Chapter 1

Co-production and Resilient Cities to Climate Change

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Abstract Through a review of the scholarly literature and policy documents that have simultaneously treated participatory governance, resilience and/or adaptive management in urban contexts, with an emphasis on current framings and application of the concept and practice of co-creation or co-production, this chapter critically explores how citizens' participation is being discursively used and applied in urban resilience and climate change adaptation planning. It also examines how power dynamics within co-production processes for climate change adaptation planning already implemented in four European cities shape resulting resilience and adaptation measures.

Keywords Climate change · Urban resilience · Co-production · Adaptation planning · European cities

1.1 Introduction

In the current context of rapid and profound social and environmental changes, including the crisis and the emergent uncertainty and risks of climate change for urban settings, sustainability debates are increasingly focusing on the relationship between democracy, development and innovation. Within these debates, the approach of “co-creation” is becoming a key concept at the European policy level since it involves participatory governance and bottom-up innovation for development. Co-creation mainly refers to the active engagement of citizens with other societal actors (i.e., public and private sectors) in sharing information, knowledge, ideas and experiences to collaboratively construct and transform sustainable settings. It is an approach to participatory action research, having its origin in co-inquiry, in which researchers are facilitators of the participatory process rather than intellectual leaders of the research (Heron and Reason 1997). By relying on such active engagement approach when designing and planning urban spaces and communities to face climate change

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J. Nared and D. Bole (eds.), *Participatory Research and Planning in Practice*,
The Urban Book Series, https://doi.org/10.1007/978-3-030-28014-7_1

challenges, it is expected to build more democratic, inclusive and resilient cities (Lemos and Morehouse 2005; Revi et al. 2014).

Interestingly, in the adaptation literature, the concept of “co-production” has become more popular than the term “co-creation” (Wamsler 2016). Both concepts refer to participatory or collaborative governance, but differ in its origins and in the nature of the actors involved. Different from co-creation that comes from business science and involves public–private partnership, co-production has its origins in the literature on urban planning, sustainability and science and technology studies. Moreover, co-production basically refers to government, researchers and community actors, although market and third sector actors might also be engaged since this approach recognizes the relevance of having a diversity of societal actors involved in the planning and decision-making process (Van Kerkhoff and Lebel 2015; Wamsler 2016, 2017; Muñoz-Erickson et al. 2017). Since the focus of this chapter is climate change adaptation planning and urban resilience, I use the term co-production from now on although some evidence and arguments presented can also be applied to co-creation processes broadly understood.

This chapter critically explores how citizens’ participation is being discursively used and applied in urban resilience and planning for climate change adaptation. It also reflects on how power dynamics can shape resilience and adaptation measures in urban settings, which is critical to provide a nuanced understanding of the potential and limitations of citizens’ engagement in climate change adaptation planning and management.

1.2 From Consultation to Co-production

The need for entailing participatory approaches when planning for coping and adapting to climatic changes is not anymore a new trend in research and practice in the field of climate change. Since the Intergovernmental Panel of Climate Change (IPCC) first report in the 1990s, community participation in adaptation decision-making has been highlighted as a way to ensure legitimacy and local compliance with the measures planned by policy-makers to deal with climatic stresses (Bernthal 1990). Consultation was by that time the main mechanism promoted to achieve the goal of participation in order to guarantee the representation of different interests when defining risks and/or adaptation strategies, including the interests of those more vulnerable and powerless (Watson et al. 1995). However, climate change researchers and policy-makers realized a few years later that a consultation mechanism cannot guarantee by itself that all voices are considered or even heard. As anticipated by the author of the seminal paper “A ladder of citizen participation” (Arnstein 1969, p. 216): “there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process.”

Also, people’s interests and preferences are not stable, and these can shift depending on the changing social-ecological conditions (Nelson 2013), a dynamism that can be difficult to capture by using a single consultation strategy.

Conceived to address these challenges, the co-production approach has gained ground in the last years as a participatory process supporting stakeholders' engagement in climate change adaptation planning and management decision-making. This implies the recognition by climate change experts and decision-makers of the crucial role that local knowledge, expertise and preferences have for developing innovative and successful adaptation strategies and preventing from maladaptation practices (Ruiz-Mallén and Corbera 2013; IPCC 2014; Wamsler 2017). Also, it requires moving from knowledge transfer to knowledge sharing, which in turn demands participants' early engagement in a process of "negotiation of meaning" among them, that is, between the scientific experts and the local people (Roux et al. 2006).

The approach of co-production encompasses transdisciplinarity since diverse capabilities and knowledge are combined through the participation of different actors and networks in generating relevant knowledge and putting it into action (Muñoz-Erickson et al. 2017). Co-production is thus expected to entail a certain degree of citizens' power through establishing a "partnership" between laypeople and traditional decision-makers (i.e., government), enabling non-expert citizens to engage in decision-making through contributing their knowledge and capacities (Arnstein 1969). It also relates to Freire's Pedagogy of the Oppressed (1970) in the sense that it can support those more disempowered in being able to identify and analyze the risks they face and the opportunities they can have, to become agents of change for improving their reality. In this regard, evidence from including stakeholders' responses in climate change scenario planning through a co-production approach shows how these stakeholders become more aware of the need for long-term planning, which in turn can also potentially increase the legitimacy and acceptance of the resultant management and policy options (Oteros-Rozas et al. 2015).

In practice, co-production is understood in the climate change literature in two different but connected ways (Van Kerkhoff and Lebel 2015). On the one hand, this notion contains a normative and instrumental connotation when it is approached as an agenda of actions supporting community participation for enriching the scientific basis of decision-making in projects or programs. Therefore, it is assumed that co-production is relevant to rethink and improve the interconnectedness between science, policy and society and build effective pathways to deal with climate changes (ibid.). On the other hand, co-production is viewed as a descriptive concept when it is approached from an analytical focus that highlights and reflects on the lack of neutrality in science and policy due to the influence that social and cultural norms—at different scales and contexts—have on the production of both scientific knowledge and planning decisions (Jasanoff 2004). It also grasps the nature of power relationships and dynamics around climate change research and policy at multiple scales. Both ways of approaching this notion are complementary because the first one can lead to concrete actions to improve climate change adaptation planning and decision-making, whereas the second one provides critical analysis and reflection on how such generation of knowledge is leading to more inclusive and democratic outcomes than those achieved through conventional approaches (Van Kerkhoff and Lebel 2015). In this last regard, it is relevant to consider that pushing forward inclusive co-production processes for climate change adaptation planning entails challenges related to the

behavioral and structural conditions driving heterogeneity and social differentiation in people's access to assets. For instance, those citizens or members of a community who have more opportunities and resources to invest time in attending municipal or community meetings, or a greater ability to engage in organizations or rely on social networks than their peers, can also have more opportunities to become involved in planning and management processes and bring their ideas and claims for adaptation. This may exacerbate inequalities and reduce the capacity for adaptation of those more vulnerable and powerless actors whose voices have not been incorporated (Ruiz-Mallén et al. 2017).

In this call for more participatory and inclusive governance in adaptation planning for dealing with climatic changes, local governments and authorities are requested to be able to engage the community in public policy and decision processes (Wamsler 2017). Vulnerability and risks assessments, for example, can benefit from establishing governance structures and tools at the local level that include communities' voices, together with those of private and third sectors. Such mechanisms can facilitate a set of iterations between these actors to learn collectively about risks, think about options, evaluate them, make decisions, and critically reflect about outcomes. Resulting collective learning, as discussed in the following section, is key to support urban resilience, or "the ability of urban centers (and their populations, enterprises, and governments) and the systems on which they depend to anticipate, reduce, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner" (Revi et al. 2014, p. 547).

1.3 Participatory Planning and Urban Resilience

In recent years, the literature on urban planning has paid increasing attention to the resilience thinking, previously developed in the fields of psychology and ecology, as an alternative approach for planning (Eraydin 2013). Different from other metaphors used in urban planning, such as the "beautiful city" that emphasizes aesthetics aspects and the dominance over nature, or the "garden city" that proposes green spaces isolated from other zones and relies on the separation between nature and society, the metaphor of "cities of resilience" promotes the integration between ecological and social systems through a flexible design approach shaped by the dialogue between different stakeholders (Pickett et al. 2004). Establishing links between socioeconomic processes with ecological processes within and beyond the urban system provides evidence to understand how disturbances shape people's adaptive capacity and vulnerability as well as to identify those forms of change driving adaptive cycles and transformations. The analysis framed on the resilience approach is expected to define priorities in planning that guide adaptation to both slow changes and rapid and unexpected disturbances through a collective decision-making process (Eraydin 2013).

Despite the implicit role of co-production in the construction of the metaphor of "the city of resilience," such function is often neglected when looking at how the

resilience approach is currently shaping the planning of the city. Evans (2011) argues that the implementation of the resilience metaphor in cities has mainly adopted a conservative discourse that promotes adaptation actions at both individual and collective levels, which design relies on expert knowledge and focuses in restoring the equilibrium in the urban system through technological interventions. This discourse is based on the notion of nature stability and, consequently, the implicit desire of returning the system to its original state. Such dominant approach, however, has been highly criticized from a human development point of view (Evans 2011; Jabareen 2015; Sánchez et al. 2018). Part of these critiques highlight that the prior state to the disturbance can often perpetuate inequalities between social groups. Other critiques point out that such approach only provides emergency responses to crisis and questions if this is sustainable in the long term (Sánchez et al. 2018). Further, it is argued that this mainstream discourse provides adaptation responses resulting from top-down decision-making processes and, consequently, does not include the voices of those more vulnerable and marginalized (Jabareen 2015). For instance, measures to deal with sea level rise caused by climate change can easily affect low-income residents in coastal areas who can be forced to be displaced whereas those with higher income can be able to negotiate other measures (Vale 2014). The mainstream discourse leaves aside the human causes of social-ecological disturbances from urban planning to focus on the solutions, which can contribute its depoliticization: “by constraining governance within a technocratic mode that remains inured to the tropes of scientific legitimacy” (Evans 2011, p. 232).

An alternative resilience discourse that builds upon a social-ecological perspective advocates for managing urban systems from the understanding that cities are complex and nonlinear systems, which planning for dealing with uncertainty requires both expert and local knowledge (Evans 2011; Vale 2014). It is argued that local people’s experience on similar previous disturbances can be a useful cognitive asset in urban planning and when discussed and merged with expert knowledge can lead to social and environmental innovations to deal with climate change impacts (Evans 2011; Goldstein et al. 2014). Such urban planning and management scheme are expected to support a diversity of cultures and profiles and their connection to their immediate environment and to embed key knowledge and experience that can foster social learning (Bendt et al. 2013). This alternative discourse also highlights the need to question whose resilience, that is, who takes part in the decision-making process because has the power to do it, including power issues among the members of a community, and who will be the winners and losers of the resulting adaptation measures and actions (Colding 2007). The implementation of such alternative approach to the conservative discourse, however, implies challenges related to overcoming existing top-down governance structures, building enough capacity for adaptation through learning or defining what is acceptable and for whom (Sánchez et al. 2018).

Indeed, scholars are engaged in ongoing discussions about the impacts, opportunities and challenges of these different discourses of resilience when applied in urban planning and design (Goldstein et al. 2014). In the current context of unprecedented changes, however, it is not possible to deny that climate change is questioning the effectiveness and suitability of conventional approaches

to planning, including the mainstream discourse of resilience, and that alternative paradigms that can guide urban policies to a more holistic management of urban resilience are needed (Jabareen 2015).

Addressing resilience to climate change impacts for cities under the alternative discourse is thus intimately linked to the capacity of local governance to open up communicative and deliberative spaces for co-production, in which those who are more resilient and those who lack resilience can be heard, hold discussions and build new knowledge to overcome vulnerabilities (Revi et al. 2014; Vale 2014). The next section reviews a set of experiences of co-production in designing climate change adaptation strategies recently driven by European municipalities and focuses on power dynamics to reflect on the potential and limitations of citizens' engagement in knowledge co-production for adaptive management planning.

1.4 Co-production Experiences in Adaptation Planning

Some cities around Europe have already worked in the production of participatory action plans for climate change adaptation through establishing partnerships with public and private sectors, civil society organizations and/or individual citizens. Actors' involvement in climate change adaptation planning is not standardized: It can be fostered by using a variety of tools and structures and can take place at different levels and in different stages of the adaptation planning process (e.g., initial phase, risk assessment, identification of options, selection or prioritization, evaluation of the final design). Because of adopting different approaches, co-production may easily lead to differentiated types and intensities of voices' representation and outcomes. The following four case studies are interesting examples of this variety of co-production processes shaped by power dynamics in which municipalities used different strategies for engagement, deliberation and decision-making (van der Ven et al. 2016; Wamsler 2017; Grau-Satorras et al. in prep). In each case, co-production is analyzed by examining two key aspects for the governance of urban resilience: inclusivity and equity (Jabareen 2015; Frantzeskaki and Kabisch 2016): Who did participate in decision-making and planning and how was involved? What were the structures or tools for exchanging knowledge and sharing planning and decision-making responsibilities?

Wamsler (2017) compared two pioneering experiences of participatory planning for adaptation to climatic changes in Munich (Germany) and Lomma (Sweden). In both cases, motivated civil servants in the corresponding municipalities initiated the co-production process. They involved stakeholders at local government by relying on existing institutional structures supporting cooperation between the different departments and sectors within the corresponding municipal governments. Due to the academic background of these civil servants and their previous collaboration in research projects, they also invited researchers to participate at an early stage of the process in both cities, a collaboration that continued during the whole design of the adaptation strategies. Similarly, their previous collaborations in projects or programs

with other municipalities and regional administrations, private actors and civil society organizations conditioned the selection of external stakeholders to be involved in co-production. Differences between both cities in previous relationships resulted in different external actors engaged. While in Lomma neighboring municipalities were contacted and asked for providing mapping data for risk assessment from a common cooperation program, in Munich neighboring municipalities were not involved because previous collaboration with the civil servant did not exist.

Further, in both municipalities, Wamsler (2017) reported low enthusiasm to involve citizens in the process because of civil servants' negative experiences with participatory planning in the past. Despite this common challenge, important differences existed between the two cities in the way citizens' involvement in the co-production process was planned and developed. In Sweden, Lomma municipality created a joint council to discuss with vulnerable groups of citizens their needs and interests in the use of the space, whereas the German municipality, Munich, deliberately excluded citizens from the process. Unfortunately, time constraints in the Lomma adaptation plan design reduced the capacity of the council for engaging citizens and their voices influenced the plan to a lesser degree than the one initially expected. In sum, and despite the highlighted differences between the two cases, Lomma and Munich municipalities' efforts to engage those who did not use to be involved in policy-making processes were characterized as "generally low" (Wamsler 2017, p. 153). Stakeholders' involvement was shaped by existing power dynamics between the civil servants leading the process and the rest of actors. The structures for participatory management only existed at local government level, and the engagement strategies followed, although more inclusive in Lomma, missed the opportunity of targeting unknown but relevant actors for adaptation policy co-production.

Two other recent co-production experiences in adaptation planning in Utrecht (the Netherlands) and Barcelona (Spain) combined the use of face-to-face workshops and virtual tools for supporting the involvement of stakeholders in decision-making.

In Utrecht, van der Ven et al. (2016) examined the implementation of a toolbox consisting of:

- a climate adaptation app that lists over 120 structural adaptation measures and ranks them according to their potential applicability in the local context;
- an adaptation support tool based on a platform that simulates the effectiveness and costs of selected measures in the local area.

These tools were used in two workshops in which representatives of different departments of Utrecht municipality and private stakeholders identified local climate change impacts and vulnerabilities, defined potential solutions and determined priorities. Because of combining different options through participants' discussions, three alternative scenarios were envisioned and evaluated to check if they met adaptation targets and to rethink urban development plans in the area (van der Ven et al. 2016). This case clearly shows how participants' needs and views were directly translated into outcomes.

In Barcelona, in turn, the municipality conducted a co-production process for producing the climate change adaptation and mitigation plan of the city through

the implementation of five workshops and the use of an open platform called “Decidim” (Grau-Satorras et al. in prep.). Involved stakeholders included civil servants, private companies, civil society organizations and individual citizens. These actors actively participated in the two initial workshops and collectively reflected on climate change risks and vulnerabilities in the city, proposed and discussed coping and adaptation measures and established priorities, which were uploaded to the virtual platform. Other civil society organizations and individual citizens who did not attend these workshops also uploaded their proposals to the platform, being this tool an alternative way for stakeholders to get involved in the co-production process. In parallel, civil servants launched a call addressed to potentially interested stakeholders (e.g., private companies and civil society organizations) for organizing their own workshops, but only two workshops were self-organized due to the time constraints of the overall process and the summer period. In a final workshop, civil servants guided the discussion and reflection among participants to improve the definition of the proposed measures collected through the platform, to identify overlaps and to group them together if needed. Around 90% of the agreed measures were included in the Barcelona’s climate change plan, which is, as in the case of Utrecht, an indicator highlighting the inclusivity of the co-production process. The main difference between both cases is that the tools used for supporting co-production in Utrecht entailed the definition of available adaptation options in advance by the experts, so other participants (e.g., individual citizens) were not able to propose other measures that might have resulted from knowledge sharing and deliberation during workshops. Excluding users’ knowledge from the design of adaptation measures could constrain the potential of the co-production process for social innovation and the development of planning strategies that can effectively deal with the complexity and dynamism of cities (Muñoz-Erickson et al. 2017).

Another key question for co-production, as highlighted by van der Ven et al. (2016), is who is being and should be engaged in the participatory planning process. Unfortunately, in the Utrecht’s case the authors did not provide enough details on the type of private and local stakeholders involved in the workshops, so it is not possible to discern who was involved: Were they representatives of private companies, members of civil society organizations, lay citizens, others? In the other reviewed cases, in which the public and private sectors were represented, individual citizens’ participation was reported as low (i.e., Lomma and Barcelona) or was not considered (i.e., Munich). In Barcelona, despite the plurality of means and tools offered by the municipality for supporting actors’ engagement, the involvement of individual citizens was limited, particularly in the case of the face-to-face workshops. Municipality’s tight agenda and the absence of an information and communication campaign addressed to the broad society might explain low citizens’ participation in the Barcelona case (Grau-Satorras et al. in prep.). As in the other cases, lacking an institutional tradition of participatory governance or using non-effective methods to support knowledge exchange and institutional learning in each particular context may also explain citizens’ limited involvement (Glaas et al. 2010). Further, the different individual and collective capabilities and assets citizens’ have to become part of the co-production processes also influence the achievement of genuine levels of participation, such

as socioeconomic background or social cohesion facilitating the organization of a representative group in the process (Arnstein 1969).

1.5 Final Remarks

The co-production approach in climate change adaptation planning has potential for building resilient and sustainable cities, but its effective implementation seems to require an institutional transformation to overcome resistance to power redistribution and to enhance the planning process in terms of inclusivity and equity.

Besides institutional willingness for promoting such change, a profound understanding of how cities work (i.e., governance and infrastructure) and think (i.e., expert and local knowledge) is also needed to effectively guide the design and implementation of co-production approaches linking knowledge and action for climate change adaptation planning in each particular context. It is thus necessary to identify those who are usually treated more as observers than actors in policy-making processes, to question why they are excluded from decision-making and giving them a voice by opening up spaces for participation and reflexivity: “what local people know about the city, how they know and experience the city, how they envision the city” (Muñoz-Erickson et al. 2017, p. 203).

Co-production also entails the challenge of being a time-consuming process. Short-term steps and deadlines in conventional planning practices should be balanced with longer periods for collective reflection and deliberation, which in turn is challenging in terms of resources as well as because people may not be available for long-term commitment.

There is not a blueprint solution for achieving effective and inclusive engagement. Mechanisms and structures for supporting inclusivity and equity are context-dependent and, therefore, should be addressed and developed considering local capacities and power dynamics in governance and knowledge production processes. Far from being an insurmountable challenge, this entails an opportunity for strengthening the research field of urban resilience toward contributing to the understanding and rethinking of the role of knowledge co-production in urban planning for climate change adaptation and inclusive societies.

Acknowledgements Spanish Research Agency through a “Ramón y Cajal” research fellowship (RYC-2015-17676) and Plan Nacional RESCITIES (PGC2018-100996-A-I00(MCIU/AEI/FEDER, UE).

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