workshop: Not everyone is accustomed to participatory workshops. Good facilitation skills are essential to encourage participants to actively engage in the process.

[3] Source: KS Toolkit.
[4] Source: CDKN Workshop report.

- The interest of participants: The way the workshop was designed and conducted enabled to free up participant's attention and stimulate their interest to actively engage in the process.
- The incentives for the participants: The workshop gave participants the opportunity to share what they were doing in their projects and what they learned. Likewise, they had a unique opportunity to learn about others' experiences.
- The creation of a network: Prior to the workshop, participants were not connected to each other across projects. The face-to-face workshop gave them the opportunity to meet and to set the foundations for a new network of practitioners.

On the other hand, the workshop presented also a set of challenges:

- Keeping the momentum: This is a key and common challenge to most face-to-face workshops, especially when participants don't know each other prior to the event and don't belong to an established network or community. While a lot of energy and engagement can be achieved during the workshop, maintaining the momentum and keeping people connected after the event ends is no simple task, regardless of the technology in place and the online spaces that may be available to continue talking and exchanging.
- Inviting the right people: Especially in a participatory workshop, it is the participants who own the process and determine the outcome of the event. Having the right people participate is therefore critical to achieving the workshop objectives. In the case of the Quito workshop, this meant having participants that had been involved in the projects since the beginning and had a hands on experience of the subject. Additionally, it would be useful to have participants that actually have decision-making power in their organisations to increase the likelihood of recommendations being taken forward.
- Knowing how to share: People don't necessarily know how to share their lessons learned, especially deep lessons. They are not sure how to communicate them in ways that are meaningful to others. This is where process facilitation is key to stimulate collective learning and sharing.
- Taking the process forward: There is a trade-off between being prescriptive and leaving participants scope to define what they want to develop or share after the workshop. The risk is that, when the momentum is gone, little gets actually done. In this case, CDKN proposed some options but the final decision on ways to take the process forward after the event was up to participants.

Results

Usually products such as lessons learned are outsourced to professionals or drawn up engaging with single suppliers. In the case of the Quito workshop, the whole approach was

underpinned by the effort to promote a co-creation process, which captures different perspectives and transforms tacit knowledge from participants' heads into explicit knowledge.

As a result, during the workshop participants co-created 30 lessons learned, around the design, implementation, governance and further research on CCD in LAC. These lessons have been packaged, re-used and presented in different products, such as a 1-pager for each of the projects presented in the workshop, blog posts, a working paper, and a public webinar.

The workshop was instrumental to identifying challenges related to sustainability of projects, from diagnosis and planning to implementation and how to generate the political so that projects are translated into laws, rules and specific activities.

Further, the co-creation process allowed participants to put forward recommendations for CDKN to improve project implementation in the region and to create a CCD Network in Latin America and the Caribbean. Specifically, participants decided to set up a Facebook group to bring forward what achieved in Quito and continue to exchange ideas and challenges, to share good practices and continue learning from each other how to implement climate compatible development in their region.

Analysis

Traditional workshops and events often fail to trigger participants' interest and engagement, resulting in missed opportunities for effective dialogue, knowledge transfer and learning.

This case study instead demonstrates how a relatively short face-to-face event can be effective in bringing people together to share experiences and co-create valuable knowledge products. The 30 lessons learned produced in the Quito workshop emerged from the collective knowledge and experience in participants and have been the re-used by CDKN, repackaged into additional outputs and used to to inform subsequent work.

For this to happen, the right people should be involved, and the appropriate participatory methodologies and facilitation techniques should be put in place.

Case 2: Climate Change and Social Learning Sandbox

Contributors: The CCSL Sandbox team

Drafted by: Pete Cranston

Overview

CGIAR research programs are complicated ventures, involving several CG centres as well as a range of other partners. The Climate Change Agriculture and Food Security (CCAFS) program led an investigation into the role of Social Learning in fostering learning and change within its' domain. The Climate Change and Social Learning initiative CCSL ran for three years. All of the partners engaged in CCSL activities as an additional focus in their work. CCSL held workshops, commissioned and produced co-authored publications and other communication material, including a large number of blogs and a cartoon-story. The initiative was supported by a Sandbox, a facilitated community of practice that used a social network (Yammer) and a wiki to maintain and grow communication between face to face meetings. CCSL illustrates how a targeted investment in a mix of face to face meetings and a facilitated community of practice can support and build an environment in which a loose network of people are able to collaborate to help form and build a set of concepts in an emergent area of interest, and out of which to develop and synthesise ideas and recommendations for research and communication products.

Context

CCAFS explores communication and learning approaches that might be appropriate in its' constantly changing domain. With a group of partner organisations,[5] CCAFS held two workshops on Communications and Social Learning in Climate Change in May and November 2012. These workshops highlighted that for problems like climate change it is not sufficient to direct experts to evaluate the issue and advise policy makers or affected people how to respond. Instead, we need ongoing, flexible, consultative processes that develop a collective understanding and response.

The relevance and potential of Social Learning as a learning and collaboration approach was first discussed within the CCAFS team and then shared with members of the ILRI Communication and KM team in 2012. To engage potential collaborators a call was issued for Expressions of Interest in developing a Research paper on the potential of Social Learning in Climate Change Adaptation. All the finalists were invited to the first workshop in May 2012. This facilitated participatory workshop scoped out the area and identified areas of research interest. The first CCSL paper, 'Unlocking the Potential of Social Learning for Climate Change and Food Security' set the conceptual framework for the project, and

[5] International Livestock Research Institute (ILRI), the International Institute for Environment and Development (IIED), the Institute of Development Studies (IDS), and other partners.

was followed by other papers over time. All the papers were developed collaboratively, shared and discussed on the Sandbox Yammer network.

The Initiative

A Sandbox (essentially a facilitated and resourced space for virtual collaboration) was established to sustain work on the ideas and activities around Climate Change Social Learning (CCSL) that had surfaced during the workshop.

The Sandbox consisted of:

- A public wiki where CCAFS and related projects' CCSL experience was documented
- A private social network (on Yammer) to seek feedback on ideas and projects, to share resources and to learn socially, where practical challenges and issues could be reflected upon and supported by the collective wisdom of Sandbox members
- A modest funding mechanism to encourage interesting ideas around social learning in climate change agriculture and food security to be developed and rolled out

The Sandbox ran from September 2012 - June 2015 and was designed for the use of CCAFS and partners to enthuse and catalyze interaction, innovation and concrete collaboration using social learning to inform decision-making. The vision was that the Sandbox could evolve into a self-governing community of practice and be a genuine reflection of how social learning may work in practice.

Another outcome was the initiation of a series of working papers, journal articles and briefs that continue to capture the new thinking coming out of the CCSL initiative[6].

Activities and Outputs

Over its lifetime the sandbox supported the following:

- The CCSL Framework and Toolkit
- Three international workshops[7]
- Four innovation grants[8]
- 108 people who joined the CCSL group (on Yammer) from 27 different organisations
- 381 CCSL Yammer group conversations, 118 associated files, 17 collaborative notes and over 48 topics

[6] https://cgspace.cgiar.org/handle/10568/32729.
[7] Evidence Gathering for the Climate Change and Social Learning community, June 2014; CCAFS Science Meeting, April 2013; Acting on What We Know and How We Learn for Climate and Development Policy, IDS March 2013.
[8] To Makerere University, ILEIA, IIED and IDS.

- 92 CCSL wiki pages and 228 associated files (covering strategy, events,projects, resources, glossary, funding opportunities, etc)
- Three face-to-face and two virtual CCSL Core Team meetings
- The CCSL narrative explaining how social learning for climate change, agriculture and food security should be brought about among scientists and climate change-focused practitioners
- The CGIAR stocktaking paper: 'A new relevance and better prospects for wider uptake of social learning within CGIAR — Findings from a stocktaking exercise within CGIAR'
- The whiteboard video 'Transformative partnerships for a food-secure world'.

Resources: Funding for the core Sandbox activiteis covered 60 days per year, split between three people, who co-facilitated the activities.[9]

Drivers and challenges

Overall, the Sandbox wasn't especially innovative. Rather it used a mix of well-tried approaches to building and supporting a community of interest, selecting from a toolbox of face to face and digital facilitation methods. The CCSL project as a whole was similarly eclectic in its balanced set of activities, starting with exploration and concept formation, and then developing into research and publication, as well as advocacy within the CGIAR for the value of Social Learning. The Sandbox similarly had a mixed product and process orientation and was deliberately emergent in concept - not engaging in promotional activities aimed at mass recruitment nor spreading itself thinly over many activity streams. Instead the project focused on encouraging conversations and slow, organic and sustainable growth. The overall level of activity was typical of networks that connect mainly online, with only periodic face to face meetings. There was a small but slowly growing core of regular users who posted items and responded to others; a larger group, that also grew during the project, who responded occasionally; and the majority content to view the traffic, who valued being connected, and were content to exploit or share resources privately, outside the Sandbox itself. One indicator of the strength of the community came from the annual 'refresh' process. When asked if they wished to remain members 90%+ of the members opted to stay connected.

The Sandbox also faced typical challenges for such a network: constant complaints of over-busyness, and a lot of members who aren't very interested in working online but who accept it as a 'necessary evil'. Another challenge, relevant to CARIAA, was that the CCSL project as a whole was nobody's central focus. It was building into the interstices of people's lives.

[9] Ewen Le Borgne ; Carl Jackson; Pete Cranston.

Results

"Responding to the challenges of climate change as a cross-cutting and disruptive discourse in development requires … fresh combinations or conjunctions of learning and knowledge sharing practice."[10] Social Learning (SL) as a concept is not new, and the general case is easily made that SL could be a valuable approach to support collaboration and adaptive responses to climate change. There is also generally energy around the identification of new research areas, and bridging different disciplines. However, applying some rigour to an investigation of the potential and actual value of social learning required a series of steps:

- The identification and engagement of those with experience of and an interest in the area
- Working with those collaborators to define what was a new area for investigation and explore research
- Applying resources to modelling a SL approach to the way that the activities developed, ensuring that all connected were kept in touch with developments, had access to collective support and shared findings
- Building connections between different disciplines and institutions
- Supporting and promoting publications

Networks and communities of practice, especially those which rely heavily on digital channels for communication almost never form spontaneously but instead form around a group of people who play a facilitative role. The Sandbox was designed to use entry-level digital technology and provide a minimum viable amount of support for collaboration and network development. The steady growth, engagement of a very diverse network as well as the outputs demonstrate a positive return on this investment. Of course collaborative research and co-production take place outside of facilitated groups and networks. The Sandbox case is that limited facilitation using simple digital tools can speed up research and collaboration processes, increase the diversity of participants and improve output quality through collective support and review.

Analysis

The potential relevance to CARIAA is that CCSL overall was a loose network of people and organisations whose main focus was elsewhere. So the challenge was to find ways to link, connect and engage people in a common area of interest. The Sandbox demonstrates how a small investment in facilitation, Community of Practice development and support to small research and publication projects can generate useful research products and also, more importantly, connect and engage people in an ongoing process of reflection, learning and

[10] CCSL Sandbox briefing note http://bit.ly/1qLzvQd.

concept development. And that these connections in turn build into and support other projects. The mix of process and product orientation is also important: the product focus generates motivational timelines, targets, and a sense of focus; attention to process keeps people informed, builds connections and engagement as well as maintaining interest and connection between face to face meetings. While the parent project, CCAFS, had a strong interest in the area and its development, they were able to outsource its development and benefit themselves from the process and products.

Case 3: The Climate Knowledge Brokers Manifesto

Contributors: James Smith and Sigmund Kluckner, REEEP

Drafted by: Blane Harvey

Overview

- The Climate Knowledge Brokers Manifesto lays out the roles and principles of the profession of a Climate Knowledge Broker: an organization or individual facilitating the exchange of climate related information to enable climate sensitive decisions based on the highest quality information and knowledge possible.

- The Manifesto was developed in through a highly collaborative process with 17 individuals from different professional backgrounds, organisations and geographical locations contributing to data collection, analysis, drafting of results and validating the final output.

- The process offers clear opportunities to build stronger bonds within a team and with a wider set of stakeholder while simultaneously generating a co-produced piece of knowledge synthesis.

Context

Climate knowledge brokers help to ensure that those who need to take climate sensitive and climate-related decisions have access to the best available knowledge. They act as filters, interfaces and translators between climate knowledge producers and users, across different disciplines, fields and sectors, employing a range of methods and communication approaches to meet their diverse users' needs. It is a relatively new field of thinking and practice, but one that has developed fast to serve the needs of knowledge users.

Collaboration, coordination and coherence have been the core principles behind the Climate Knowledge Brokers Group (CKB) since it was established in 2011. The CKB Group acts as a champion for this emerging field, an innovation hub, and a thriving community of practice with over 150 members drawn from leading global, regional and national knowledge brokers working across the full spectrum of climate-related themes. Organisations involved range from UN organisations and multilateral development banks, through governmental organisations, academic institutions, research institutes and think tanks, and NGOs.

The CKB Coordination Hub was established in 2014 to coordinate different efforts within the CKB Group. It is hosted at REEEP, the Renewable Energy and Energy Efficiency Partnership in Vienna and consists of a small team of full and part-time staff members working on the CKB intitiative, with one person acting as a full-time project lead. Three members of the REEEP CKB team were involved in the planning and design of the Manifesto knowledge synthesis process.

The main purpose of the Climate Knowledge Brokers Manifesto was to put climate knowledge brokering in general, and the CKB group in particular, firmly in the minds of decision-makers. They also wished to attract further knowledge brokers to their group, and persuade funders to support brokering with increased, and more coordinated funding. The Manifesto sets out the case for climate knowledge brokering: what it is, why it is important and how it works. Importantly, it starts from the needs of the users of climate knowledge; decision makers in whatever field who decisions are (or should be) influenced by what is known about climate change.

The Initiative

The Manifesto (available online here in a range of formats) was developed in a highly collaborative manner with 17 contributors (who acted as interviewers and editors) – individuals primarily drawn from the CKB group who conducted over 80 interviews with climate knowledge users and brokers alike. These interviews were loosely transcribed then collectively edited at a loosely-structured but facilitated two-day write-shop. A final round of editing was undertaken by a small core group of editors with contributors then providing a further review and approval of the final product.

What motivated people to contribute? Contributors participated voluntarily with the exception of a few who had travel costs covered. They saw value of engaging with this set of interview targets and many self-selected based on interest and perceived opportunity. This engagement was built on the convening power of the CKB group, and contributors were to a certain extent able to use the CKB Manifesto process (which was perceived as semi-independent to their usual responsibilities) as an opportunity to learn more for themselves. Clearly, personal interest and perceived importance of this topic also had a big role in people's willingness to volunteer their time and expertise.

Step 1. Designing the process: The timing of the CKB Manifesto drafting process was, to some extent, opportunistic. The Steering Group and Coordination Hub had intended to develop a clear statement about knowledge brokering principles, but the opportunity presented by some newly-available funds to support the team's work really kick-started the process.

A small team at REEEP undertook the design of the process based on some past experience of collaborative drafting from a different field of work. They presented the idea to the CKB Steering Group to get their buy in and solicit their participation. Through the discussions with the Steering Group the core team drafted a first list of people to invite as either contributors or interviewees. They tried to develop a list that would reflect the full diversity of the knowledge brokering field, building the list through multiple rounds of inputs from contributors as they joined the initiative. The group used Google Apps to host documents and allow for mass collaboration.

Step 2. Gathering contributions: Once the team of 17 contributors was in place and a list of potential interviewees was developed the list was shared out among by region and by

topic wherever possible. A set of semi-structured interview questions was developed by the team of contributors. The interviews themselves served multiple purposes. Obviously they served to gather information about what the users need, but they also had the benefit of raising awareness about the group and the forthcoming publication among people who were seen to be key actors in a field of their interest.

The contributors themselves transcribed the interviews, but did so to varying degrees of completeness. On this point, given the number of contributors, the voluntary nature of the exercise, and the fact that this was not a piece of academic research, the team did not impose strict research protocols on the process, leaving a degree of inconsistency across the evidence collected.

Step 3. Collective analysis and write-up: The results of the interviews were jointly analysed by the contributors in a loosely-structured two-day workshop hosted by REEEP in Vienna. The team worked with a fluid framework for the workshop to respond to emerging ideas – working with stacks of interview reports at hand to make sure they accurately reflected what they had heard. Once contributors had familiarised themselves with enough of the interview transcriptions/reports the next task was to draw out interesting content on user needs and to put these points onto post-it notes. Participants then undertook a clustering and ranking exercise that served to emerge the produced the basic framework of their analysis, and ultimately, of the Manifesto.

After two days the team of contributors had produced a succinct statement on what the Manifesto was going to say, along with a set of quotes and notes drawn from the interviews. At this point the core team at REEEP took on the task of producing a full draft of the Manifesto, with two team members leading, and two others providing support. This process took approximately 2-3 weeks of work. The draft was then shared back to contributors and steering group for revision. A second draft was then discussed during facilitated discussions – both plenary and small group - with the wider CKB group during the annual CKB workshop. This led to further amendments, and the Manifesto was formally adopted by the Steering Group a few weeks later.

Drivers and challenges

Drivers:

- The focus on a topic and content that strongly resonated with the group was a critical factor in securing people's personal efforts to join and contribute. The fact that collaborators volunteered their time to this serves as evidence of this buy-in.

- A second major contributor to the success of the process was the contribution of strong facilitation with experience in similar processes. The fluid nature of the workshop process, in particular, required facilitation that could give people faith that the outcome would emerge from something with a quite loose structure.

- Perhaps as a product of both points above, a final important driver was that the sense of collective ownership of the Manifesto process and content remained strong throughout the process; no small feat for a team of 17 contributors.

Challenges:

- The Manifesto writing process raised strategic questions and discussions for the CKB Group, and it is always difficult to find sufficient time for such conversations in a networked organisation.

- As noted above, the consistency of structure and content between the interviews and the reports drafted by contributors was not optimal. However, this was a relatively minor issue since the main content development was undertaken through the discussions at the workshop

- The Manifesto was only published in English, but has since sparked a lot of interest of regional editions in other languages. A translation has been done into Spanish as of today, and is currently in the design and print process. The CKB team expect this to have a positive impact on the outreach and connection towards Latin American Knowledge Brokers.

Results

- The primary output was the Manifesto book and an accompanying 8-page summary pamphlet. A web page hosting all of the outputs was also created.

- The process also generated other positive outcomes. It provided a great networking and "bonding" experience as the team collaborated on topics that drew group members together.

- Related to this, the process helped to push the CKB group forward in its thinking about its role in relation to the wider climate change community and how best to play it.

- Finally, the process offered a strong added value by connecting climate knowledge brokers to climate knowledge users. This offered a strong networking effect that was of benefit to the individuals and group alike.

Analysis

The process described offers some valuable points for reflection for the CARIAA programme. It highlights the potential to use knowledge synthesis and co-production processes as ways of building stronger stakeholder engagement by positioning the knowledge products for uptake right from the very design stage while broadening the knowledge base on which the programme is drawing. Done well, this can also have a powerful team-building dimension that is valuable in a distributed network or partnership such as both CKB and CARIAA.

It is worth noting, however that there are some clear pre-conditions for success in this kind of endeavour:

1) The selection of a theme that genuinely resonates with participants is critical to gaining and sustaining buy-in to the process.

2) There is a strong need for facilitation and coordination in the process. This should not be seen as a time-saving exercise, but rather a way of broadening the sources and potential user-base of knowledge products.

3) Participants must be willing to have degree of tolerance for uncertainty and fluidity as the process evolves. As with many co-production processes, the end point is collectively defined and therefore people must be willing to surrender some control of both process and outcomes.

Case 4: FAO Global Forum on Food Security and Nutrition

Contributor: Max F. Blanck

Edited by: Logan Cochrane

Overview

- The Food and Agriculture Organization (FAO) of the United Nations has operated a Global Forum on Food Security and Nutrition (FSN) since 2007, facilitating knowledge sharing and synthesis work for a global community of experts and practitioners. To-date, there are over 7000 members, who have contributed to more than 150 online discussions.

- There are two main approaches taken, both of which are entirely online and typically run for 3 to 4 weeks. In the first, the FAO shares a draft document seeking feedback and input, and in the second an expert facilitates a discussion by offering opening remarks and key questions with the objective of sharing and presenting information.

- The key to FAO's FSN is the flexibility of the platform, which allows governments to have regionally-specific discussions on policy, as well as global discussions on emerging issues.

- The impacts vary according to the discussion, they have directly changed and informed national policy, supported the creation of global guidelines, provided feedback into international forums and creating new knowledge, one of which resulted in the writing of a book.

Context

FAO established the FSN and facilitates the discussions that occur on it. However, a range of individuals, organizations and governments can propose topics to the FSN, who then facilitate or support the facilitation of the discussion. For example, a government has used the platform to seek input and feedback on its national policy, which resulted in a complete change of direction for that national policy. In other instances, the FSN community provides input for the High Level Panel of Experts on Food Security and Nutrition for the United Nations Committee on World Food Security. In other cases individuals propose topics for discussion, such as a doctoral student who facilitated a discussion on deconstructing the concept of food security, after which he published a book on the topic. In yet other cases, the FSN community contributes input and feedback to global guidelines, such as the Voluntary Guidelines on Sustainable Soil Management. The purpose of the projects vary according to the type of discussion, although two broad approaches are used, which are discussed in more detail below (one seeks input and feedback, the other creates content and shares new knowledge on a subject). The drivers for participation are largely participants' involvement

and interest in the FSN community. The FAO leadership of the project draws interest, and the opportunity to provide input for documents such as the High Level Panel of Experts on Food Security and Nutrition for the United Nations Committee on World Food Security, offers incentive for individuals to offer their time and thoughts voluntarily.

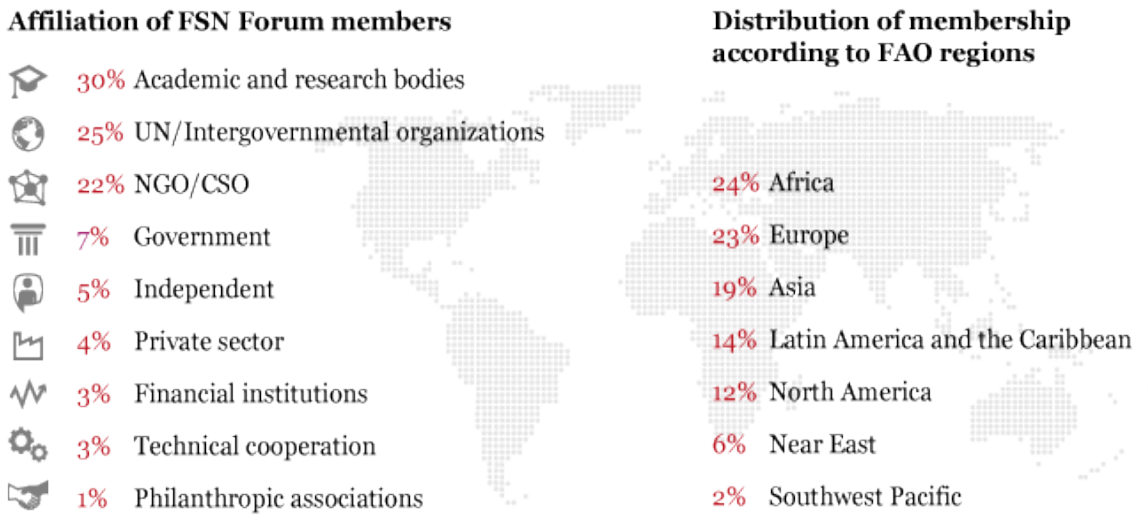
The initiative

Two broad approaches: (1) Consultations - a draft document (e.g. global guidelines, national policy documents or High Level Panel of Experts reports) is shared for feedback; there are some instances of radical changes to drafts, in others not, and (2) Open discussions, with opening comments and key questions posed. Both are participatory processes to enhance knowledge sharing / dissemination. In general, FSN believes 50% of participation is for the input itself and 50% is for knowledge sharing and learning for the community.

Consultations: In the consultation approach, FAO (or another entity) produces a draft, for which feedback is sought. These are some of the most widely engaged with processes, and specifically the drafts produced by the High Level Panel of Experts on Food Security and Nutrition for the United Nations Committee on World Food Security. In these instances, participation is limited to commenting on a proposed draft, after which revisions are integrated into the draft before finalization. The synthesis work is conducted by the FAO (or HLPE or otherwise), drawing upon the comments and feedback offered by the community. There are an average of 60 contributions per discussion, which are quite detailed (1+ page each), with ~30 countries commonly represented. The motivation of community members is heightened in the case of the HLPE reports, since the audience of the final report will be global, and therefore the input (although not acknowledged within the report), may reach a broad audience.

Open Discussions: The second approach are discussions around a specific topic. These may be raised by members or by the FSN, and can be regionally- or nationally-specific. FAO states that the discussions "explore food security and nutrition topics from a practitioners' point of view, can provide input to policy formulation processes and can be used to validate technical work." Topics are introduced by a facilitator, who is an expert in the field, who also provides a background and poses key questions, which "helps to build a shared understanding on goals for the discussion." Digests are prepared as the discussion progresses, which are shared via the mailing list (they find some users prefer to use email over the website, so the digests are emailed as well as posted). Specific individuals may be identified and invited to contribute. Discussions end with concluding remarks from facilitator. FAO FSN team prepares a synthesis summary (English, French, Spanish, with translation provided), which is shared with all members.

In total, more than 150 discussions have been held to-date. These discussions promote knowledge management and sharing, and act as a community of support and sharing for the 7,000+ members. There is also a great diversity of membership, both in terms of background and location:



Publication outlining FAO FSN approach:
http://www.fao.org/docrep/016/ap095e/ap095e00.pdf

Drivers and challenges

Effective: The FSN representative at FAO suggested that the most important driver for sustained and increasing participation in the discussions is driven by high-level, long-term support from FAO, which he traced back to 2005, before the launch of the FSN network (in 2007). This provided commitment and direction from FAO, and ensured sustained support for participatory projects such as FSN. Having established the network, one of the means through which the project was made effective was the structure: topics are demand driven, so that ideas and interests of the community are reflected in the discussions. Additionally, there is a purposeful effort to diversify topics, such that specific, highly-detailed reports (e.g. soil conservation) are balanced with broader discussions more applicable to the community as a whole (e.g. urbanization and rural transformation). With participants interested in the topics, FSN ensures the processes are easy-to-use, clear and engaging to retain participation. This includes continuous, consistent and strong facilitation – occurring at multiple levels: the expert facilitator of the topic, the FSN team facilitating posting and process as well as translation, synthesis and summary. As a result of FSN's international network, there is a very diverse group of participants (regions as well as backgrounds, as shown above), which results in discussions that are dynamic (as opposed to a group of individuals who share perspectives at the outset and the discussions simply confirm the ideas the group already shared). This diversity is key to success, but a challenge to foster. The driver of this success can largely be attributed to the FSN being a project of the FAO (the network now has more than 7000 members). Two specific initiatives of the FSN also enhanced the effectiveness of the discussions: (1) translation: this is not limited to outputs, but also within the discussions while they are on-going, enabling a much broader opportunity for participation, and (2) participants can contribute on the website or via

email. These contributions require significant contributions from FSN, since the posts submitted via email are added by FSN staff. However, FSN has found that some members prefer to engage via email, and this is likely the case for individuals who do not have consistent internet access, but can write/respond on email while offline (which would not be possible if engagement was limited to the website platform). FSN also does not specify what the output should look like for all discussions, rather the output is flexible based on the type of discussion, from proceedings to synthesis summaries.

Challenges: The FSN faces a number of challenges in ensuring its continued success in these synthesis and feedback discussions. One challenge is that the topics typically are proposed from members, organizations or other third parties, and the nature of the topics as well, which can result in periods of specific discussions occurring wherein broader participation is limited. FSN attempts to address this to the best of its ability by encouraging new topics for discussion and scheduling proposed ones accordingly. The scheduling and type of discussions affects the interest of the general membership, who may not have knowledge or interest to engage in highly specialized conversations that are outside of their field of expertise. FSN attempts to ensure a regular set of topics that are broad, inclusive and encourage a diverse range of participation. Although FSN places a lot of time, resources and effort into translation, there are still linguistic barriers that prevent some participation. Indeed, one of the primary challenges FSN faces is the cost and time required for existing translation efforts. A challenge that FSN encountered early in the process was some users feeling overwhelmed with email communications, so the process was refined and fewer digest emails are sent to members to prevent this.

Advice: FSN offers some advice for consortia and networks working on synthesis: If you create a community, you need a long-term vision. FSN has two staff dedicated to running discussions, totaling about 15 per year, which has been running since 2007. These staff also put together the syntheses, summaries and digests. FSN also provides the financial and technical support for translation, so the commitment to these participatory exercises must be significant, and not created as a side project. The entire activity is participatory, but the synthesis work is mostly done by FSN or other partners (not the participants), who do not have a review of the final document. The FAO brand certainly contributes to the success of FSN, as the FAO is a place where people look to find information on the FSN topics.

Results

Of the more than 150 discussions that have taken place to-date, each have resulted in outputs, from proceedings to synthesis summaries. Along with these, a host of other resources are collected, shared and posted on FSN for future reference by the community, and general audience (these are open to the public). In terms of participation, the HLPE CFS discussions were suggested to be the most successful, and had the largest level of engagement – these had a slightly unique format as well, whereby there were two online discussions parts each, the first on the scoping and the second on the draft. The discussions have resulted in a high level of information sharing, which have directly contributed to

policy changes and academic outputs that have created new knowledge on the topics discussed. In other instances, the outputs have resulted in global guidelines, which are adopted and/or followed by a host of organizations. Few generalizations can be made because the impacts vary according to the topics, objectives and organizations involved. FSN also noted that the facilitating person and/or organization gains a significant amount of visibility as a host of an FSN discussion, which can raise awareness about specific projects or programs, as well as key issues.

Discussions are available here: http://www.fao.org/fsnforum/forum

Within each discussion there are links to the documents (e.g. drafts), key questions and background. The FSN also updates a list of "Discussion Documents" (e.g. topic, proceedings, about the facilitators) and a "Further Reading" section, with links to key documents on the topic being discussed.

Statistics of some of the Discussions are listed in a document (link below), which include the location of the participants for each specific topic, their gender and affiliation. Interestingly, these varied significantly by topic. For a discussion on women in agriculture, 46% of contributors were women, whereas a discussion on "current food security concepts" had only 12%. In the food security concepts discussion, 52% of contributors were academics or researchers, whereas a discussion on "food security in protracted crisis" had 45% of contributors being "Independent/Other."

Selection of specific discussions: http://www.fao.org/docrep/016/ap095e/ap095e00.pdf

Analysis

If CARIAA plans to have reports about the entire program written by the IDRC team, or by a select few individuals, the "Consultation" process used by FAO FSN provides a working model for how feedback can be obtained, while also increasing buy-in because all members had the opportunity to contribute in the draft phase.

CARIAA may use the discussion format (and even use the FAO FSN existing platform, if the topic is connected) to have a structured conversation about a topic. For CARIAA, this might include discussions about theme-based synthesis work (e.g. around migration). This could occur in an early stage, as a knowledge sharing activity. It may also occur as an activity seeking to answer specific questions with the stated objective of creating a CARIAA synthesis document on that subject.

Case 5: Potato Park-International Potato Center-ANDES Agreement for the Repatriation of Native Potatoes

Authors: Tammy Stenner, Alejandro Argumedo, David Ellis, Krystyna Swiderska, Rene Gomez and Marissa Van Epp

Overview

- This case study explores collaborative research between the International Potato Center (CIP) and indigenous communities in the Peruvian Andes during a ten-year agreement for native potato repatriation, in relation to the agreement's impact on food security, climate adaptation and sustainable development.

- The agreement is an example of a successful program-based effort to foster the co-production of research by stakeholder groups with significant cultural differences. Ten years of activities under the agreement have led to transformational changes in the values and practices of both scientists and local communities, and to a wide range of positive development outcomes that would not have been possible with a different approach to the research.

- Drivers of collaboration include two-way capacity building, facilitation, and trust building. Emergent outcomes were enabled by flexible planning. Challenges faced include developing adequate systems for documenting and sharing research results, as well as spreading transformational change in values in practice to wider groups.

Context

This case study explores collaborative research between the International Potato Center (CIP) and indigenous communities in the Peruvian Andes during a ten-year agreement for native potato repatriation, in relation to the agreement's impact on food security, climate adaptation and sustainable development.

The Agreement for the Repatriation, Restoration and Monitoring of Agrobiodiversity of Native Potato and Associated Community Knowledge Systems between CIP, ANDES and the Association of Potato Park Communities (in Pisac, Cusco, Peru), was first signed in December 2004. Through this historic five-year agreement, the CIP genebank has returned 410 disease-free native potato landraces to the six Potato Park (PP) communities for food security and in-situ conservation of genetic resources. These varieties were collected by CIP scientists from communities in the area in the 1960s, but had since been lost from the communities through genetic erosion. This is one of the first such repatriation from a genebank to communities, recognising the importance of in-situ-ex-situ links for food security and climate adaptation.

A second five-year agreement was signed in 2010, which involved collaborative research activities to monitor and test the repatriated potato varieties. Knowledge sharing and direct

research collaboration between scientists and indigenous farmers, two groups that do not normally interact as co-researchers, took place during this second phase. Asociacion ANDES, an NGO that works closely with the Potato Park communities, is also party to the agreement and has played an important role in capacity building and facilitation to enable the indigenous farmers to engage in collaborative research with CIP scientists.

The agreement is one of the few examples where the usually separate formal and informal seed systems are collaborating directly for mutual benefit, with active community participation in research processes, from design to analysis. This equitable research partnership between indigenous farmers and scientists has linked science and traditional knowledge, and global and local knowledge, for a better understanding of climate change and food security problems and solutions. Active participation of farmers has also ensured a high level of commitment to reaching the project goals, a key factor in ensuring the project's success. Social learning has been an inherent and necessary part of this process.

The agreement is historically significant because for the past 200 years or more, the flow of genetic material has largely been from communities to private collectors, commercial entities, botanical gardens and genebanks; once transferred, communities have had very little access to the traditional varieties they have domesticated, improved and conserved over centuries. Thus, for the Potato Park communities, a key objective was to enable a reciprocal (i.e. two-way) exchange, and enhance the recognition of their rights over native potatoes collected from their communities.

The initiative

Design and implementation of the agreement: The pre-agreement activities involved all parties in developing the idea, content and format of the agreement. The agreement includes objectives on conservation, protection of community resources and knowledge, collaborative research, and rural development.

Five Potato Park communities were actively engaged in designing and implementing activities, with technical support and training from ANDES and CIP. In total 49 indigenous farmers were directly involved, including women and youth.

Through the agreement, CIP and the PP are jointly responsible for dynamic conservation, combining activities in situ and ex situ. Both organisations recognised the contributions of scientific and traditional knowledge (TK) to potato diversity characterization, conservation, climate change research, and to the related learning processes. Fieldwork was conducted in Quechua, as an important carrier of TK.

Co-production of research: CIP's micro-level approach to genetic resources conservation, potato breeding and cultivation was complemented by the holistic approach taken in the PP, where the spiritual, natural, social and economic aspects of food systems are considered important. Similarly, CIP's scientific characterisation of potatoes was complemented by TK of names, mythology, rituals, uses, agricultural practices, soil and climate conditions.

Two-way capacity building has been an important element of the collaborative research process. CIP has provided scientific training to the farmers (on potato conservation, characterisation, pollination, integrated pest management, natural fertilisers, botanical seed production and seed storage). Farmers have taught CIP scientists about the Andean holistic worldview and the importance of macro-level factors, concepts of reciprocity, and cultural aspects of potato cultivation.

ANDES played an important role in ensuring active community participation. The organisation provided capacity building to the PP communities for negotiating the agreement and on associated conservation, rights and economic development aspects. ANDES did this by using indigenous research methodologies, and communications systems and formats compatible with indigenous knowledge. For instance, oral and visual approaches — such as storytelling, songs, poems and legends that reflect customary laws and do not separate the artistic from the functional — were used to identify concepts and values associated with equity, which were then used as the basis of the development of the agreement.

Drivers and challenges

Drivers:

- Social learning-oriented approach: In the development of the first phase of the agreement, social learning was intended to be a key component of the dynamic conservation and collaborative research processes. This set the scene for mutual learning.

- Language: The ability of a CIP scientist to speak Quechua was crucial for integrating traditional knowledge.

- Capacity building: Investment in capacity building by both CIP and ANDES and the timing of the capacity building for Potato Park communities, which began before the agreement was negotiated, to enable community members to participate in the design of the agreement itself from an informed, equal footing. ANDES also supported previous and parallel farmer- led action-research processes, which strengthened farmers' capacity to engage in co-research with CIP scientists.

- Facilitation: The facilitation role of ANDES ensured active farmer participation and an equitable partnership throughout the implementation of the agreement.

- Flexible planning and review: Yearly new challenges arise which were either not thought about or were a result of exchanges from the previous year. PP communities, ANDES and CIP commit to projects annually, but the projects are never so fixed in design that they cannot accommodate new ideas or interests. Through the agreement, the parties jointly learned to better appreciate the value of using an idea as a spark to build a project rather than developing an idea into a

project and presenting this to the communities; and to take a broader landscape approach.

Challenges:

- Facilitation of processes for co-learning, information sharing, and joint decision making: While the agreement has increased understanding between scientists and farmers of their different needs and perspectives, there are still some challenges. Regular communication through monthly meetings, and working together, supports information sharing and increased understanding, although CIP's time in the field is quite limited. A more systematic process for documenting, storing and sharing information and results of collaborative research is needed. The PP farmers feel that more efforts are needed to ensure traditional knowledge is clearly documented and accessible, as well as scientific knowledge. The farmers also feel that access to information, especially on the purpose and results of collaborative research managed by CIP, could be improved, and that this would strengthen social learning and enable research results to be more broadly tested and implemented.

- Funding: There is no institutional funding for the agreement, which is an obstacle to promoting institutional change within CIP.

Results

Through the agreement, CIP, ANDES and the Potato Park communities have contributed directly to development outcomes, by enhancing food security, climate change adaptation, economic opportunities, scientific and cultural understanding, and social cohesion of poor indigenous farmers in the high Andes. A number of important conservation and development outcomes include:

- Preservation of genetic diversity: The agreement established an evolving genebank for adaptation, with about 650 different potato varieties (or about 1344 varieties according to traditional morphological classification).

- Biodiversity and in-situ conservation: The reintroduction of 410 repatriated varieties has increased potato diversity in the Potato Park from around 240 to 650 varieties (or as above, to about 1344 varieties according to traditional morphological classification), creating one of the highest levels of potato diversity anywhere in the world, which has been conserved by the communities.

- Best practices: Co-management of native potatoes has generated best practices for in-situ conservation, sustainable use, increasing productivity and diversity, in-situ-ex-situ links and dynamic conservation.

- Increased yields: CIP reports a 30-40 per cent increase in yield due to repatriated varieties and production based on clean seeds, while farmers estimate as much as a 50 per cent increase.

- Food security and climate adaptation: The agreement has established a large evolving gene pool for climate adaptation, and enabled farmers to increase on-farm crop diversity to reduce the risk of crop failure in the face of increased pest infestation, and other changing climate conditions. It also facilitated seed production for depositing the Potato Park's seed collection in the Svalbard Global Seed vault, for food security of the communities and the world as a whole. This concrete outcome has also enabled recognition of the PP communities in the global stage of conservation of genetic resources.

- Traditional knowledge and cultural practices: The return of traditional potato varieties that the communities had lost has led to a revival of the traditional knowledge, beliefs and practices associated with the repatriated potatoes, through the memory of the elders. It has also promoted traditional agriculture by diversifying the native varieties available. The use of local researchers as leaders and Quechua language in the activities has helped to maintain traditional knowledge and language.

- Economic development: Sixty-one repatriated potato varieties are being used to develop 11 new 'biocultural' products: chocopapa (chocolate with potato flour), starch, papa sour, prepared food and drinks, and natural products (including potato shampoo). The agreement has also contributed to enhanced revenues from tourism, the Potato Park's largest and growing revenue stream. These economic impacts are reflected in a recent survey of four Potato Park communities, which found a steady increase in income between 2003 and 2012, when income exceeded expenditure for the first time.

- Rights and benefit sharing: Ensuring genetic resources and knowledge remain under the custody of the communities and do not become subject to IPRs in any form is an objective of the agreement. The agreement has increased the Potato Park communities' understanding of their rights to genetic resources and traditional knowledge and related policies; their capacity to protect their rights through community register databases of TK developed by ANDES; and led to an inter-community agreement for benefit sharing.

- Trust and social cohesion: The agreement has helped to build trust between CIP scientists and indigenous farmers and led to greater awareness and valuing of the knowledge and practices of farmers by CIP scientists and vice versa. It also led to stronger cohesion, knowledge sharing and collaboration among the PP communities through a new inter-community group of potato experts to manage the potato collection; and with other communities in Lares, Vilcanota, Lamay and Paruro, through sharing of potatoes.

Analysis

The agreement is an example of a successful program-based effort to foster the co-production of research by stakeholder groups with significant cultural differences. Ten years of activities under the agreement have led to transformational changes in the values and practices of both a major scientific institution and local communities, and to a wide range of positive development outcomes that would not have been possible with a different approach to the research.

Takeaways for CARIAA pertain primarily to the co-production of research with local communities in the climate change hotspots that CARIAA consortia operate in, rather than to the co-production of research between multiple scientific institutions:

- Two-way capacity building, facilitation and trust have been key to the results achieved. One notable factor is the involvement of PP communities in the design of the agreement itself, and the capacity building provided by a third party organization (ANDES) to the communities that allowed them to participate in this stage of the process on equal footing with CIP scientists. ANDES' facilitation was also crucial to maintaining the active participation of communities throughout the implementation of the agreement, and in enabling two-way knowledge sharing and collective learning. Trust between the stakeholder groups, developed from previous engagement between the PP communities and ANDES, and over the course of the agreement between the PP communities and CIP—was also an important ingredient of success.

- Flexibility in the planning of the research enabled outcomes to be emergent, rather than pre-determined. It also enabled CIP scientists to work together with PP communities in a more fluid manner.

- The challenges the agreement has faced demonstrate the difficulty of spreading transformational change to wider groups. Though the agreement has begun to challenge institutions and norms of stakeholder groups beyond the direct participants, through awareness raising, exchange visits, and the sharing of knowledge and resources, it is clear that long-term investment of effort and financial resources is needed to make changes achieved transformational on a larger scale. Earlier engagement of wider groups, through outreach and well-designed communication materials, may be one part of the solution.

Case 6: Red Cross Climate Centre Writeshop Process

Contributor: Margot Steenbergen (Red Cross Climate Centre)

Edited by: Blane Harvey

Overview

- The Red Cross Climate Centre writeshop process is an intensive, participatory workshop that helps participants document and share learning while quickly generating knowledge products that can be shared more widely.
- Writeshops allow teams working on related issues to use a peer review processes to clarify and refine their documentation through a facilitated multi-step process that is supported by skilled writers and editors.
- While writeshops are very time-intensive once they begin, they are reasonably short in duration. This kind of process could provide CARIAA partners with the opportunity to undertake synthesis and co-production work that has clear start and end points and is therefore easier to plan and manage.

Context

> *"The methodology is really good. Receiving feedback from so many different people with different backgrounds is invaluable and it reduces any risk of misunderstanding and 'defensiveness'. At the same time it is a good way to learn what other projects are doing."* - Writeshop participant

A writeshop is an intensive, participatory workshop that aims to produce a written output. This may be a set of short case studies or even a bound book. Participants include authors, editors and external reviewers. These may include researchers, NGO staff, extension agents, farmers and other local stakeholders: anyone who has, in one way or another, been involved in the experiences to be documented or who can constructively comment on these experiences. A team of facilitators and logistics staff assists these participants.

The writeshop process was pioneered by the International Institute of Rural Reconstruction and has been adapted by many institutions, including the Red Cross Red Crescent Climate Centre. Since 2013, the Climate Centre has organised over eight writeshops for over 130 participants, producing over 55 case studies.

Two reasons normally associated for doing writeshops are[11]:

1) For project or organisational learning to improve performance, results and impact;

[11] The International Institute of Rural Reconstruction has developed the writeshop methodology and developed "Guidelines for Writeshops - 2010".

2) For wider sharing or mainstreaming of experiences and knowledge and in networking and cooperation among the different development stakeholder groups beyond the local or project setting.

It is useful to conduct the writeshops once you have gathered experiences and have stories to share – in the course of the project or towards the end.

The initiative

The writeshop had two main phases: preparation and implementation. These are described below with approximate timelines for each.

Phase One – Preparation (2-3 months): During the preparation phase, the following steps are taken:

1) Organisers share details of the writeshop methodology and confirm participants, including authors, editors and external reviewers; and organisers, including facilitator(s) and logistical staff. A writeshop can be an opportunity to bring a range of stakeholders together - the more diverse the group the more interesting the stories become. It is important to include persons who have technical expertise or personal experience in the topic as well as an experienced writeshop facilitator. Typically, there are between 10 and 20 participants at a writeshop.

   The roles of the participants are as follows:

   - **Authors**: The authors will prepare the first draft and are the key resource people during the writeshop. If the written output is a case study, the authors should have first-hand experience of the case.

   - **Editors**: During the writeshop, editors (ideally journalists) are responsible for submitting high quality outputs in a timely manner. They will support the authors in creating each consecutive version of their joint work. This process will involve correction, condensation, structuring, and many other revisions to the text, with the aim of producing an interesting, accurate, consistent, well organised and complete case study. Attention to detail, the ability to be focused while working through the text, tact in dealing with writers, and excellent communication skills are a must.

   - **External reviewers**: In addition to people with excellent writing skills, it is recommended to invite a few resource persons, offering outside perspectives. They can be subject-matter experts who are able to validate and enrich the quality of the case studies, or, conversely, lay-persons who can ensure that the case study is understandable for non-experts, thereby making it accessible for a wider audience.

2) The organising or facilitating team agrees on the anticipated format of the final products and then provides authors with guidance and support for their first draft write-up. The writeshop starts with participants reading and commenting on the first draft of authors' written outputs. This means that the authors will have to finalise their first draft before arriving. Clear guidance, both in the form of a written outline and subsequent e-mail or verbal follow-up, will likely lead to a higher quality output and will reduce delays during the event.

3) Ensure all logistics are in place, including logistics staff to be on hand during the writeshop.

4) Organise briefing meetings prior to the start of the writeshop to familiarise everyone with their respective roles.

Phase Two – Implementation (4-5 days): At the outset of the writeshop each participant presents the first draft of his, her or their (in the case of author teams) paper. The other participants provide feedback verbally and in written form (directly onto the first draft copies). The facilitator allows as much discussion as possible so that everyone can contribute his or her own knowledge on the topic. The aim is not to criticize the manuscript, but to improve it, add to it - and often to remove unnecessary information - so that it fits the end product and is appropriate for the target audience.

After his or her presentation, each presenter will work with their assigned editor, who has also been taking notes of the discussion. The editor helps to revise and edit the draft in the hours that follows. The revised drafts of each participant are then presented again and the audience can provide comments and suggestions for a second time. After this second series of presentations, an editor again helps to revise the drafts. This review process is repeated a total of three times for each case study over the course of the next days, before each case study is finalised. The final version can be completed, printed and distributed soon after the writeshop.

Overall the process is very straightforward and facilitator led. The role of the facilitator is to provide structure during the process, setting and updating an agenda with clearly defined deadlines for each author/editor pair. The facilitator also structures the amount of time given for feedback, which decreases with each round of feedback. Typically, feedback on the first version will be more structural in nature, whereas feedback on the later versions is more detail-oriented as authors and editors get nearer to a finished product.

Drivers and challenges

Drivers:

> *"Everyone has contributed. I have really appreciated that each participant brought additional value. All of this was based on very specific guidance. This will allow us to create briefing notes that can be appreciated anywhere in the world. Also, I have learned about the other innovations."* - Writeshop participant

- The writeshop process is a fast and efficient way of documenting experience. The actual writeshop itself typically lasts 4-5 days. By generating several feedback loops in the space of a few days' time, you avoid drawn-out e-mail conversations and inevitable delays as teams collaborate over long distances amidst competing priorities.

- It combines various types of expertise, for example by bringing together practitioners, technical experts and professional editors. On the one hand, writeshops are an excellent way to document tacit "experiential" knowledge that may only exist in the heads of practitioners. On the other hand, they have been useful for enhancing the relevance of "expert" knowledge, by making it understandable and thus, more easily usable (IIRR Writeshop Guidelines).

- It delivers a product. Though writeshops come in many shapes and forms, one of the non-negotiable elements is that by "close of businesss" of the final day, a final version of all written output is submitted to the organisers. The product enables the writeshop participants to share their ideas and experience more broadly.

- It encourages the exchange of knowledge, while providing a constructive platform for feedback, and a pleasant environment of co-creation. By reviewing several case studies, writeshop participants get an in-depth understanding of each of the cases.

Challenges:

- Sufficient preparation time and clear guidance for authors are critical for a good start to the process. Missing out on either of these can lead to a poor quality first draft, which in turn means the process during the writeshop is more rushed and stressful than it needs to be. To remedy this, clear and succinct guidelines, including a good example of a case study, should be sent to the authors at least two months in advance. The organisers and facilitator should follow up with the authors two weeks prior to the writeshop, to ensure the first drafts follow the outline.

- It is challenging when case studies are not written by staff members with direct experience of the subject matter. Two examples follow: In one case, a technical staff member who did not have time to write a case study, was replaced by a colleague. In another case, external consultants were contracted to write a case study. In both cases, this led to missing and incorrect information. To overcome this, it should be made clear that all case studies must be written by people who are directly involved in the implementation of activities being described (e.g. technical staff).

- A lack of competent editors is a serious challenge for the success of a writeshop. In order to overcome this, experienced writers need to be identified well *before* a writeshop. Before being selected, samples of their writing of case studies or similar documents should be evaluated to assess their writing skills. Additionally, before

the writeshop, there should be a list of qualifications for the following technical staff: a) authors, b) editors, and c) external reviewers.

- The writeshop process demands that participants be present throughout the full duration. This can present challenges to securing the right participants amidst competing priorities and busy schedules.

Results

Since 2013, the Red Cross Climate Centre has organised over eight writeshops for over 130 participants producing over 55 case studies. A specific example is a 2015 writeshop, which produced four case studies that addressed the gender and resilience nexus in projects in Burkina Faso, Myanmar, Chad, Sudan and Uganda, as well as the outline for a synthesis report. This was produced as part of the BRACED programme. Outputs can be found at: http://www.odi.org/publications/9967-braced-gender-equality.

A writeshop is essentially a drafting and peer-review system in a condensed period of time. By combining various types of expertise, the final product becomes more relevant and accessible. As one participant mentioned: *"It was extremely useful to receive input from people with a different background, to help me shape my arguments in accessible language".* As such, the synthesis aspect of this case is primarily providing a platform for teams to undertake their own synthesis activities via the writeshop, while the co-production is also primarily via the participating teams. As the example of the BRACED Gender and Resilience theme above highlighted, however, it can also provide the opportunity for wider synthesis and co-production among all participants.

Analysis

The writeshop approach described here offers CARIAA consortia an opportunity to engage in very targeted and time-bound synthesis and co-production activities that generate tangible outputs. These outputs are organised around a common theme but are still entirely based on experiences of the specific teams that take part in the writeshop. Further co-production and synthesis of findings from across these different experiences and outputs can then be undertaken to generate a joint output. This approach could allow for a process that meets both consortium and programme objectives.

While the writeshop approach described here isn't likely to be appropriate for producing articles for peer reviewed publications, it can be a valuable tool for working across the research-policy-practice nexus, for example generating policy briefs, or guidance for the use of research findings in practice. As such, if CARIAA partners are interested in piloting approaches that can show short-term results but are not likely to provide scope highly technical collective analysis, this approach may be suitable.

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