



Title

# Towards Adaptive Governance in Peri-Urban Areas

Sub-title

An Empirical Review of Collaboration for Climate Change Adaptation

Deliverable #

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## 1. Summary

The Peri-cene project has the challenge of working with a multiplicity of causes, effects and responses. Peri-urban development, climate risk and vulnerability, and adaptive governance and pathways, are each complex, contingent and often controversial.

This report is a major component of the D5-1 *'governance & institutional issues & challenges'*.

So in this WP and particularly this preliminary report, we have focused in on the most unique and crucial qualities of governance for the Peri-cene agenda: the formation of adaptive pathways, for peri-urban / climate-environment interactions. Hence the focus in this report on collaborative governance for climate adaptation.

However the combination of all these shows up in the case studies from around the world. At the planned international 'pathways' workshop in 2021, we intend to build on the insights presented here on collaborative governance, to co-design adaptive pathways, (at the generic level).

The report contains three main sections:

- Analytic review of literature on collaborative governance in peri-urban climate adaptation
- Application for the Peri-cene Framework for further development and case study analysis.
- The Annex contains analytic tables with further details

## 2. Introduction

### Scope & structure of this preliminary report

This report is a major component of the D5-1 '*governance & institutional issues & challenges*'.

Generally the issues and challenges in both the peri-urban domain, and the climate risk-resilience domain, are huge and complex. The scope of governance also ranges far and wide, covering formal 'government', collaborative-adaptive governance, informal social-institutional systems, and system level issues such as resilience, social learning and collective intelligence. The Peri-cene case studies and partner cities demonstrate this, as per the example in section 5. The formal, collaborative, informal are all entangled at a variety of scales and sectors, with results shaped by dynamic conflict and competition.

So in this WP and particularly this preliminary report, we have focused in on the most unique and crucial qualities of governance for the Peri-cene agenda: the formation of adaptive pathways, for peri-urban / climate-environment interactions. Hence the focus in this report on collaborative governance for climate adaptation. Other vital issues, for instance land ownership or the political economy of infrastructure, have to stay on the margins.

However the combination of all these shows up in the case studies from around the world. At the planned international 'pathways' workshop in 2021, we intend to build on the insights presented here on collaborative governance, to co-design adaptive pathways, (at the generic level).

The report contains three main sections:

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- Application for the Peri-cene Framework for further development and case study analysis.
- The Annex contains analytic tables with further details

### Recap from the project proposal & work program

"This final WP5 will employ a co-design process to develop a synthesis, working on scalable and transferable solutions for adaptive pathways, with a focus on dissemination and impact. The background, as in the review above, sees contradictions and challenges. Aspirational calls for adaptive-collaborative governance, and resilience of many kinds, are not easy to realize in practice: meanwhile there are new critiques on 'adaptation' and 'resilience' as proxies for neo-liberal agendas.<sup>1</sup> The implication is a call for systems transitions and multi-innovation. There is an open research agenda to explore systemic cognitive capacity, and strategic policy intelligence, framed variously as 'Urban 3.0' or 'mode-III' co-learning and co-creation.<sup>2</sup> The case of peri-urbanisation, largely beyond the mainstream

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<sup>1</sup> Beilin & Wilkinson 2016

<sup>2</sup> Cohen 2012; Ravetz 2015:

economic and political structures, and fragmented between administrative units and multiple scales, is a very topical test case for new modes of entrepreneurial and experimental governance.<sup>3</sup>

(See Annex for full text)

This deliverable D5-1, when complete, will cover the following:

**D5-1 GOVERNANCE & INSTITUTIONAL ISSUES & CHALLENGES**

***Review & analysis of peri-urban governance & institutional challenges***

- review of governance & institutional systems / issues / challenges: analysis of partner profiles, with reference to global evidence.
- critical analysis & system mapping of the partner / case study profiles
- review of meta-concepts: e.g. adaptive/ co-evolutionary: policy innovation / experimentation: transitions etc.

The due date was planned as month 12 but this is delayed by the current pandemic situation.

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<sup>3</sup> Argyris & Schon 2006: Swilling and Hajer 2017

## **2. Overview of literature review**

Collaboration is often promoted as an adaptive governance tool to address climate change in urban areas, this review is therefore insightful to understand research findings on such experiments. Adaptation is a relatively new policy realm for cities and adaptation often remains in the planning phase, rather than implementation and assessment – thus published empirical research on the topic is still emerging. We provide the first global review of research on collaboration between state and non-state actors for climate adaptation in cities and their regions. To be clear, we focus on the practices of collaboration, rather than assessing the adaptation measures. This approach is helpful to identify key trends in the empirical findings as well as research gaps.

These examples incorporate a range of city types (informal settlements, districts, capital cities, peri-urban areas, regions), environmental concerns (mostly water-related, but also heat waves and agriculture), different methods of collaboration (workshops to policy-planning and implementation), and researcher positionality (conducting the collaboration to observing). The empirical examples largely focus on the initial phase of developing policy. In what follows we present our research design and then we discuss the key themes that emerged.

## **3. Methods**

For this empirical review, we first conducted a keyword search that included combinations of the following and their variants: adaptation; adaptive; city; climate change; co-design; co-production; collaboration; collaborative; community-based adaptation; deliberative; governance; local; participation; participatory; resilience; and urban. We selected articles based on their relevance, with a primary concern that they include an empirical case study of collaboration between state and non-state actors. We also used the snowball method by reviewing the reference lists of selected literature for additional sources. This included publications from 2005-2019 in English in peer-reviewed journals, on any environmental sector and in any urban region. We then coded the empirical sections of the selected publications using the following themes: challenges to collaboration; trade-offs; synergies; advantages; temporal scale; previous experience of extreme weather events; and socio-economic inequalities. These themes were inspired by both the existing literature and inductively through commonalities across the publications. The below chart lists each individual city, with 31 case studies from 20 publications (note that some publications contain multiple case studies).

Table 1. Selected Cases

Country	City and Author(s)
Australia	Adelaide (Akompab et al. 2013)
Bangladesh	Dhaka (Haque et al. 2012)
Canada	Halifax (Henstra 2012) Quebec City (Cloutier et al. 2014) Toronto (Henstra 2012)
Chile	Santiago (Barton et al. 2015)
Colombia	Cartagena (Stein and Moser 2014)
Ecuador	Quito (Anguelovski et al. 2014; Chu et al. 2016)
Germany	Bavaria (Wamsler 2016)
India	Bhubaneswar (Chu 2016) Gorakhpur (Bahadur and Tanner 2014) Gujarat (Chu 2016) Indore (Bahadur and Tanner 2014; Chu 2016) Surat (Anguelovski et al. 2014; Chu et al. 2016)
Mexico	Upper Lerma River Valley (Eakin et al. 2010)
Mozambique	Maputo (Castán Broto et al. 2015)
Netherlands	Arnhem (Mees et al. 2015) Rotterdam (Mees et al. 2015)
Portugal	Coastal municipalities (Schmidt et al. 2013)
Senegal	Saint Louis (Vedeld et al. 2015)
South Africa	Durban (Anguelovski et al. 2014)
Sweden	Helsingborg (Brink and Wamsler 2017) Lomma (Brink and Wamsler 2017) Malmo (Brink and Wamsler 2017)
Tanzania	Dar es Salaam (Vedeld et al. 2015)
United Kingdom	Christchurch Bay (Few et al. 2007) Orkney Islands (Few et al. 2007)
United States	Fresno (Moser and Ekstrom 2011) San Luis Obispo (Moser and Ekstrom 2011)
Vietnam	Can Tho (Birkmann et al. 2010) Ho Chi Minh City (Birkmann et al. 2010)



The majority of the case studies focused on city or municipal level actions; otherwise eight focused on regions; four on slums; and three on neighborhoods and wards. About half of the cases dealt with a coastal area. Several were chosen for their 'best-practice' international status (Anguelovski et al. 2014), commitment to climate change action (Wamsler 2016), or because the city is viewed as climate adaptation 'information-rich' (Brink and Wamsler 2017). Discussions of the geography of these collaborative measures for adaptive governance were largely missing, such discussions were limited to the environmental impacts of climate change. Besides the environmental impacts, the process of urbanization was problematized via land use: how residential development on 'high-risk' land (for example, flood-prone) occurs due to poverty, the lack of affordable housing, expanding cities, and a lack of enforced land regulations.

## **4. Results**

### **a. Challenges to collaboration**

Documenting the difficulties to collaboration was the most prominent theme in our review. This ranged from practical capacity (such as time and funding); institutional capacity (formal structures to support collaboration); quality of participation; and perceptions of climate change. The theme of challenges links to several other themes, especially trade-offs, temporal scale, and socio-economic inequalities.

Facilitating long-term collaboration (rather than a one-time workshop) requires funding and time commitments from those involved. Collaboration in the global south often had funding from international networks, for example: German funding in Santiago (Barton et al., 2015); Rockefeller Foundation funding for the Asian Cities Climate Change Resilience Network (Anguelovski et al., 2014; Bahadur and Tanner, 2014; Chu, 2016); and Quito's involvement in several international networks (Anguelovski et al., 2014). A challenge is to maintain funding and support after initial funding (Wamsler, 2016; Vedeld et al., 2015) and the overall high cost (Brink and Wamsler, 2017; Haque et al., 2012)

In order to collaborate with the government about climate adaptation, the government needs to have institutional capacity and structures in place to facilitate such engagement. Traditional and 'siloed' planning approaches and a lack of coordination across departments and scales limit local governments to adequately address the complex nature of adaptation (Akompab et al., 2013; Anguelovski et al., 2014; Barton et al., 2015; Brink and Wamsler, 2016; Schmidt et al., 2013; Wamsler, 2016; Vedeld et al., 2015). Institutional capacity is further needed to implement collaborative plans. From their research in Ho Chi Minh City (Vietnam), Birkmann et al. (2010, pg. 197) highlight this challenge: "many strategies proposed, such as better land use planning and improved building codes, although important, do often not sufficiently match the reality, which is characterized rather by a lack

of provision of public infrastructure and constraints of formal planning processes” (see also Castan Broto et al., 2015).

Two additional strains on institutional capacity were discussed: the status of informal settlements and corruption. Collaboration has been documented in informal settlements and slums that often face multiple stress factors. The regulatory status of these areas can be a challenge to collaborate. For example, in Barrio Policarpa (Colombia), “local authorities had clarified publicly that they were not permitted to invest public resources in the *barrio* because of its location in a high-risk area subject to recurrent flooding” (Stein and Moser, 2014: pg. 177). Corruption, often documented as clientelism and/or the weak enforcement of existing land use regulations, was also raised in cases in the global South and in informal settlements (Bahadur and Tanner, 2014; Eakin et al., 2010; Vedeld et al., 2015). Clientelism can create incentives against finding proper legal and institutional solutions, as found in the case of Indore’s water management (Bahaur and Tanner, 2014).

Another challenge to collaboration is the quality of participation. If the collaboration happens too late in decision-making process or is not taken seriously, it can be perceived that goals were predetermined, or the process is merely tokenism (Akompab et al., 2013; Few et al., 2007). Collaboration often attempts to involve a range of actors from different sectors and demographics. This diversity can pose a challenge, for example in Gorakhpur (India), Bahadur and Tanner (2014, pg. 206) note that “the Brahmin caste (the highest caste) had also been difficult, as many of them were uneasy about being physically seated at the same level as the rest of the community in project meetings, and participating as ‘equals’ within decision-making processes.”

Empirical research on collaboration for climate adaptation stresses the challenge of confronting multiple perceptions, which relates to ‘post-truth’ and climate denialism, the technical and expert-led framing of climate science, urbanization, and responsibility. For effective collaboration on climate adaptation, the parties involved need to accept climate science. Anguelovski et al. (2014) and Moser and Ekstrom (2011) document climate denialism amongst the public and government in Durban (ZA) and Fresno (US) respectively. In Dar es Salaam (Vedeld et al., 2015) and Toronto (Henstra, 2012) a low public awareness of climate adaptation was found. This can hinder collaboration and implementation of adaptation measures, for example in Bavaria: “residents ignored emergency warnings and evacuation instructions... This failure led to time-consuming, costly and dangerous rescues by boat and helicopter. Furthermore, residents often do not pay sufficient attention to official instructions during the recovery phase;” Wamsler’s (2016, pg. 190) interviews show that some residents claimed that officials fabricated flood warnings.

If adaptation is viewed as a technical issue, it can be perceived as outside of the scope of lay knowledge and a responsibility solely of experts and the government (Birkmann et al., 2010; Few et al., 2007; Schmidt et al., 2013; Wamsler, 2016). Wamsler (2016) found that municipal officials perceived that higher government levels were responsible for adaptation, and individual residents perceived that municipalities were responsible. Policy-makers may view the public incapable of making important contributions in this field (Few et al. 2007; Schmidt et al., 2013), and residents may feel they lack an in-depth understanding of planning-process (Brink and Wamsler, 2017). On the other hand, Castan Broto et al. (2015) warn that collaboration could lead to responsibilities passed down to communities. Finally, the perception of whether changes in the climate are from an ‘urban’ source can link to which actors or regions are deemed responsible. A case study of an urbanizing region in

Mexico by Eakin et al. (2010) shows how stakeholders perceive water as a 'rural' issue and not one for municipalities to govern, thus linking urbanization, climate change and responsibility. In Portugal, officials view urban expansion and coastal defense as the reason for coastal retreat (Schmidt et al., 2013).

## **b. Trade-offs**

Trade-offs were also commonly documented in empirical studies of adaptive governance for climate adaptation. This relates to attempts to develop synergies and integrate adaptation into urban development plans, while engaging with a diversity of groups. Examples include trade-offs between mitigation and adaptation measures and trade-offs amongst varying social, economic and environmental concerns. These can also be viewed as mismatches, negative consequences and/or externalities, occurring across sectors and scales. For example, Wamsler (2016) explains that there can be individual adaptation measures that obstruct or hamper other individual or institutional measures; and institutional measures can obstruct or hamper other institutional or individual measures. Birkmann et al. (2010, pg. 197) stress that future research and practice should take trade-offs into consideration: "negative consequences or externalities of structural measures, such as dyke systems or relocation, should be discussed and made transparent. Some of the adaptation measures proposed for HCMC will have severe secondary implications not only for the city and its inhabitants, but also for the surrounding urban, peri-urban and rural areas" (see also Vedeld et al., 2015).

In terms of searching for sustainable synergies, Anguelovski et al. (2014) found an economic versus environment frame in Durban; economic concerns faced adaptation measures that could reduce property values in Sweden (Brink and Wamsler, 2017); and in Maputo there were choices between luxury residences and providing basic services to informal settlements (Castan Broto et al., 2015). Schmidt et al. (2013: 323) highlight an example of prioritizing the economy in Portugal: "to keep this iconic vision of the coast, some local officials prefer to play down risks, arguing that coastal erosion problems are not that serious. This approach is designed to prevent the urban and commercial devaluation of coastal areas." An example from Gorakhpur (India) shows how trade-offs can intersect with inequalities, as one social group was benefitted by an adaptation measure to another's disadvantage: "some wealthier households had built boundary walls around their homes to prevent floodwaters from entering. This led to greater risks to those more vulnerable adjacent households who could not afford boundary walls" (Bahadur and Tanner, 2014: 205).

This further relates to cultural clashes. For example, Mees et al. (2015) found that heat wave adaptation measures can be perceived as paternalistic and encroachments on personal freedom, and Wamsler (2016) found that individuals were reluctant to participate in an urban greening initiative because they felt it threatened their privacy (see also Cloutier et al., 2014). These trade-offs highlight the challenge of developing adaptation measures that (1) consider the diverse priorities of different social and economic groups, and (2) attempt to integrate adaptation measures into urban planning and climate governance.

### **c. Temporal Scale**

One way that trade-offs are framed in adaptation discussions is connected to time and the long-term nature of climate science, this is also connected to the challenge of the perception of climate science. Adaptation requires action in the present to prepare for possible future events.

The temporal scale creates a challenge of 'making the case' for adaptation given scientific uncertainty and long-term time frames (Barton et al., 2015), which can clash with short-term political cycles (Schmidt et al., 2013). Several studies highlight the difficulty in convincing communities of necessary action for future weather events in both the global north and south (Bahadur and Tanner, 2014; Barton et al., 2015; Chu, 2016; Cloutier et al., 2014; Few et al., 2007), especially with pressing concerns in the present. In Bhubaneswar this has impacted the governance approach: "the overall urban agenda has framed climate adaptation in terms of immediate capacities for responding to and managing the impacts of extreme events, rather than dedicating significant investments towards addressing slow-onset effects" (Chu, 2016: 444). Conversely, in Adelaide, which faced repeated extreme heat waves, the situation was seen as an emergency in the present and this influenced decision-making: "all the stakeholders mentioned that due to this urgency, the different actors involved in the process realised the need to ensure that decisions were quickly reached in order to move the process forward" (Akompab et al., 2013: 1010).

### **d. Experience of extreme weather events**

A caveat to the above theme of the temporal scale, often discussed as a challenge to adaptive governance for climate adaptation, is the local experience of extreme weather events. This has been documented across the global north and south as a catalyst and convincing factor for community and government action. Brink and Wamsler's (2017: 90) studies of three municipalities in Sweden have all been affected by 'high-profile' weather events, where "citizens seemed to learn quickest from exposure to hazards", for example "as Klagshamn regularly suffers storms and pluvial flooding, property owners' awareness of their responsibilities and the need for individual and community-based adaptation measures has increased." In addition to the above-mentioned heat waves in Adelaide, (Akompab et al., 2013), floods propelled local action in Maputo (Castan Broto et al., 2015), Quito and Surat (Anguelovski et al., 2014), Dar es Salaam (Vedeld et al., 2015) and preceded Eakin et al.'s (2010) research in the Upper Lerma Valley (Mexico). A blizzard following a hurricane inspired action in Halifax, and in the case of flooding in Toronto: "dramatic media images of the storm – such as a gaping trench carved through a major road by a swollen creek – generated a period of heightened public and political awareness of the potential impacts of extreme weather events" (Henstra, 2012: 182).

Experiencing extreme weather events also inspired national flood planning in Bangladesh (Haque et al., 2012) and Senegal (Vedeld et al., 2015). These experiences can be utilized for producing local climate knowledge: a Participatory Climate Change Asset Adaptation Appraisal in Cartagena "identified the most important weather events affecting the *barrio* based on the experiences and historical memories of their citizens" (Stein and Moser, 2014: 173).

## **e. Synergies**

A caveat to the challenge of trade-offs is documented synergies (benefits of mitigation-adaptation and integrated approaches), this theme is less prominent in the literature than trade-offs. Wamsler (2016) notes that there can be individual measures that complement other individual or institutional measures and vice versa. Anguelovski et al. (2014: 159) found this in practice in terms of mitigation and adaptation: "The development and implementation of Quito's Climate Change Action Plan reflects the holistic vision of decision-makers to maximize mitigation strategies that also contribute to adaptation and build resilience. Adopted actions have to create win-win results. For instance, some strategies combine benefits derived from reforestation, water conservation, and biodiversity." Similarly, a collaborative approach in Halifax sought to mainstream climate adaptation into the city's overall climate and urban development plans (Henstra, 2012).

## **f. Advantages of collaboration**

The theme of advantages takes shape around examples that document benefits either for individual participants and communities or the government. Individuals can benefit by improving their knowledge (Barton et al., 2015; Brink and Wamsler, 2017; Cloutier et al., 2014; Moser and Ekstrom, 2011) and gaining the confidence and empowerment to engage with the policy process (Castan Broto, et al. 2015). Bahadur and Tanner (2014) found that residents demanded more accountability from their local representatives and challenged local corruption in Gorakhpur, and in Indore a Citizens Advisory Council was started, which had input in planning and provided a sense of community and a space to engage.

In terms of the government perspective, there can be increased institutional capacity building (Stein and Moser, 2014), access to and improvements of data (especially qualitative) and developments of knowledge-sharing platforms (Haque et al., 2012; Moser and Ekstrom, 2011), building legitimacy and consensus for implementing adaptation plans (Barton et al., 2015; Haque et al., 2012), and raised awareness and education for risks and disaster response (Brink and Wamsler, 2017; Chu, 2016; Vedeld et al., 2015). Another advantage is the opportunity for transfer and scalability: "The success of the Saint Louis local governance model has made it a country-wide approach to city and sub-city level governance in Senegal" (Vedeld et al., 2015: 306).

## **g. Socio-economic inequalities**

Inequalities are discussed in empirical case studies in terms of access to participation to the collaborative process or addressing existing inequalities into which adaptation intersects, such as uneven vulnerabilities. Few et al. (2007: 56) stress that this consideration is important for collaboration: "the participatory approaches that are likely to successfully engage key stakeholders need to be assessed: different social contexts may require different approaches, especially in order to attract and sustain dialogue with 'hard to reach' stakeholders" (see also Brink and Wamsler, 2017).

Related to the perception of who should participate in climate adaptation, Stein and Moser (2014: 180) challenge the idea that the poor are simply victims, rather there are important opportunities for collaboration: "it clearly shows that the urban poor know about weather and have reasonable knowledge of how extreme and severe weather events affect their assets and well-being at the household, community and business levels." Cases of the urban poor show how environmental stressors and socio-economic stressors can combine and interlink with urbanization. Part of the reason such groups live in these climate-affected and high-risk areas is the attraction of low value land, processes of rural-urban migration, and lack of affordable housing. Such settlements are characterized by weak services and infrastructure where long-term solutions are not accessible or affordable; for example, settlements near waste dumps in the Chamanculo C (Mozambique, Castan Broto et al., 2015) or Can Tho on the flood-prone Mekong Delta (Vietnam, Birkmann et al., 2010).

## **5. Researcher Positionality and Collaboration Practices**

In addition to analyzing the main themes of the chosen publications on adaptive governance, we documented the methods in terms of researcher positionality and collaboration practices in the reviewed research. Some of the above research involved active participation from the researcher and some were observers of the collaboration process. Of the above, the following were active facilitators: Barton et al. (2015) organized participation; Castan Broto et al. (2015) conducted action research through 'Participatory Action Plan Development'; Cloutier et al. (2014) facilitated workshops; Haque et al. (2012) conducted a MCA; Mees et al. (2015) co-organized workshops with local authorities; Moser and Ekstrom (2011) facilitated workshops; and Stein and Moser (2014) facilitated Asset Planning for Climate Change Adaptation (only case where the active researchers offered to train locals). The only case where at first they were observers and then active facilitators was Few et al. (2007). This is well-mixed of global north and south cases. Some of these cases used previously developed facilitation tools (Castan Broto et al. 2015; Haque et al. 2012; Stein and Moser 2014).

The majority of the 20 publications above utilized non-active participation. Some conducted interviews with individuals that were involved in previous collaborations and some observed the collaborations (see the attached Table 2 below for details). Some involved climate change-affected residents and vulnerable populations, a few attempted to involve the wider public (this indicates that these collaborations are more about identified stakeholders rather than the public). Many involved 'experts', climate scenarios and climate science. Two specifically mentioned 'consensus' building/decision-making. Some used ranking and prioritizing methods. Almost all used qualitative methods; except for mixed methods that included MCA by Haque et al. (2012).

This review aimed to provide insight to emerging empirical research on collaboration as an adaptive governance tool for climate change adaptation in urban areas. We included cases from the global north and south and from a range of urban types. Given that adaptation planning is a relative new policy realm for cities, the focus of most collaboration activities was on the initial planning and implementation phase, and often focused on water-related adaptation concerns such as flooding. The theme that was most pronounced and diverse in the 31 case studies was challenges to collaboration.

## **6. Application to Peri-cene Framework**

This section first asks some wider and deeper questions on the role and context of adaptive governance, working with case studies which are complex combinations of formal, collaborative, informal institutions and processes.

Second, this section provides an outline of the Peri-cene Framework with its applications to governance and adaptive pathways.

### **Case study example**

From current work in peri-urban Manchester (Ravetz & Connelly 2019; Ravetz & Warhurst 2013):

- Much of the peri-urban climate adaptation agenda is in green belt areas: this aims to stop urban sprawl, proposed by planners for approval by the democratically elected local authority, acting on national guidance & professional standards
- Land in the green belt is then in private / public ownership, & also a climate hazard and/or adaptation opportunity. The green belt also shows up the inequalities and exclusions of society, with pockets of extreme wealth and poverty.
- Land management & beneficial uses might then have scope for creative synergies, opportunity & flexibility (multi-functional landuse, community land ownership, trans-boundary exchange, social learning, socio-eco-innovations etc.)
- These possibilities can be debated in a wider forum than that of direct ownership, or other legal or property rights (in the case of water, the regulator of private utilities OFWAT)
- E.g. Catchment Management Partnerships, aim to involve a wider circle of stakeholders, but often find themselves as talk shops
- Some are successful but most are not, depending on who is actively involved: how the stakeholders are connected to the structures of power and resources: and other competing lines of decision making.
- The concepts below of deliberative, associative, participative, inclusive etc, are all relevant as factors of success: as are the 'formal / collaborative / informal' categories.

- In particular, how far the 'soft' creative synergies & emergent learning from the wider forum, can link to the 'hard' structures of power & resources.

## Key questions

These have been debated over the first year of the project

- Is there a possible ambiguity / overlap between 'governance for adaptation' and 'adaptive governance'.
- Case studies show many examples of 'governance for adaptation' which is non or 'mal-adaptive'
- ***What are the criteria for adaptive governance - how do we know if this or that case is 'adaptive' or non-adaptive governance?***
- can adaptive governance be negative in effect in some cases, and/or open to informality, expropriation, hierarchy, corruption? (e.g. powerful landowners can 'adapt' governance systems in a peri-urban wild-west, grabbing land and resources from the poor and excluded)
- What kind of links between adaptive governance & governmentality, or communitarianism, or other large scale concepts in political science?
- On the governance side, should we draw the line around 'delegated decision-making', or include many kinds of projects and programs centred on practical action?
- is adaptive more likely to be local, or, should we look at other scales, i.e. transboundary or city-region scale, which can then enable & support localized activities.?
- are the most effective cases seen where adaptive works closely with non-adaptive, i.e. formal & legalistic? (e.g. formal Green Belt legislation with enforcement then allows soft human scale adaptive projects to take place). If so should we look at the whole system rather than the parts?

## Notes on the peri-urban governance challenge

It would be helpful to frame governance (adaptive / non ) as a system of institutions / relations, not so much a thing (governmentality takes this to its logical conclusion. Then for examples of governance, we can look for both 'projects / policies' and systems of institutions / relations.

Such institutions / relations can be typed with the synergistic framework, as below: see the worked example of Green Belt above.

### *Typical transboundary issues*

- Under-bounding / over-bounding of metropolitan areas (e.g. peri-urban areas use urban services but pay no taxes for them)
- Trans-boundary governance, redistribution of costs / benefits, sharing of risks / resilience (e.g. in flood or coastal defence).

### *Typical problems of local fragmentation & polarization*

- Fragmentation of local government units, accountability etc
- Fragmentation urban & public services & infrastructures
- High polarization of wealth & connectivity with bypassing of local / indigenous communities & livelihoods.



### ***Typical problems of systemic infrastructure***

- High car dependency, low cost-effectiveness of efficient infrastructure,
- Low density populations, low cost-effectiveness for defence / adaptation policies
- High rates of change in landuse and urban development – challenges to address the above.

### **Peri-urban / climate / governance issues**

This explores the typical linkages between governance issues / challenges, and the peri-urban typology now emerging in WP2:

	<b><i>P.U. LOWER DENSITY</i></b>	<b><i>P.U. HIGHER DENSITY</i></b>
<b><i>HIGH REGIONAL PROXIMITY</i></b> (near to large urban gravity)	Metropolitan open land for flood plains	Urban / suburban fringes with urban heat island
<b><i>Climate issues / challenges</i></b>	Metropolitan urban fringes needed for biodiversity, cooling, flood alleviation etc: social amenity, health etc	Metropolitan urban fringes needed for biodiversity, cooling, flood alleviation etc: social amenity, health etc
<b><i>Typical governance issues / challenges</i></b>	governance of open / semi-rural land, with high amenity and/or high industrial pollution etc.	Strategic management of conurbation open space: competing levels of government: competing demands from private ownership / public goods
<b><i>LOW REGIONAL PROXIMITY</i></b> (further hinterland)	Open upland & peat bog fire risk	Urban / suburban extended sprawl & urbanization with typical climate risk & vulnerability
<b><i>Climate issues / challenges</i></b>	Local urban fringes: urban-rural exchange of local food & resources: visitor economy & semi-rural activities. Desakota type combinations.	Local urban fringes: urban-rural exchange of local food & resources: visitor economy & semi-rural activities. Desakota type combinations
<b><i>Typical governance issues / challenges</i></b>	Transboundary policy links: governance of open / semi-rural land, with marginal farming / high amenity / high pollution etc.	Management of diffused urban sprawl in outer hinterland (ex-urban settlements and/or former industrial settlements)

### **Keywords for adaptive governance dimensions**

These 'keywords' were debated at the project meeting in Jan 2020, then refined, linked to the literature, and then connected to the main Peri-cene Framework. The first table below shows notes on the keywords, and the second puts them into the format of the Framework.

Table xxx:

<b>Characteristic</b>	<b>Description</b>	<b>JR NOTES</b>
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<b>Collaborative</b>	Co-production, inclusive, diverse, participatory, empowering	<i>Framed as a system dynamic quality</i>
<b>Knowledge-based</b>	Expert and local experience, information sharing, deliberative, collective learning	<i>Deliberative is the key word, framed as deeper layers of knowledge &amp; social learning, not just technical info.</i>
<b>Contextual</b>	Real world, applied, localised, situated, place-based	<i>We frame this as multi-level synergy, between local &amp; strategic).</i>
<b>Emergent</b>	Recursive, iterative, reflexive, action-oriented	<i>Emergent maps onto general 'Adaptive' category (i.e. Mode-III co-evolutionary') (some overlap with 'transformative' concept below)</i>
<b>Transformative</b>	Innovative, experimental, strategic, creative	<i>Maps onto co-production, social learning,</i>
<b>Associative, multi-sector</b>		
<b>Mutual learning, innovation, experimentation</b>		
<b>Participatory, inclusive</b>		
<b>Anticipatory, long - term</b>		

Based on:

- D1.1 – governance literature review
- Wilson et al 2020 – incremental vs transformative adaptation
- Sarzynski 2015 – variations of public participation in climate change adaptation
- Brink and Wamsler 2017 – key dimensions of adaptation interactions
- Anguelovski et al 2014 – indicators for assessing urban climate adaptation planning processes
- 100 Resilient Cities conceptual framework
- Vink et al 2013 – knowledge and power in adaptive governance

## Peri-cene Framework '20 questions'

As in D1-2, the 20 questions template shows four sub-divisions of a wider & deeper governance system: formal / associative / informal / system level

### **Formal government:**

- Spatial planning, property institutions, green belt etc: / Housing policy / Infrastructure development

### **Associative governance:**

- Public sector / Private sector / Civic sector /Citizens etc

**Informal governance:** note this theme is still under debate and problematic in some ways: – see the D1-1 and other reports:

- Informal land-use, settlements / Corruption & nepotism / Social innovation & enterprise

**System effects,** resilience, collective intelligence: these categories represent the underlying system qualities or potentials which are cross-cutting the above categories.

- Social learning & collaboration / Social co-creation & mobilization potential / System transformation potential

## Adaptive Governance template

So, we can now fit together the adaptive governance keywords, with the Peri-cene Framework. In particular the 'synergistic model' of the Framework is very useful to map the difference between:

- 'linear / evolutionary' systems (*Mode-I & II*), and
- co-evolutionary' systems (*Mode-III*):

This helps to identify the '**mal-adaptive**' governance (*Mode I & II*) column, along with the '**adaptive**' column, i.e. emergent, transformative etc.

- '**mal-adaptive**' column: includes typical peri-urban examples of syndromes and challenges
- '**adaptive**' column: includes descriptors and keywords as above

This also links the '*wider-deeper*' scheme of the synergistic model (see Annex) with the '*formal-associative-informal*' scheme from the 20 question template. In reality most case studies and governance examples (policies / projects / institutions etc), will be a combination at various levels & for various actors (reality is rather complex).

## Combined Peri-cene Framework template

This then simplifies down to a practical questionnaire template, extended from the main project '20 questions' template, for stakeholder interviews & dialogue.

Note there are issues on key terms: here the '**adaptive**' keyword is used to describe the Mode-III column, of transformative etc. The horizontal integration of stakeholders between formal / informal, is here termed '**associative governance**', i.e. partnerships, networks, forums etc, which has the ability to connect between 'formal' and 'informal'.

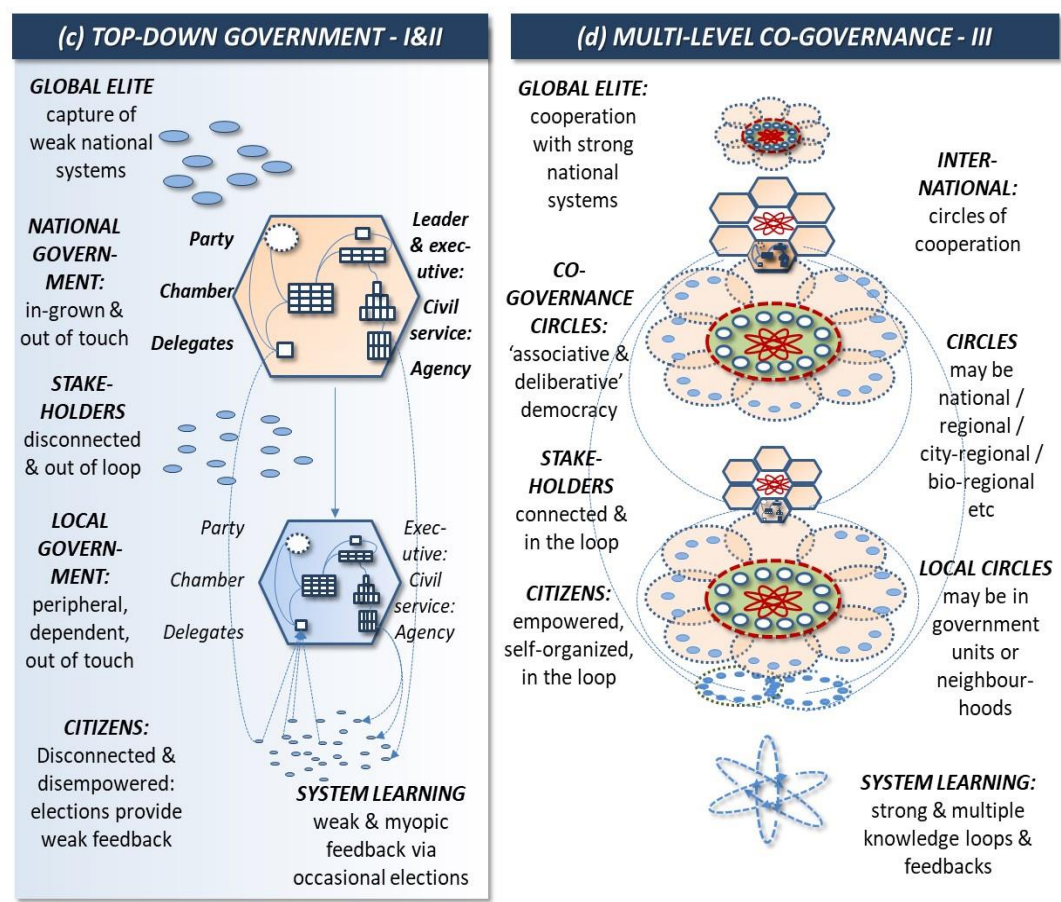
<b>'SYNERGISTIC'&gt;&gt;</b>	<b>'MAL-ADAPTIVE'</b> (Mode-I & II: Linear / Evolutionary)	<b>'ADAPTIVE'</b> (Mode-III: Co-evolutionary)	<b>'ADAPTIVE'</b> <b>LEADING QUESTIONS</b>
		<b>EMERGENT, TRANSFORMATIVE, SYNERGISTIC:</b>	Does the policy / project lead towards transformative action?
<b>FORMAL GOVERNANCE:</b> <b>'Deeper' policy &amp; agenda formation</b>	<i>Linear problem-fixing, materialist, myopic.</i>	<b>DELIBERATIVE / RESPONSIVE</b>	What types of expertise / knowledge are used? Is there integrative (cross-sectoral) multi-hazard approach?
<b>FORMAL GOVERNANCE:</b> <b>'vertical' multi-level integration</b>	<i>Command &amp; control / power &amp; conflict.</i>	<b>MULTI-LEVEL</b>	top down VS bottom up: conflict or synergy? responsive to local needs & opportunities?
<b>ASSOCIATIVE GOVERNANCE:</b> <b>'horizontal' integration of stakeholders</b>	<i>Command &amp; control / power &amp; conflict.</i>	<b>ASSOCIATIVE / INCLUSIVE</b>	Stakeholder conflict management? Stakeholder synergies formed & maintained?
<b>ASSOCIATIVE GOVERNANCE:</b> <b>'Further' integration of policy &amp; services</b>	<i>Fragmented &amp; privatized services /infrastructure.</i>	<b>CO-PRODUCTION, SOCIAL LEARNING</b>	Is the service responsive, innovative, learning? Risk management? Sharing of costs / benefits?
<b>'INFORMAL GOVERNANCE' dynamics of informality / formality</b>	<i>Inequality, exploitation, corruption</i>	<b>COLLABORATIVE / CREATIVE:</b>	How are informal claims on land & resources managed? negative informality / corruption?

## System mapping of collaborative (co) governance

In terms of governance system structures, this can be visualized, as a shift from 'top-down government' to 'multi-level co-governance'. In this sense 'co-governance' (collaborative governance) could be taken as a shorthand for 'collaborative-adaptive governance'.

The **co-governance** concept then emerges as a systemic structure of network / circle / web of relations and interactions.

**Figure 3. from top-down government to multi-level co-governance. (Ravetz 2020)**



## 7. Annex

### WP5 proposal

WP5 will employ a co-design process to develop a synthesis, working on scalable and transferable solutions for adaptive pathways, with a focus on dissemination and impact. The background, as in the review above, sees contradictions and challenges. Aspirational calls for adaptive-collaborative governance, and resilience of many kinds, are not easy to realize in practice: meanwhile there are new critiques on 'adaptation' and 'resilience' as proxies for neo-liberal agendas.<sup>4</sup> The implication is a call for systems transitions and multi-innovation. There is an open research agenda to explore systemic cognitive capacity, and strategic policy intelligence, framed variously as 'Urban 3.0' or 'mode-III' co-learning and co-creation.<sup>5</sup> The case of peri-urbanisation, largely beyond the mainstream economic and political structures, and fragmented between administrative units and multiple scales, is a very topical test case for new modes of entrepreneurial and experimental governance.<sup>6</sup>

For the WP5 method, we draw on foresight and road-mapping techniques, together with social and eco-innovation, with co-design thinking. It uses creative scenario visualizations, with topical examples of innovation, drawing on best practices in the Living Lab, from Bangkok to Toronto. For example, urban finance / business model innovation, can enable alternatives to the standard real-estate model of car dependent greenfield development: or socio-eco innovation can enable climate resilience of peri-urban water landscapes.

The WP5 process will set up structured deliberations and co-design thinking processes, at several points in the project. In Month 6-12, the concept of adaptive pathways and collective intelligence will be introduced to the case study stakeholders and Living Lab partners in the form of templates and online discussion process. In month 18 an international 3-day workshop will explore in depth the challenges and potentials, based on the 'synergy foresight' methodology for the co-creation of adaptive pathways and road-maps.<sup>7</sup> Consequently, we will produce a range of policy / practice briefs and guidance tools, freely available online in modular format. The main dissemination will use the existing networks and programs of our inter-governmental partners, i.e. ICLEI, UN Global Compact and UN Habitat.

### WP5 Work program

#### ***D5-1 Governance & institutional issues & challenges (month 12)***

##### *Review & analysis of peri-urban governance & institutional challenges*

- review of governance & institutional systems / issues / challenges: analysis of partner profiles, with reference to global evidence.
- critical analysis & system mapping of the partner / case study profiles
- review of meta-concepts: adaptive/ co-evolutionary: innovation / experimentation: transitions etc.

#### ***D5-2 Policy & governance innovations & pathways (month 18)***

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<sup>4</sup> Beilin & Wilkinson 2016

<sup>5</sup> Cohen 2012; Ravetz 2015:

<sup>6</sup> Argyris & Schon 2006; Swilling and Hajer 2017

<sup>7</sup> Ravetz & Miles 2016:

### *Review & analysis of innovations & pathways: workshop plan & outcome*

- International workshop plan & briefing materials:
- Initial report & analysis of workshop results.

### **D5-3 Global peri-urban synthesis & recommendations (month 24)**

#### *Synthesis & recommendations for policy & governance innovations & pathways*

- Includes: Policy / governance responses & recommendations
- Stakeholder recommendations, for public, private, civic, STI sectors
- policy / practice briefs for key sector issues: in text & online format.

Linkages: WP5 workshop results and preliminary findings on governance can feedback to WP3 & 4

## **Summary**

	<b>TITLE</b>	<b>CONTENT</b>	<b>Lead</b>	<b>Partners</b>	<b>Timing (month)</b>	<b>Inputs (p.m.)</b>
	<b>WP5: PATHWAYS</b>					
<b>D5-1</b>	<i>Governance &amp; institutional issues &amp; challenges</i>	<i>Review &amp; analysis of peri-urban governance &amp; institutional challenges</i>	KTH (AK)	UOM & IITM	12	6
<b>D5-2</b>	<i>Policy &amp; governance innovations &amp; pathways</i>	<i>Review &amp; analysis of innovations &amp; pathways: workshop plan &amp; outcome of stakeholder dialogues</i>	KTH (AK)	UOM & IITM	18	6
<b>D5-3</b>	<i>Global peri-urban synthesis &amp; recommendations</i>	<i>Synthesis &amp; recommendations for policy &amp; governance innovations &amp; pathways</i>	KTH (AK)	UOM & IITM	24	6
<b>Total</b>						<u>18 total</u>

## **Resources**

	<b>Months</b>	<b>UOM</b>	<b>KTH</b>	<b>IIT-Madras (named)</b>	<b>IIT-Madras - other</b>	<b>Total (named)</b>	<b>Total</b>	<b>LEAD</b>
WP5	Pathways	3	6	6.6	2.4	<b>15.6</b>	18	KTH & IIT

## Peri-cene Framework & governance applications

(Background – from the D1-2 Framework)

Much depends on the ‘frame’ of problems and solutions: whether a flood risk is seen only as water levels and flood walls: or the human systems of governance, investment, information and skills, cultural learning and so on. The Synergistic Toolkit helps to see this kind of bigger picture, with a 3D framework – **‘wider-deeper-further’**:

- **‘Wider’** synergies between communities of actors and factors, (people or organizations or institutions): we can start by mapping the inter-connections and exchanges of the people around the table.
- **‘Deeper’** synergies between different value systems and logics: social, technical, economic, ecological, political and cultural. This is also about different knowledges – ‘know-what, know-how, know-who’ etc.
- **‘Further’** synergies between upstream causes, (literally up-river in the case of flooding), and downstream effects (downriver which gets the impact of our actions).

Then we can explore different levels of synergy and systems change, which highlight which kind of resilience we are talking about. These can also be framed as **‘clever, smart or wise’**: or otherwise, **“Mode I, II or III”** type operating systems:

- **‘Mode-I’ (1.0): linear and ‘clever’**: here the synergy works as a ‘functional system’: it follows direct instructions and responds to short term pressures. A linear-type ‘Resilience-I’ strategy would build higher walls in response to flood risk.
- **‘Mode-II’ (2.0): evolutionary and ‘smart’**: here the synergy works as a ‘complex adaptive system’, evolving by self-selection and self-organization. Evolutionary type ‘Resilience-II’ looks for interactions between flood risk, property and infrastructure, with innovations, incentives and markets: but these often reinforce inequality and exclusion.
- **‘Mode-III’ (3.0): co-evolutionary and ‘wise’**: here the synergy works with co-learning, co-innovation and co-creation. A co-evolutionary ‘Resilience-III’ works on the cognitive level, and promotes shared learning and collective intelligence of all stakeholders. It aims beyond ‘clever’ flood defence, towards a ‘wiser’ co-evolution of urban systems with their climate systems.

## Peri-cene Framework with adaptive governance concepts

This is a more detailed version of the above keyword table, with the typical peri-urban governance challenges.



<b>'SYNERGISTIC'&gt;&gt;</b>	<b>'MAL-ADAPTIVE'</b> (Mode-I & II: Linear / Evolutionary)	<b>'ADAPTIVE'</b> (Mode-III: Co-evolutionary)	<b>'ADAPTIVE'</b> <b>LEADING QUESTIONS</b>
		<b>EMERGENT, TRANSFORMATIVE, SYNERGISTIC:</b> recursive, iterative, reflexive, action-oriented:	<i>Does the policy / project lead towards transformative action?</i>
<b>FORMAL GOVERNANCE:</b> <b>'Deeper' policy &amp; agenda formation</b>	<b>Linear problem-fixing, materialist, myopic.</b> Fragmentation of policy / public agendas, structures of value / cost / benefit etc	<b>DELIBERATIVE / RESPONSIVE co-governance</b> Expert and local experience, information sharing, deliberative, collective learning	<i>What types of expertise are utilised? What knowledge base is used? Does the initiative apply an integrative (cross-sectoral) multi-hazard approach?</i>
<b>FORMAL GOVERNANCE:</b> <b>'vertical' multi-level integration</b>	<b>Command &amp; control / power &amp; conflict.</b> Under-bounding / over-bounding. Trans-boundary governance gaps, redistribution of costs / benefits, risks / resilience	<b>MULTI-LEVEL co-governance.</b> Real world, applied, localised, situated, place-based	<i>top down VS bottom up: conflict or synergy? responsive to local needs &amp; opportunities?</i>
<b>ASSOCIATIVE GOVERNANCE:</b> <b>'horizontal' integration of stakeholders</b>	<b>Command &amp; control / power &amp; conflict.</b> Fragmentation & division: local government units: public services & infrastructure: polarization of wealth / poverty	<b>ASSOCIATIVE / INCLUSIVE co-governance</b> Co-production, inclusive, diverse, participatory, empowering	<i>Stakeholder conflict management? Stakeholder synergies formed &amp; maintained?</i>
<b>ASSOCIATIVE GOVERNANCE:</b> <b>'Further' integration of policy &amp; services (e.g. housing, emergency etc)</b>	<b>Fragmented &amp; privatized services /infrastructure.</b> High car dependency, low cost-effectiveness of infrastructure, Low density is problem for defence / adaptation	<b>CO-PRODUCTION, SOCIAL LEARNING co-governance</b> Transformative, innovative, experimental, strategic, creative, reflexive learning	<i>Is the service responsive, effective, innovative, learning? Risk management? Sharing of costs / benefits?</i>
<b>'INFORMAL GOVERNANCE' dynamics of informality / formality</b>	<b>Inequality &amp; corruption, informal VS formal.</b> Systemic disarray enables negative informality, encroachment etc High rates of flux & disruption in landuse & devt	<b>COLLABORATIVE / CREATIVE: formal / informal synergy:</b> Co-production, inclusive, diverse, participatory, empowering	<i>How are informal claims to land &amp; resources managed? How is negative informality / corruption managed?</i>

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## Summary table

Table 2. Researcher Positionality and Collaborative Practices

Author(s)	Location	Adaptation Focus	Researcher Position	Collaborative practices
Akompab et al. (2013)	Adelaide, Australia	Heat waves	Outsiders: conducted interviews with stakeholders two years after participatory process	A lead agency was selected to facilitate collaboration, they defined “the goal and key objectives of the participatory process, setting out the structure of how the process had to be conducted, the main deliverables and outputs of the participatory process.” A steering group and small working groups were also established. Consensus decision-making; used an assurance mechanism for feedback to ensure transparency
Anguelovski et al. (2014)	Durban, ZA	Sea level rise, heat, extreme events	Outsiders: interviews and PO	Started a climate change forum and partnership
Anguelovski et al. (2014)	Quito, Ecuador	Increased rainfall, extreme weather events, mudslides, landslides	Outsiders: interviews and PO	Officials refer to participation process as “co-responsibility and participatory collective management”. They seek traditional and indigenous knowledge input. Program for youth to develop climate action plan Involved in international networks
Anguelovski et al. (2014)	Surat, India	Flooding, health risks	Outsiders: interviews and PO	ACCCRN set up a City Advisory Committee Visioning; drafted assessments; scenario planning; workshops
Bahadur and Tanner (2014)	Gorakhpur, India	reduce water-logging, water stagnation, prolonged flooding and consequent impacts on health, livelihood and infrastructure	Outsiders: interviews and PO	ACCCRN: city advisory group made of experts oversees activities Climate scenarios, raise awareness of climate change, problem solving meetings
Bahadur and Tanner (2014)	Indore	Water scarcity, conjunctive water management	Outsiders: interviews and PO	ACCCRN: city advisory group made of experts oversees activities Climate scenarios; water user group
Barton et al. (2015)	Santiago, Chile	Heat, water supply, flooding	Active-organized participation	Ten thematic roundtables with three science working groups (land, water, energy): meetings had presentations and participation activities Developed a Regional Climate Change Adaptation Plan and an Implementation Manual
Birkmann et al. (2010)	HCMC	Sea level rise, floods, saline intrusion	Outsiders: case study	Formal planning
Birkmann et al. (2010)	Can Tho	“sea level rise, salinization, increased river bank erosion, changes in temperature profiles, changes in precipitation patterns as well as with an increase in frequency and intensity of extreme	Outsiders: case study, field research	Informal planning: autonomous adaptation, no formal plans Households elevate homes

		events, particularly typhoons, heavy rain events and extraordinary strong flooding"		
Brink and Wamsler (2017)	Sweden	Flooding, erosion	Outsiders: case study, interviews, NPO	Evaluated 17 city-community interactions in three municipalities; 12 were initiated by the city; half used hard forms of governance; out of the 17, four had a 'clear continuous dialogue' for collaboration
Castan Broto et al. (2015)	Maputo, Mozambique	Floods and droughts	Active: action research Participatory Action Plan Development	Consensus building Step 1: community assessment; Step 2: facilitated meetings for problem definition and a final plenary meeting for all groups to discuss and elect a committee; Step 3: engage secondary stakeholders and draft proposals; Step 4: open community meeting; Step 5: final workshop
Chu (2016)	India	Disaster, health and water management	Outsider: comparative case study, field research	Civil defense corps (volunteers) for disaster management; community workshops; ACCCRN community-based water management; ACCCRN scenario planning workshops; multi-stakeholder platform for adaptation planning
Cloutier et al. (2014)	Quebec City	Transport and water management, heat	Active: facilitators	Ran workshops over three years with 100 total participants: 12 sectoral workshops; set of workshops on risk assessments; intersectoral forum; design workshops To promote self-learning, participation, and sharing of experiences
Eakin et al. (2010)	Upper Lerma River Valley, Mexico	Flooding, subsidence, lack of soil humidity	Outsiders: case study and field research	Interviews with officials and flood-affected residents about their collaboration experiences and perceptions
Few et al. (2007)	Christchurch Bay, UK	Flooding, coastal erosion	First as outsiders: interviews and observations Then active: facilitators	"facilitated discussions, small group discussions, ranking and re-ranking exercises, and group policy 'mapping' tools"; focused on time scaled and adaptation options (protect, accommodate, retreat)
Few et al. (2007)	Orkney Islands, UK	Transport between islands and mainland	First as outsiders: interviews and observations Then active: facilitators	"facilitated discussions, small group discussions, ranking and re-ranking exercises, and group policy 'mapping' tools"; focused on time scaled and adaptation options (protect, accommodate, retreat)
Haque et al. (2012)	Dhaka, Bangladesh	Flood management	Active: facilitated MCA	CLIMACT software for Multi-criteria analysis: Step 1: select range of options; Step 2: stakeholder criteria selection; Step 3: expert assessment; Step 4: stakeholder focus group; Step 5: prioritize options; Step 6: sensitivity analysis
Henstra (2012)	Toronto (CA)	Extreme weather, heat waves, flooding	Outsiders: case study	NGO collaborated with the Toronto Environment Office; an expert panel presented on climate science; officials then engaged with the community via forums, workshops, and a call for comments; two working groups developed proposals and hosted workshops and information sessions

Henstra (2012)	Halifax (CA)	Extreme weather	Outsiders: case study	"members of ClimAdapt – a consortium of private firms, government agencies, non-governmental organizations, and academics committed to providing expertise on climate adaptation – approached Halifax Regional Council with a policy proposal. It entailed a partnership between the city and ClimAdapt, in which Halifax would be used as a pilot case for the development of an initiative called ClimateSMART"; a steering committee and informal working group was established and had meetings and consultation sessions
Mees et al. (2015)	Netherlands	Heat	Active: co-organized workshops with local authorities	Two interactive, multi-stakeholder workshops: divided into groups on health care and the built environment, discussed the division of responsibilities One focus group of the vulnerable population (elderly)
Moser and Ekstrom (2011)	California	Water, health	Active: facilitators	natural systems report and workshop then a social systems report and workshop; placed local officials as leaders of the process; facilitated small group sessions; then held a decision-maker forum and a public workshop; post-workshop evaluation survey and informal follow-up conversations
Schmidt et al. 2013	Portugal	Coastal retreat	Outsiders: interviews	Interviews with officials and citizens about the perceptions of collaboration and adaptation measures
Stein and Moser (2014)	Cartagena, Colombia	Extreme weather, flooding, heat	Active: facilitators Asset Planning for Climate Change Adaptation	Background assessments; training facilitators; 22 focus groups; planning workshop; prioritized solutions with predetermined criteria; merged top two priorities of each group into a plan
Vedeld et al. (2015)	Dar es Salaam, Tanzania	Flood management	Outsiders: case study and field research	Focus groups; validation workshops
Wamsler (2016)	Bavaria, Germany	Climate adaptation planning	Outsiders: case study and field research	Interviews and follow-up surveys with stakeholders about their collaboration experiences