



Towards a Step Change in Co-Production for Climate Resilience

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Abstract

- Co-production brought clear benefits to a range of projects across the UK Climate Resilience Programme (UKCR).
- Experiences were deeply context specific; dependent on those involved, their motivations and expectations.

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- A range of barriers currently exist to achieving the benefits of co-production more fully.
- Skills associated with using co-productive approaches need to be developed, taught and mentored in the research community.

Keywords Co-production · Engagement · Community · Action research · Climate services

1 INTRODUCTION

This chapter records experiences of UKCR researchers whose projects incorporated co-production approaches to improve the usability, accessibility, relevance and credibility of outputs, and engage different groups of people in climate resilience. A workshop towards the end of the programme enabled researchers to reflect on benefits derived from this approach, and where and when barriers have existed and why. Participants outside academia, including sector experts and community participants involved in this research were invited, but were unable to attend. Different projects used co-production in a variety of ways, depending on the aims, motivations and theoretical backgrounds of those involved [1, 2].

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We outline key learnings and recommendations, while recognising that any learning is deeply context specific. We also highlight the need for a step change in fundamental aspects of research planning, funding, multi- and transdisciplinary working, to achieve the perceived benefits of co-production more fully.

2 WHAT IS CO-PRODUCTION?

Co-production was popularised as a concept in the 1970s and has been taken up widely in the fields of public services, social care and health care. It challenged the knowledge-deficit model with a recognition that users of a service or product had valuable knowledge and experiences that could help to shape future research and development; it was becoming increasingly common in other sectors [3, 4, 5, 6]. No single definition of ‘co-production’ exists, but most reference ‘equality of power’, working together in ‘partnership’ or ‘relationship’ to generate knowledge or reach a ‘collective goal’ [7].

Recognition is growing that such collaborative approaches are needed to produce more usable and useful research and solutions to meet the challenges of societal resilience to a changing climate. Rapid growth in scientific understanding and technological capability has, to a large extent, outpaced the ability of scientists and other ‘producers’ to ensure outputs are relevant and tailored to society’s needs. In addition, there is a recognised disconnect between the various disciplines involved in utilising climate information effectively in decision-making and adaptation, a lack of understanding of critical issues by decision-makers and a strong need for greater community engagement in action at the local level. Thus, co-production is increasingly being adopted in this field [8, 9, 10]. Various research initiatives have provided useful guidance and principles for co-production, particularly within climate services [11, 12, 13, 14, 15]; this has resulted in a shift away from the often unhelpful binary framing of ‘producer’ and ‘user’, towards a recognition that many different stakeholders hold valuable information and knowledge, resulting in an improved power-balance that can contribute to decision-making for resilient societies. However, there is also an increasing recognition that co-production must be done appropriately, with a shared understanding of what is expected, and if not given due consideration this can cause damage and a strong disengagement. UKCR projects have contributed

further to this literature, through combined learning of what works, and what the remaining challenges are for climate resilience co-production.

3 WHAT WORKS WELL

3.1 *Gathering Community Experience*

The ‘Creative Climate Resilience’ project has demonstrated success in using place-based folks arts and socially engaged practices—for residents, policymakers and local authority workers—to co-produce knowledge as part of a community development and social change framework [16]. This has supported participants working together to firstly identify their own needs and actions for local climate planning; secondly take collective action, identifying and using their strengths and resources; thirdly develop confidence, skills and knowledge for mitigation and adaptation; fourthly challenge unequal power relationships; and finally promote social justice, equality and inclusion.

Throughout the project, there were numerous encounters with participants through arts-based research methods, including place exploration, visual arts workshops, heritage interpretation, recorded interviews and stories, animations, puppetry artist residency, creative writing and song-writing—alongside geographic information system (GIS) spatial analysis and biodiversity data analysis. These processes built community capacity, connectivity and skills, and drew out local knowledge. By working in this way, strong relationships were built between residents, local authority staff and organisations and the research team. This built trust in the process and contributed directly to local authority neighbourhood climate action planning and wider legacy work in community development and social action, such as contributing findings around resilience to local authority decision-makers; supporting resident-led fundraising and capacity building; informing landscape decision-making; enabling resident self-expression for communicating needs and opportunities; encouraging political literacy; and further research and development for establishing new community assets.

3.2 *Sustaining Engagement Throughout*

The original Met Office City Pack, developed through the ‘Meeting Urban User Needs’ project, is a successful climate service prototype co-produced in close partnership with Bristol City Council. This project highlighted the advantages of joint initiation—and an opening discussion centred on what would add value—before defining outputs or outcomes. Regular workshops, online interaction and iteration of prototypes throughout the process created a trusting relationship between the local authority and researchers, resulting in a highly bespoke service for the city of Bristol, which is deemed successful by a range of stakeholders.

Another project, ‘CLandage’, saw landscapes and cultural heritage researchers partner with Tasglann nan Eilean Siar (the Hebridean Archives), Staffordshire Record Office and Historic England, to capture individual and community experiences of storms, floods and droughts, and how they have adapted and developed resilience through time [17]. Partners were involved from project inception, with relationships already fostered through previous research. Prior experience of working together proved invaluable, particularly as the project evolved during the COVID-19 pandemic, with the loss of face-to-face activities, travel restrictions and closure of archives and museums. These altered working practices actually resulted in a closer partnership within ‘CLandage’, and more effective co-production.

The ‘Creative Climate Resilience’ project also demonstrated the need for co-production across a diverse network of individuals and groups, and at different moments and intensities during the project. This network included the interdisciplinary research team, residents, local authority civil servants and neighbourhood teams, local environment organisations, community development organisations and artists.

3.3 *Getting Creative with Storytelling*

Various projects advocated the use of storytelling to facilitate co-production. In ‘CLandage’, online poetry workshops led by a local poet—working with archive materials, supplied by Staffordshire Record Office—encouraged participants to reflect on local experiences of flooding through poetry [18]. Also, a creative-maker led small workshops, using old pictures and reports of drought, to stimulate and explore memories of flooding and drought. In addition, a storyteller led a series of walking

tours, collecting memories and exploring ideas of flooding through traditional stories and oral histories. In each instance, the creative approaches were initiated by Staffordshire Record Office and led by individuals from the local area, placing high value and emphasis on experiential knowledge, thereby enabling and empowering communities.

3.4 Balancing Power and Managing Expectations

The co-productive approach taken by the ‘Creative Climate Resilience’ project helped to navigate differences in income, health and well-being, and education. It also succeeded in overcoming entrenched apathy with local political systems, and a sense of disenfranchisement with local decision-making. The project was part of a much longer process of supporting community development with climate change challenges. Researchers connected into and supported existing community practices, such as resident-led networks, local charity initiatives and community spaces, acknowledging the wider societal action independent of the research project. This approach, alongside a continuous physical and emotional presence in the area as part of the socially engaged arts methodology, and flexibility to respond to challenges and opportunities as they arose, led to a more equitable balance of power and constructive conversation.

The ‘UK-SSPs’ project created UK and nation-specific socioeconomic scenarios for use alongside climate change projections, to assess risk, vulnerability and resilience. The need to ensure consistency with previous global SSPs limited the extent to which co-production was possible and required careful management of expectations. To minimise constraints on stakeholder imagination, stakeholders were asked to identify and cluster socioeconomic drivers that they considered particularly important (and uncertain) before being introduced to the global SSPs, onto which they could then map the UK-specific drivers. The process was highly iterative, balancing the need for consistency and legitimacy with stakeholder creativity, in order to develop a set of UK-specific SSPs that are locally comprehensive and relevant, yet consistent with global SSPs [19, 20].

The project ‘Transport/Energy Climate Services’ also found it beneficial to proactively manage expectations of the co-production process. User expectation was often high, with some expecting “the ideal solution” after a relatively light investment of resource and engagement; in reality, what emerged from the project was simply the first step in solving

the problem. This approach also recognises the different expectations and approaches to co-production across disciplines, as well as the need for transparency and agreement.

3.5 *Experimenting with Upscaling*

The City Pack resource (outlined above) was subsequently rolled out to other UK cities, but with less co-production; while city-specific information changed, the template remained the same and user engagement was, therefore, less-intensive. Researchers explored different approaches to upscaling co-production, and assessed value lost if co-production was less central. Their experience suggests that upscaling a climate service, which has been co-produced with one set of stakeholders, can provide a useful and usable service for others.

4 EMERGING CHALLENGES AND OPPORTUNITIES

The UKCR experience suggests that, when done well, co-production is an effective way to bring climate information together with other forms of knowledge to support resilience building at community, organisational and policy levels. The remainder of this chapter offers a set of recommendations emerging from the UKCR programme on how to set up effective co-productive approaches.

4.1 *Focus on the Process, Not Just Outputs*

One of the main barriers to successful co-production among projects was where the research process was fixed on pre-defined outputs. Projects that saw the primary aim of co-production as discovery, or knowledge sharing, were more open to learning and bringing in others' perspectives. Linked to this was a need to be flexible, to allow the detail of what is considered a 'useful output' to emerge through the process of engagement. Where some pre-definition of outputs may be required for funding purposes, flexibility is needed to allow for changes as a wider understanding of the nature of the problem deepens and assumptions are challenged. Not fixing too early on an idea avoids creating outputs that later turn out to be unfit for purpose or missing the point. Participants particularly valued the "opportunities for serendipity" afforded by the flexibility of co-production, quoting:

The story changes throughout the process... this is fundamental to co-production. Everything is part of the process

The more co-creative projects within UKCR enabled this process, as their goal was to learn and share, rather than to produce specific outputs. The experience and maturity of researchers and their relationship with partners were seen as another factor in how effective projects were in setting up more flexible research approaches. Such researchers were better able to craft research proposals that satisfied funding requirements, while also setting up participatory processes with sufficient flexibility to allow for emergent processes. To achieve this, there is a need to develop the skills necessary to draft research proposals with a ‘design for learning’ approach, as well as a shift in the way research is funded to focus on goals and outcomes rather than specific outputs.

Researchers from the ‘MAGIC’ project reflected on the element of the unknown, emphasising the need to have shared understanding of aspirations and expectations from the early stages of the research process. This was shared by ‘Risky Cities’, which gradually increased the use of immersive co-production until “neither party had control” over what the other party was going to do. In this case, co-production was initiated by the National Youth Theatre, who approached scientists to talk to them about the climate crisis; it soon became apparent that both parties had a lot more to offer each other. This learning, and the fundamental need to address power inequalities in co-production, is reflected in the wider literature [9].

4.2 *Revise Funding Structures and Timescales*

Many of the challenges relate to limitations of current funding structures and timescales. Some researchers argued that all participants in the process (not just researchers) need to be funded, as without this non-academic partners in the research found it hard to make time to participate or lacked the incentive to do so. However, some researchers felt that co-production was most successful when stakeholders were motivated to engage without funding.

There is also a need to move away from rigid project timescales to do justice to co-production and allow it to be truly emergent, because co-production requires time to build relationships and a culture of trust to enable the work to flourish. As such, traditional finite-length project

funding can be limiting. Flexibility in the funding model offers opportunities to shape and respond to emergent processes, and longer-term funding furthermore enables breaking down of disciplinary boundaries. Researchers engaged in co-developing prototype climate services for the energy sector revealed that “There was a lot of early engagement, but the needs were so diverse it took a long time to identify where to work together”. It was also reportedly difficult firstly to establish what was critical and urgent for users, and secondly to manage expectations in terms of progress towards the ideal solution.

Many researchers attributed their success to pre-existing relationships; in many cases, links were developed through previous projects, and so a co-production process emerged organically benefitting significantly from the existing understanding and trust [19, 20].

4.3 *Promote New Measures of Success*

There is a need to recognise the importance of relational, embodied learning, connection, and sharing knowledge, fun and trust, alongside more traditional outputs, such as peer-reviewed papers and tangible products. New measures of success are needed to evaluate the process, in addition to the outcome, and to reflect different motivations and requirements of participants [21, 22]. Within projects there was a general recognition of the value of the process (e.g. building trust, collective decision-making) but also a perceived challenge that these are not generally recognised by funders. Researchers commented that there is a need to “understand other ways of doing knowledge”, and that funding needs to be “targeted towards processes not just outputs”, requiring a change in mindset.

One barrier to co-production and associated transdisciplinary research was the perceived lack of incentive within an academic career. Promotion criteria at universities are, in many cases, still skewed towards the disciplinary academic; better recognition of transdisciplinary processes, and weighting them for promotion criteria, is needed. This experience can be particularly acute for early career academics attempting to acquire permanent academic posts, where inter- and transdisciplinary skill sets may be perceived as lacking a clear focus. However, the practice of transdisciplinary research had a positive impact on more experienced researchers, through advancing networks and opportunities for future

impactful research. Public scholarship and other motivations for co-production were seen as critical to its success, while encouragement for early career researchers is needed to underpin shifting attitudes.

4.4 *Invest in Multidisciplinary Approaches*

Successful co-production for climate resilience demands input from a range of disciplines and stakeholders, including researchers, practitioners and action-takers [23, 24]. Researchers commented that key skills were missing from project teams, as “academics can only help with part of the problem”. ‘MAGIC’ addressed this by implementing a community-led approach to reducing flood risk, achieved through a case study of the flood-vulnerable region around Hull. Hull and East Riding Timebank, one of the key partners, provided a range of expertise and skills beyond those traditionally included in projects.

Researchers also argued that funding mechanisms should be available to resource additional expertise in response to specific issues as they emerge. However, the transient nature of this solution provides its own challenges; therefore, more enduring teams, capturing the requisite skills, expertise and competencies are also needed.

5 CONCLUSIONS

The experiences of UKCR researchers have confirmed a range of benefits of co-production. In addition, the challenges cited highlight the need for a step change in co-production for climate resilience (summarised in Fig. 1). Current approaches to research design, planning and funding, as well as the skills of researchers, can present obstacles to fully achieving the perceived benefits of co-production. One aspect that all projects reflected on is the fundamental role of the ‘quality of relationships’. In many cases, co-production success was a function of the relationship; a lack of time or close engagement contributed to power inequalities, which if not addressed could inadvertently cause harm or derail knowledge creation into predetermined science-based frameworks. Several other key considerations also emerged:

- Engaging suitable contacts at the appropriate level of an organisation is critical. Contacts need to be sufficiently well connected, but with time and inclination to engage closely and sustain the relationship.

- Having a flexible approach and realistic expectations are crucial to success. The ability to build relationships and establish trust are important skills, which should be practised, taught and cultivated.
- Prior experience of co-production can engender the confidence needed to take perceived risks or develop flexible research proposals. It can also equip the researcher with the confidence to recognise and make changes when a partnership is not effective.

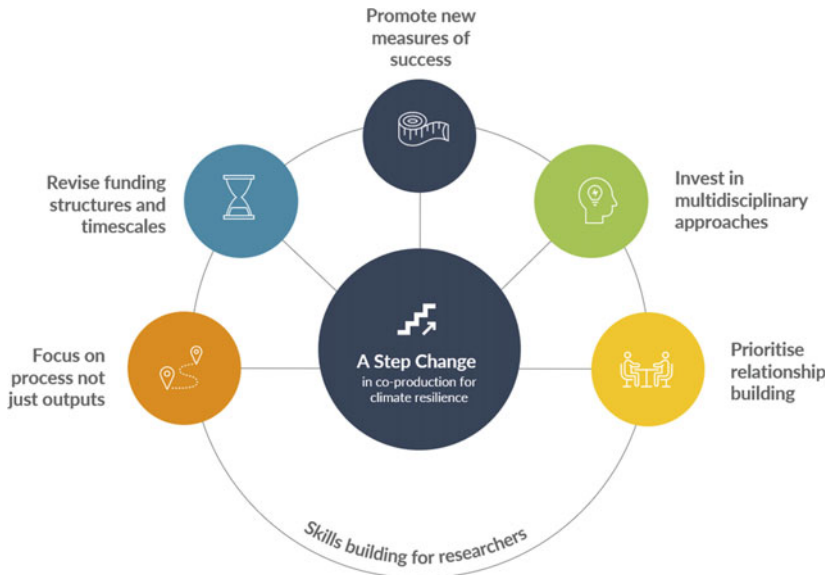


Fig. 1 Summary of the key themes emerging from UKCR projects relating to a required step change in co-production research for climate resilience

The need for relationship building was accentuated by the COVID-19 pandemic restrictions. Close relationships allowed for a more agile response to changing circumstances. This is another argument for investing in such skills—and integrating time for nurturing relationships into career development and project design.

Finally, it is clear from the UKCR programme that there are a range of effective and transformative approaches to co-production, driven by different disciplinary backgrounds, motivations and expectations. Many of the most successful examples enacted co-production continuously throughout the research, with creation of knowledge and understanding the primary aim, and other pre-defined outputs secondary to this. In many cases, the aspiration to co-produce was juxtaposed with reality and practicality, particularly in the context of restrictions during the COVID-19 pandemic. There is a spectrum of approaches, and each has its relative strengths. Notwithstanding, in strong agreement with previous literature [25, 26, 27], there is a need for greater transparency and shared expectation regarding co-production: what it means in each context, how it will be achieved, and what the anticipated benefits are for all participants.

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