

Urban partnerships and climate adaptation: challenges and opportunities

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Cooperation amongst public, private and civil society actors in the design and implementation of sustainability policies and practices are not new. Many characteristics of urban partnerships, as a diverse set of governance instruments, show potential to address the inherent risks and impacts associated with a changing climate. This review identifies and describes a number of existing and emergent urban partnerships from traditional infrastructure Public–Private Partnerships (PPPs) and urban regeneration through to cross-scalar policy networks. It examines the key challenges, and gaps, specific to adaptation that partnerships must embrace if they are to provide a valuable policy instrument for climate adaptation.

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Introduction

Managing complex social, economic and environmental problems through partnership-based arrangements have become increasingly popular in recent decades. Scholars for instance have critically examined cooperative governance in the context of sustainable development [1–3], and more recently, in urban adaptation and mitigation initiatives worldwide [4–5]. Partnerships are described as a coalition of interests drawn from two or more spheres of society (state, market and civil society) to resolve complex and often ‘intractable problems which cross traditional organisational boundaries and which present challenges that agencies cannot tackle on their own’ [6]. They are commonly used in urban development contexts to deliver critical infrastructure [7–9], housing

affordability [10] and urban regeneration [1,3,11–13]. To date however, there is little evidence of the value of these policy instruments to manage complex problems such as climate change in urban development contexts. Managing complex or ‘wicked’ problem such as climate change [14] is a challenging task for planners and policy makers as the impacts are expected to cut across all sectors and scales of urban governance [15]. This challenge sits within the broader context of local and national governments around the globe struggling to meet the basic needs of communities through providing necessary urban infrastructure under pressures of rapid urbanisation and population growth [16,17]. These problems are exacerbated by the decentralisation of public administration and governance which is shifting many of the infrastructure responsibilities to local government actors [16].

Despite their wide use, not all partnerships are successful and thus have been subject to much debate and criticism [18–20]. For example, Johnston [20] argues that the privately financed project (PFP) type Public–Private–Partnership (PPP) procurement model contains inherent flaws which means that projects do not always operate in the public interest. Issues relating to ‘legality, transparency, accountability, risk assessment and allocation, benefit transfer, transaction costs, political costs, performance management, stakeholder involvement, governance systems and frameworks’ are common concerns raised by researchers and practitioners ([21], p. S2). While not all partnerships are successful many have proven to deliver sustainable outcomes — see for example urban sustainability in regeneration projects in the Netherlands [12]. Thus, partnerships have gained prominence in urban policy debates because of their purported ability to resolve issues of funding large scale projects whilst ‘involving local communities and enabling the state to steer the outcomes’ [22]. There is also evidence that these instruments are effective at sharing risk, resources and skills through projects in ways that can benefit partners as well as the community [1,2,23]. These characteristics of partnerships suggest they potentially offer benefits but may also present risks as a means of progressing climate change adaptation outcomes in cities. For this reason a review of both traditional and emergent forms of urban partnerships and their current, as well as potential contributions to adaptation is needed.

Partnerships operate at all scales from the local to the international [24]. While partnerships operate in developing world contexts, this review largely focuses on developed, liberal economies of North America, Europe

and Australia. As a way of structuring our review we draw on Hodge and Greve's [25] characterisation of partnerships as typically belong to one of five families, namely; first, infrastructure contracts; second, urban renewal and economic development; third, public policy networks; fourth, civil society or community development and fifth, institutional cooperation for joint production and risk sharing. However we contextualise their schema to our problem focus of climate change. As such this review reports on the following broad types in turn: PPPs for critical infrastructure (see also [26**]); partnerships for urban regeneration and development; partnerships for managing disaster risk; diverse range of networks between local governments; and, regional collaboratives for adaptation. While there are many different types of partnerships identified in the literature [27], the authors acknowledge the overlap between the various types and families. A key characteristic that differentiates these partnership types however, relates to who initiates and leads them [1]. We conclude by identifying the key challenges, and gaps, specific to adaptation that partnerships currently purport to, and might conceivably address.

PPPs for infrastructure

Convinced of the benefits of greater levels of involvement from the private sector in the provision of critical infrastructure [19,21], many countries have utilised various forms of PPPs to develop and expand on critical infrastructure such as 'public transport, waste management facilities, roads, water and wastewater services' [18]. Governments have partnered with the private sector to finance and manage major infrastructure assets such as toll-ways [20], shipping ports [28,29], airports and railways [18]. Cooperation between the government and the private sector in PPP arrangements is typically facilitated through mechanisms such as build-operate-and-transfer (BOTs) arrangements, build-operate-own-transfer (BOOT), design-build-operate (DBO), joint-ventures, contracts and concessions and informal and voluntary agreements [18,19]. More recently, PPPs have been considered for green infrastructure in cities to encourage longer-term private investor buy-in to provide low-carbon, climate resilient infrastructure [26**]. Each of these arrangements has strengths and limitations (see [30]). Advocates promote several benefits including, 'enhanced performance, accelerated production, access to fresh sources of finance and/or expertise, a better pooling and sharing of risks, and opportunities for business expansion' ([21], p. S1). Critics on the other hand argue that problems can arise if they are not properly designed and executed [21,31]. Issues of corruption [18], transparency, accountability [21] and a lack of flexibility in contracts are also commonly cited as problematic [31].

Partnerships for urban regeneration and development

There are a number of forms of urban regeneration partnerships reported in the literature [32,33]. To better

understand how these partnerships have influenced urban form and function it is important to highlight both historical and contemporary experiences. While urban regeneration projects have been widely used across the globe [34**], there has been particular scholarly interest in these forms of redevelopment in countries such as the UK, US and Australia [13,22,35,36]. Along with many other countries, the UK, US and Australia have implemented programs and policies to deal explicitly with social and economic problems arising from large public housing estates which were built mainly in the period following the Second World War [13,35,37]. Major urban housing strategies were deployed during the 1950s and 1960s in response to problems of inner city slums and suburban sprawl [22,38]. However, during the post WWII reconstruction period, efforts to revitalise urban areas through renewal and regeneration programs were criticised for their lack of acceptable social outcomes [37,38] and community involvement in the decision making process [35,38]. Many of these early partnership projects failed due to a complex set of issues such as post war housing shortages and segregation policies which resulted in highly concentrated numbers of socially disadvantaged communities [37]. The inability to eradicate poverty in inner city areas further undermined the creditability of urban renewal policies [22].

In the 1990s urban management in these countries began to refocus on a number of strategies to better manage scarce fiscal resources. In support of these strategies, 'a wide range of institutional structures emerged, including the proliferation of new partnerships between businesses, civic groups and community and non-profit organisations' [37]. Part of the strategy involved the establishment of special purpose public development corporations to overcome widely recognised bureaucratic impediments in the public administration of land development [22,39,40]. These fit for purpose development corporations also provided opportunities to broker new relationships between public and private actors and in providing an institutional environment in which innovation is possible [41]. The emergence of multi-lateral partnerships, involving public, private, voluntary and community sectors in regeneration projects, was a distinct attempt to resolve significant social policy problems which were largely neglected from the dominant economic imperatives of earlier regeneration PPPs [42]. The degree to which communities are involved or actively participate in urban partnership arrangements is also changing. Compared with earlier efforts, that often saw local communities excluded from development and planning, community involvement in decision-making, at least rhetorically, is now considered to be a central component of the new urban partnership governance [19,22]. While inclusion can allow greater sensitivity to local needs, and hence improved economic and social benefits [42], it can also improve the likelihood of community support necessary for successful implementation [43].

Partnerships for managing disaster risk

There are also well established partnership approaches to manage for, and respond to, natural hazards, disasters and catastrophes [44–46]. The types of partnerships include, but not limited to: PPP contractual and non-contractual partnerships for critical infrastructure (e.g. building resilience), government-civil society partnerships (e.g. responding), PPP for physical reconstruction and inter-sectoral partnerships for learning (e.g. recovering) [45^{*}]. While contractual agreements are common in many urban partnerships, flexibility is also required when dealing with complex and uncertain environments — such as those prescribed by disaster management [31,45^{*}]. In their study, Chen *et al.* [45^{*}] acknowledged the importance of intermediary structures in bridging distances (e.g. spatial and political) between certain actors in partnerships to enable success. This may simply involve a partner with strong ties to other partners involved [45^{*}]. Technological innovation is also a critical ingredient in ‘new and growing spectrum of disaster management partnerships, expanding possibilities for inclusion, networking, information exchange, knowledge transfer and resource mobilisation’ [45^{*}]. Essentially these are technologies that support or facilitate processes for social innovation.

Regional collaboratives for adaptation

In addition to the partnerships for disaster management, there are a number of collaborative partnerships worldwide that have been formed particularly at the regional scale to increase awareness, build capacity, coordinate policy and promote learning specifically for urban responses to climate adaptation [24,47^{*}]. These collaborative arrangements bring together a range of stakeholders with multi-disciplinary backgrounds to coordinate state and national scale policies whilst focusing on local implementation [24,47^{*},48]. These types of collaborative partnerships exist in the Australia, UK and Canada [47^{*},49]. To date, most of the activities however have focused on building the knowledge base for regional and local climate change adaptation [24,47^{*}]. Bauer and Steurer [47^{*}] also found that the relatively weak political status and lack of financial and human capital within and across the partnerships continue to challenge their effectiveness in delivering innovative adaptation solutions. These observations have led to arguments for the need to mainstream adaptation and provide adequate legislation to enable partnerships to play an active role in catalysing adaptation plans [24]. Similar collaborative approaches to climate adaptation exist in other countries, for example, ‘Knowledge for Climate’ in the Netherlands and ‘KlimZug’ in Germany. While the focus and intent are similar to the UK and Canada, these partnerships however, are predominantly research-led [24,48].

Networks between local governments

Networking within and across local government borders is also common practice in the context of local and regional

climate change governance [50]. Local authorities around the globe cooperate in dedicated climate change networks at local, regional and national scales, many of which include partnerships between public and private actors [50]. These types of partnerships however typically focus on mitigation. In some of these partnerships local governments work closely with research institutions (e.g. universities) and local utility providers (e.g. energy) to improve local energy efficiency by reducing peak energy demand [50]. While much of the emphasis of local government cooperation has focused on energy efficiency and mitigation, there are also cooperative networks emerging between neighbouring local governments which promote collective action on climate change adaptation [51,52^{*}]. In essence these cooperative, voluntary networks increasingly provide a hub for policy coordination and information-sharing on coastal adaptation and climate risks as well as providing sufficient political and financial mass to undertake collective action on these types of problems [52^{*}].

Transnational networking of local authorities has been the focus of earlier studies in the context of climate change policy and multi-level European governance [53,54]. These networks have developed as a means to ‘diffuse policy programmes, exchange best practice and lobby at a national and international scale’ ([55], p. 3). The Cities for Climate Protection (CPP) programme, run by the International Council for Local Environmental Initiatives (ICLEI), is perhaps one of the most widely recognised networks for influencing the development of local climate change policy [50]. During the 1990s a further two transnational municipal networks were formed, namely, the ‘Climate Alliance’ and ‘Energie-Cities’ [53] and by the early 2000s a ‘new generation’ of municipal networks evolved [56,57]. The C40 Cities Climate Leadership Group is an example of these new generation networks where the partnership has successfully leveraged public and private sector cooperation to reduce greenhouse gas emissions. Table 1 provides a brief overview of the different partnerships discussed in this review.

Partnerships for urban adaptation

The above sections describe several types of existing and emergent forms of urban partnerships. Here we can make a number of general observations about the challenges and opportunities for urban partnerships as instruments for urban adaptation. Firstly, the majority of partnerships for critical infrastructure are project specific tasks and not explicitly engaged with climate change related risks. Secondly, partnerships for disaster risk mitigation are often initiated in the recovery phase, following natural disaster events. As such, there is currently a lack of focus on the anticipatory dimensions of disaster planning. Thirdly, the types of partnerships that do engage with problems of adaptation explicitly tend to operate at higher levels of organisation, between the regional and

Table 1

Overview of partnerships described in this review

Partnership types	Description	Examples of mechanism/ program	Focus/Gaps
Infrastructure	Governments partner with private sector in PPP arrangements to finance and manage critical infrastructure assets (shipping ports, airports, railways, and toll-ways, and Green Infrastructure).	Build-operate and transfer (BOT), Build operate own transfer (BOOT), Design-build-operate (DBO), PFIs, Joint-Ventures (JVs).	Mostly not explicitly engaged with climate adaptation.
Urban regeneration and development	Partnerships to revitalise urban areas post WWII reconstruction period.	Urban regeneration partnerships; Special Purpose Development Corporations (UDC).	Social and economic development orientation — not explicitly engaged with climate adaptation.
Partnerships for disaster risk	Partnerships to manage and respond to natural disasters.	PPP contractual and non-contractual.	Initiated in post disaster–recovery phase. Resilience orientation.
Regional collaboratives for adaptation	Region is the focal scale for multi-level policy and program coordination; information sharing; awareness raising; and research.	Regional Adaptation Collaborative (RAC), Regional Climate Change Partnership (RCCP), Knowledge for Climate, and KlimZug.	Focus on adaptation but limited influence on urban planning and development practice.
Local government networks	Local authorities cooperate in dedicated networks (including climate change) to address complex policy problems. These arrangements can also include partnerships between public and private actors.	Largely voluntary, Cities for Climate Protection (CPP), Climate Alliance, Energie-Cites, C40 Cities Climate Leadership Group.	Predominantly mitigation focus.

the national, and are geared towards improving information sharing, awareness raising, research and policy coordination either between levels of government or between sectors. As such, these initiatives are not yet hardwired into the day-to-day business of planning and development in cities in ways that materially shape the form and function of urban landscapes. The ability to influence urban form and function and adapt urban environments to climate change is largely dependent on mainstreaming adaptation and devising supportive legislation [24] — which is a challenging task worldwide [48].

Fourthly, those urban partnerships that are central to urban regeneration are oriented strongly towards economic and social development objectives, and while increasingly include sustainability agendas, fall short of adaptation. Nevertheless, there appears to be strong correlation between the types of policy goals sought through traditional urban regeneration and renewal partnerships and the complexities in adapting urban environments to climate change impacts. These include goals such as maintaining social inclusion in a changing urban landscape; addressing social and economic vulnerability of particular communities; the mass retro-fitting of building stock; and, mobilising the financial and political capacity to ‘relocate people and industry’.

There is also strong evidence to suggest that partner-ship-working can promote innovation, probably as a

consequence of working beyond the confines of main-stream institutional settings [24]. It is also apparent that special purpose bodies within partnership arrangements can assist with brokering the relationships and resources necessary for that innovation [41]. Whether these characteristics extend to encouraging the types of social innovation that urban adaptation experiments will require [58], beyond the types of technical innovation that predominantly underpin mitigation efforts, is yet to be seen.

Conclusion

Urban partnerships that involve government, business and civil society have formed in response to major urban policy problems, often to overcome the capacity constraints associated with government-led development [24]. These partnerships have traditionally sought diverse outcomes: from improving the efficiency of infrastructure development and operation to improved social cohesion and enhancement of economic prosperity through to urban regeneration and renewal. More recently, partnerships have emerged to address challenges associated with disaster management [45^{*}], climate mitigation [53–55] and adaptation within cities and regions [24,47^{*}]. Indeed, the ability to influence urban innovation and share risk and benefits are key attributes of urban partnerships. Many of these initiatives however are yet to directly influence the practice of urban planning and development at city and neighbourhood scales (see [24]). An

obvious empirical gap, and therefore practical focus arising from the review, relates to the knowledge of how urban planning and development partnerships that exist at sub-regional scales might incorporate adaptation objectives more explicitly and proactively. One of the greatest challenges for future partnerships however, relates to the transferability of learning's and successes given the temporal nature of climate change adaptation and the difficulty to observe cause-effect relations [24]. Indeed, this is perhaps an important reason for why many studies and policies target more tangible and quantifiable issues — such as climate mitigation.

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