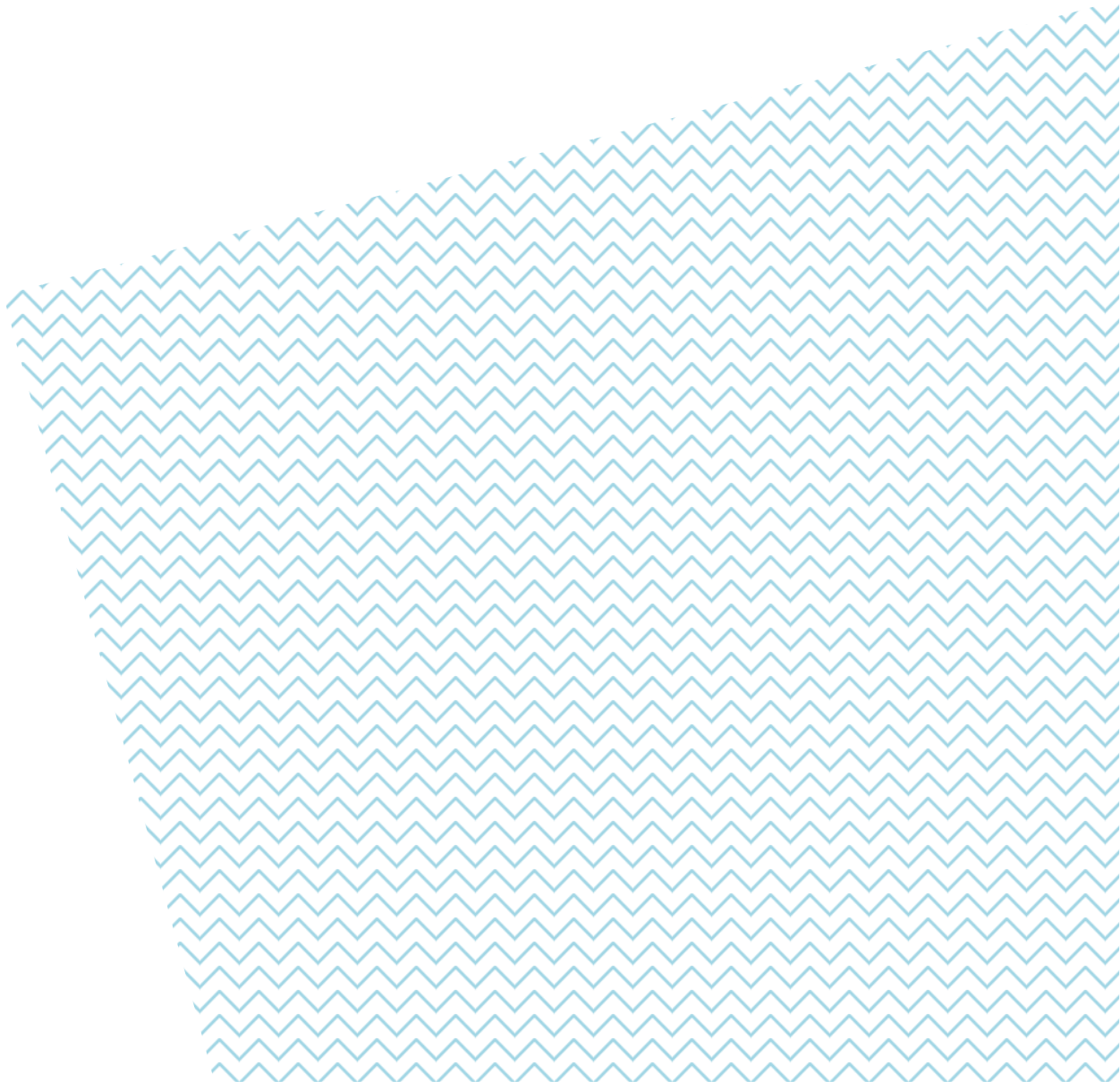Ariana Dickey and Judy Bush
Faculty of Architecture, Building and Planning

Sustaining collaborative governance

Literature review and case studies

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1. Introduction

Cities are essential to realising global sustainability (Acuto et al., 2018; Pincetl, 2010). Cities are the greatest producers of environmental pollution and greenhouse gases, as well as sites of the most significantly altered ecosystems in the world. And yet, despite the environmental challenges they create, cities often find solutions to such challenges, too (Pincetl, 2010). One such method for remediating urban environmental impacts is through deploying nature's services (Pincentl, 2010). Nature-based solutions (NBS), for example, are ecosystem-based management approaches for addressing societal challenges, such as climate change and biodiversity loss (Cohen-Shacham et al., 2016; Zingraff-Hamed et al., 2020).

But how to implement NBS initiatives effectively at the city level remains a vexing question. Indeed, both research and practice suggest that the greatest obstacles to implementing NBS are not technical challenges but rather governance issues, such as making the necessary institutional and political arrangements and transformations (Kozak et al., 2020; Rijke et al., 2013), as well as engaging non-state actors (Ansell et al., 2020). Frantzeskaki (2019) identifies *collaborative governance* as a critical element for the successful implementation of nature-based solutions, with Farrelly (2016) adding that this collective action and governance approach is an acknowledgement that many urban environmental problems are better resolved through collaboration. As such, this literature review seeks to focus on the "what" (i.e. the structures) and the "how" (i.e. the processes) that foster productive collaborative environmental governance. While much of the literature focuses variously on establishing collaborations (e.g. Malekpour et al., 2021), the drivers of collaboration (e.g. Emerson et al., 2012), and variables influencing the success of collaborations (e.g. Ansell & Gash, 2008), there has been limited research on what *sustains* collaboration, therefore warranting further attention on this gap. We first review the literature (section 2) and then propose an analytical framework that brings together the key elements highlighted in this review, emphasising the conditions, governance innovations, and requirements for sustaining collaboration.

2. Defining "collaborative governance"

Bringing together participants to address a common problem is referred to in the literature variously as "participatory governance," "networked governance," "collaborative governance," and beyond (see, for example, Zingraff-Hamed et al., 2020: 1623). This review focuses on the literature on "collaborative governance" because this approach has been identified as essential to implementing NBS (Frantzeskaki, 2019; Cohen-Shacham et al., 2016; Malekpour et al., 2021; Pörtner et al., 2021; Zingraff-Hamed et al., 2020). Further, because ecosystems transcend human-dictated jurisdictional boundaries, the cross-disciplinary, cross-sectoral, and cross-jurisdictional nature of biodiversity and ecosystem issues increasingly requires collaborative governance (Tang & Tang, 2014). For example, despite having identified ideal tree species and target locations for a million trees planting campaign in Los Angeles, USA, the campaign largely failed as a result of poor collaboration between the urban actors involved in its implementation (Pincetl, 2010). Some of the setbacks included budgetary challenges; weak leadership and leadership turnover; resident resistance to the tree planting program due to rumours, negative press, and disinterest in maintaining the trees they didn't want to be planted; and poor coordination between the non-profits contracted to execute the tree plantings (Pincetl, 2010).

In order to differentiate between the various governance styles, we first review how "collaboration" is defined in the literature. "Collaboration" can be distinguished from other terms related to working arrangements between multiple participants. For example, Twyford et al. (2012) highlight the degree of complexity of the issue to be addressed as being of importance in considerations of collaboration. Using the 'Cynefin model', problems can be simple, complicated, complex, or chaotic in nature, with each of the four problem types decreasing in linearity of cause and effect (Snowden & Boone, 2007). Twyford et al. (2012) propose that "simple" problems with predictable causes and effects can be resolved with *coordination* and Standard Operating Procedures, while "complicated" problems require *co-operation* and the use of data, analysis, and expertise to infer causes and effects. "Complex" problems call for flexibility, adaptability, and *collaboration,* as the causes and effects are not predictable or knowable based on existent knowledge. Finally, "chaos" has no perceivable cause and effect. Like Twyford et al. (2012), Head (2008) distinguishes between cooperation, coordination, and collaboration, albeit in different order of complexity. Head (2008) defines *cooperation* as task-focused and short-term with voluntary participation; *coordination* as more complex than cooperation, with medium-length time frames, joint planning, and greater membership stability; and *collaboration* as robust and long-term multi-participant arrangements characterised by interdependence, the creation of new roles and functions specific to the collaboration, and shared power, risk, and reward. And Michaels (2009) highlights that collaborating around development of environmental policy requires participants to integrate their expertise with that of their collaborators to produce solutions more effective than those yielded within knowledge silos. Although differing slightly in their definitions of *coordination* and *cooperation,* we nevertheless draw from these definitions that *collaboration* offers clear benefits for tackling complex urban environmental problems.

The following sub-sections explore the structural features of collaborative governance (2.1), the processes that enable collaborative approaches (2.2), and the individual and contextual factors (2.3) required to sustain collaboration over time.

2.1. Structural features

This section details the structural features essential to collaborative governance that have been identified in the literature: facilitative leadership (Ansell & Gash, 2008; Douglas et al., 2020b; Farrelly, 2016), distributed leadership and empowerment (Ansell & Gash, 2008; Barrutia & Echebarria, 2019; Malekpour et al., 2021; Rijke et al., 2013; Zingraff-Hamed et al., 2020), and transparency and respect enshrined in institutional design (Ansell & Gash, 2008: 557; Douglas et al., 2020b; Malekpour et al., 2021; Twyford et al., 2012). Collaborative governance depends on the integrity of these three features in order to support the iterative processes that yield solutions that are discussed in the following sections.

2.1.1. Facilitative leadership

The effectiveness and longevity of collaborative governance depends on facilitative leadership, which involves actively mediating relationships between participants within the governance regime. Leaders are tasked with convening actors, motivating participation, catalysing actions, and stewarding the rules that govern the collaboration (Ansell &

Gash, 2008; Douglas et al., 2020b; Farrelly, 2016). They are also crucial for ensuring fair and equitable participation between participants within the collaboration, particularly in cases with power and resource asymmetries between participants (Ansell & Gash, 2008; Ansell et al., 2020). In practice, for example, facilitative leadership can bolster the positioning of Traditional Owner groups, who may be under-resourced relative to other participants, and ensure their equitable participation in the collaborative forum (Malekpour et al., 2021). Facilitative leadership can also create connections between participants and redistribute the relational load to avoid over-reliance on certain individuals and bridge invisible silos within the governance regime (Cross et al., 2006). Therefore, facilitative leadership contributes to maintaining the robustness of the collaboration, to fostering equitable engagement between participants in the collaboration, and to orchestrating order through principles.

2.1.2.   Distributed leadership and empowerment

Distributed leadership and empowerment of participants supports collaborative governance by maximising the influence of the collaboration across participating organisations (Barrutia & Echebarria, 2019; Malekpour et al., 2021). Addressing problems by sharing power and inviting all participants to take ownership in addressing dilemmas empowers participants to take responsibility for implementing solutions (Twyford et al., 2012), including by requiring participants to commit resources as a means to fostering ownership (Ansell & Gash, 2008). Indeed, distributed leadership has been identified as a commonality in the successful governance and implementation of NBS (Zingraff-Hamed et al., 2020) and for enhancing water system resilience (Rijke et al., 2013). And supporting administrative structures that emphasise equity between participants and empowering participants with fewer resources can yield successful collaborative decision-making, as Farrelly (2016) notes in the context of co-governing natural resources with Indigenous people. At the heart of distributed leadership within collaborative environmental governance is the recognition that, like ecosystems themselves, governance regimes involve multiple and complex interrelationships and contingencies.

2.1.3.   Transparency and respect enshrined in institutional design

Key to legitimatizing collaborative governance is the transparency and respect that underpins it. Explicit principles of engagement are needed to ensure procedural legitimacy as they enable participants to understand how the collaboration will operate and makes the collaboration feel "fair, equitable, and open," and encourages mutual respect of common foundational rules (Ansell & Gash, 2008: 557; Douglas et al., 2020b). Twyford et al. (2012) emphasise the importance of participants having appreciative and respectful mindsets that focus on the strengths and abilities of their collaborators. Establishing an agreement at the outset of a collaboration that identifies some or all of the following better ensures the collaboration can function effectively by establishing a common reference point for all participants involved:

- the nature, scale and scope of the problem to be addressed
- objectives and intended outcomes
- membership, roles and responsibilities
- resource commitments
- format and frequency of interactions
- decision making rules (e.g. consensus or majority voting)
- data access and information sharing protocols (Malekpour et al., 2021: 11).

Establishing accountabilities and reporting requirements also contributes to transparency and provides a method for tracking progress (Frantzeskaki et al., 2014; Malekpour et al., 2021). Formalising these principles and structures is seen as a way to institutionalise the collaboration while also reducing the ability for politics to affect it (Henderson et al., 2020). For example, in Henderson et al. (2020)'s study of the collaborative governance involved in an urban revitalisation project, participants noted that formalised and institutionalised arrangements around the collaboration enabled depoliticised budget allocation, retained project staff, and allowed the project to progress over a number of political cycles. In summary, transparency and respect are embedded within collaborative governance through the establishment of clear rules and agreement on the purpose of the collaboration.

2.2. Processes and dynamics

Two processes drive successful collaboration: (i) establishing shared meaning and purpose (Emerson & Nabatchi, 2015; Malekpour et al., 2017; Malekpour et al., 2021) and (ii) building trust (Ansell et al., 2020; Ansell & Gash, 2008; Edelenbos & van Meerkerk, 2015; Twyford et al., 2012). The processes and dynamics are not linear but rather are iterative and require continual attention (Ansell & Gash, 2008; Emerson & Nabatchi, 2015; Douglas et al., 2020b; Twyford et al., 2012).

2.2.1. Establishing shared meaning and purpose

"Principled engagement," as defined by Emerson and Nabatchi (2015), is a method of collaborative learning that unfolds in four stages: discovery (1) occurs when participants reveal their interests, concerns, and values; definition (2) involves building shared meaning of concepts clarifying expectations when discussing the task at hand; deliberation (3) occurs when participants communicate, discuss, and share information directed towards solving the problem; and determination (4) occurs when a procedural decision (ex. setting an agenda or tabling a discussion) or a substantive decision (ex. reaching an agreement on actions) is made. A key outcome of this process is the establishment of shared meaning between participants.

Establishing shared meaning enhances legitimacy because it creates space to acknowledge and work through differences between diverse participants (Emerson & Nabatchi, 2015). Indeed, establishing shared understanding of the purpose of the collaboration, the problems the collaboration will address, and the potential solutions has been identified as a key collaboration management strategy (Malekpour et al., 2017; Malekpour et al., 2021). Doing so aligns with Ansell & Gash (2008)'s assertion that legitimacy is bolstered by participants' feeling that they are given the opportunity to voice their stance and be heard and that the outcomes produced are based on consensus derived from the collaborative forum. And, as Dickinson & Sullivan (2014) observe, the symbolism of the collaboration itself provides the means and language through which the collaboration can take place, thereby further cementing the significance of shared meaning.

2.2.2. Building trust

Developing shared meaning contributes to an essential process driving collaborative governance: building trust. As Ansell et al. (2020: 572) note, trust is the "grease that allows the gears of collaboration to turn." Trust-building increases over time (Ansell & Gash, 2008; Twyford et al., 2012) and can motivate participants to overcome key challenges (Henderson et al., 2020). In the context of water governance, Edelenbos and van Meerkerk (2015) found investing in building trust in the early stages of collaboration to be crucial for integrated performance across organisations within the governance regime. Building trust is a virtuous cycle whereby increasing trust between participants reduces the perceived vulnerabilities participants are exposed to when engaging in the collaboration resulting from the belief that fellow collaborators are not engaging in opportunistic behaviours (Ansell et al., 2020). Thus, as trust increases, the perceived risk (ex. lost time, "wasted" financial resources, etc.) associated with the collaboration decreases.

2.3. Individual and contextual factors for sustaining collaborative governance

While the bulk of this literature review has discussed the structures and processes that enable collaborative governance, there are indeed individual and contextual factors that affect the sustainability of a collaborative governance arrangement as well. Ensuring interdependence and shared motivation (Ansell et al., 2020; Ansell & Gash, 2008; Emerson & Nabatchi, 2015; Malekpour et al., 2021).

2.3.1. Interpersonal capabilities and mindset

Henderson et al. (2020) found the relational and interpersonal capabilities of the actors involved in collaborative governance to be of central importance to collaboration. In the authors' study of collaboration for urban revitalisation in a suburb of Melbourne, participants attributed the ability to overcome key project challenges to the soft skills of the

people involved in the collaboration, the strong interpersonal relationships between participants, and the goodwill of individuals (Henderson et al., 2020). Likewise, Twyford et al. (2012) emphasize the significance of having an appreciative mindset when involved in a collaboration, as doing so acknowledges the contributions of all participants and creates a welcoming environment.

2.3.2. Ensuring interdependence and shared motivation

Interdependence and shared motivation provide a means not only to instigate a collaborative governance arrangement but to sustain it as well. Who to include in the collaboration is contextually- and problem-specific, particularly in the case of NBS (Malekpour et al., 2021). Wide inclusion can bring expansive knowledge and resources, but also risk reducing the quality of deliberation or diluting negotiation outcomes to accommodate more participants (Ansell et al. 2020). Therefore, careful consideration must be given to who to include, why they should be included, what role they will play in the collaboration, and how much interest and influence they have within the collaboration (Malekpour et al., 2021) – a strategic inclusion process termed "selective activation" by Ansell et al. (2020). Identifying these factors also reinforces the structural feature of facilitative leadership by clarifying which actors may be disadvantaged by power asymmetries.

Participants involved in a collaborative arrangement should be interdependent such that the outcomes they seek are not possible without the collaboration (Ansell & Gash, 2008). And indeed, without shared motivation, collaborative governance cannot continue (Douglas et al., 2020b; Emerson & Nabatchi, 2015), yet it must be acknowledged that participant roles change over time (Malekpour et al., 2021). Therefore, a dual process of ensuring participant interests continue to align and renegotiating participant roles as motivations and dependencies shift must take place.

This dual process builds on Rijke et al. (2013)'s conceptualisation of networks and governance as oscillating between informal and decentralised, respectively, to formal and centralised, and back again as complex issues (such as urban water transformations) are continually resolved, re-problematised, and resolved by new, innovative, or alternative means again. In the context of collaborative governance, we distil the lesson that participant roles within the governance regime are not fixed but rather adaptive and flexible and therefore require regular renegotiation to ensure participants stay engaged.

3. A framework for sustaining collaboration

The ongoing management of catchments and ecosystems represent many aspects of 'complex issues' (Head 2008; Twyford et al. 2012) that require collaboration for effective governance. Ecosystem and catchment management are characterised by multi-functionality, spanning multiple policy domains, disciplines and professions, and organisations from both government and non-government sectors (Bush 2020; Massini 2016). They require long-term commitment because they require ongoing care and stewardship, and there continue to be complex contexts of multiple competing interests. While there has been considerable research that considers the factors related to establishment of collaborative governance arrangements, this review has focused on the factors related to sustaining already established collaborations, underpinning robust, long term approaches (Head 2008).

The key factors highlighted in the previous section related to structural features, processes and dynamics, and individual and contextual features. We propose that by synthesising findings from the literature, these factors can be grouped to form a framework for sustaining collaborative governance that foregrounds three dimensions: individual, group and context (Figure 1). 'Individual' elements relate to the skills and 'mindset' that the individual members bring to the collaboration. 'Group' elements include the structural and procedural aspects, funding and resourcing of the collaboration. 'Context' elements highlight the underlying motivations and interdependencies, the 'risk and reward' factors that underpin why the collaboration exists, and what members aim to achieve through their continuing involvement. Importantly, in sustaining collaborative governance arrangements, the elements within these three dimensions need to be shared across all members of the collaboration.
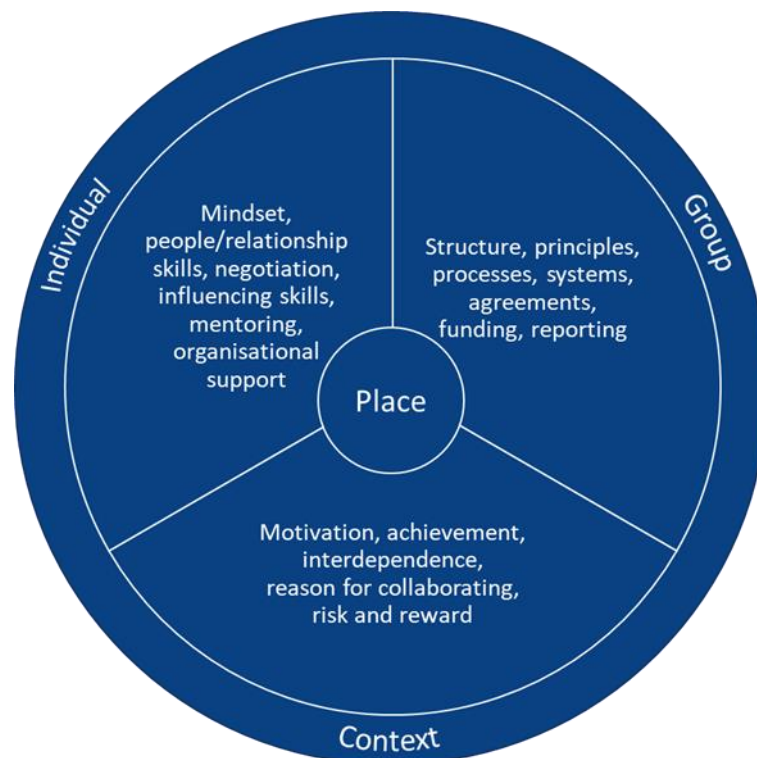

Figure 1 Sustaining collaborative governance for ecosystems: key dimensions (Source: authors)

At the centre of the framework, 'place' is recognised, acknowledging the place-based nature of ecosystem and catchment-based collaboration. Including place at the centre of the framework reinforces that collaborative governance arrangements are unique to their location, shaped not just by the individual members, their organisations and how they come together in the collaboration, but also by the nature of the place itself for which they are together striving.

The relationship between the themes highlighted in the review of research (Section 2) and the dimensions in the framework are summarised in Table 1.

Dimension	Elements	Individ.	Group	Context
Structural	Facilitative leadership		x	
	Distributed leadership and empowerment	x	x	
	Transparency, respect in institutional design	x	x	
Process and dynamics	Shared meaning and purpose	x	x	x
	Trust	x	x	
Individual, contextual factors	Interpersonal capabilities and mindset	x		
	Interdependence and shared motivation			x

4. Case studies: collaborative ecosystem governance

The following cases were identified from the literature and from the Collaborative Governance Database hosted by Utrecht University. The cases are presented from the perspective of the researchers investigating the collaborative governance arrangements. Each case includes details according to our proposed framework for collaboration and includes as much information as is publicly available through desktop research. Cases were selected for those focused on environmental governance.

4.1. Georges River Combined Councils Committee, New South Wales, Australia

The Georges River Combined Councils Committee (GRCCC) is a non-profit coordinating committee that includes nine local councils and partners with relevant state agencies and community groups within the catchment. Its activities are structured around Cluster Programs, which are designed to address immediate needs related to riverine health and are designed to change over time as priorities shift and conditions change.

Leadership of GRCCC is distributed, involving multiple and diverse organisations, all of which contribute to the collaboration's programming. It is overseen by an Executive Group, which works alongside a Programs Manager and a Council Manager.

Membership expectations are such that the member councils nominate staffers with relevant skills to work in the Cluster Programs. When necessary, representatives from relevant government agencies, such as Sydney Water, are included in the Cluster Program. Additionally, member councils are expected to pay membership fees. The GRCCC has an explicit mandate to meet state-based as well as Greater Sydney Local Land Services natural resource management targets. This mandate establishes the objectives, intended outcomes, and scale and scope of the problem being addressed by the collaboration.

A key process on which the GRCCC focuses is establishing enduring partnerships with government agencies relevant to its mission of protecting, conserving, and enhancing the Georges River. One method of doing so is by designing its program of work to meet the natural resource management targets specified by the state government and Greater Sydney Local Land Services, as mentioned in the previous section. GRCCC thus establishes shared meaning by making its programming legible between organisations, i.e. between the councils on the committee responsible for implementing the GRCCC's programs and the relevant government agencies whose targets the GRCCC strives to achieve.

Outcomes

The GRCCC is on-going and is seen to be widely successful. It regularly secures external project-based funding for capacity building and on-ground work, including a $1.78 million grant from the Biodiversity Fund entitled "Building Indigenous Knowledge and Skills to Restore Urban Waterways." The Georges River Coastal Zone Management Plan developed by the committee was also successfully gazetted as a statutory planning document.

Source: (Farrelly, 2016)

4.2. Lake Tahoe, United States of America

Lake Tahoe is an alpine lake in North America. The water quality of the lake has steadily declined since the 1950s as a result of increasing development activity around the lake, which has resulted in nutrient loading and increased sediment flow as well as decreases in the lake's depth from 100 feet to 70 feet (Imperial, consulted [2021 07 07b]). A collaboration was initiated to halt the degradation of the lake (specifically, the clarity of the water), with efforts focused primarily on achieving environmental improvements through redevelopment and restoration. The initial collaboration, called the Tahoe Regional Planning Agency (TRPA), had 16-20 institutional and interest group actors involved from both California and Nevada (the two states the lake straddles) from public organisations, private non-profit organisations, and citizen groups. By the end of the collaboration, the number of participants had grown to over 20.

At the start of the collaboration, no apparent facilitative efforts were in place. However, a new director of the TRPA was hired in the middle of the collaboration. The new director focused on brokering compromise and sought to build a new consensus building processes with the help of facilitators, which dramatically altered the dynamics within the collaboration and resulted in the first time the various interests groups involved embraced compromise.

Collaborators were drawn from both states the lake straddles, California and Nevada. Initially, the governing board of the TRPA had a substantial local majority, which resulted in the approval of 99% of development projects and thus rapid growth (and associated degradation) in the basin. This was, however, renegotiated after fears that local interests would dominate the board and the TRPA would be ineffective in protecting the lake. A later iteration saw the board restructured, and in tandem with strict land use regulations imposed by the 1987 regional plan, the development of the lake became extremely limited.

Ground rules were highly structured and regularly monitored, including through a federal-interstate compact, a series of regional plans, and environmental threshold carrying capacities (ETCC)that were required to be met by the collaboration. Reports published every five years tracked progress according to the ETCCs, and the regional plans are adjusted as needed to ensure all ETCCs are achieved. Transparency is relatively high, with regular, well-attended meetings held to make major decisions.

As a result of the new consensus building processes introduced by the newly hired director, collaborators embraced the idea of compromise for the first time, and the collaboration saw major shift in attitudes towards working on projects collaboratively. Following the success of isolated projects that yielded innovative solutions found through compromise, the subsequent director shifted the agency focus to be on successful project delivery rather than strict regulatory solutions. Between the example set by the two directors and through recognition by other interest group leaders within the Lake Tahoe region that collaboration on projects resulted in mutual wins, the participants shifted their attitudes from antagonism to mutual benefit.

At the start of the collaboration process, participants felt very low trust between them as a result of the polarisation around lake issues. However, as a result of the compromise and consensus building activities facilitated by the new TRPA in the middle of the collaboration, trust increased.

The participants began with somewhat unequal levels of resources to bring to the collaborative process, with some progress made to achieve better equity. From the beginning to the end of the collaboration, collaborators shifted from having low interdependence to a very high sense of interdependence.

Outcomes

An environmental improvement program was formed that has resulted in hundreds of millions of dollars worth of collaborative environmental improvement projects and decline of lake clarity has slowed, albeit not as quickly as some environmental groups may have hoped. Further, the ETCCs are about 60% met at the time of case study writing. Yet sustaining the collaboration remains delicate. For example, Nevada threatened to pull out of the federal-interstate compact in 2011 (although ultimately remained) and the Sierra Club sued the TRPA over its 2012 regional plan, highlighting continuing tensions between development ambitions and environmental protection.

Source: (Imperial, consulted [2021 07 07b])

4.3. Desert Tortoise Habitat Conservation Planning, United States

When species are listed as endangered by the U.S. Fish and Wildlife Service, their habitats legally cannot be disturbed. The Wildlife Service listed the desert tortoise as an endangered species, which created a dilemma for Las Vegas, one of the fastest growing cities in America at the time of listing, because it would prevent any development in the tortoise's habitat, in which the city lay. One way around this legal requirement is for local stakeholders to develop a habitat conservation plan that protects the species' habitat while still allowing for its use. Therefore, in response to the desert tortoise's listing, a collaboration of 6-10 actors, including developers, ranchers, mining interests, environmental groups and a range of local, state and federal agencies, came together in Nevada to develop a habitat conservation plan that would protect the desert tortoise while still allowing some land development to occur in its habitat.

Clark County acted as the facilitative leader in this collaboration. It served to convene the collaboration and actively levelled power asymmetries between participants by, for example, hiring a lawyer to represent geographically dispersed and unorganised individuals who would not be able to attend regular meetings but nevertheless wanted to participate. A steering committee, a technical advisory committee, and an implementation and monitoring committee were also established in order to organise work and keep the collaborative process moving forward. And finally, in recognition that Clark County was itself a stakeholder in the process, an external facilitator was hired. The facilitative leadership in this case was seen to be highly effective.

This collaboration was characterised by a distributed leadership across diverse stakeholders with divergent interests.

Three ground rules were set out at the start of the collaboration, which were designed to reduce tangential conflict and steer the engagements towards being constructive. No other formal rules were established, however strong norms of interaction were present and consistently applied, including consensus decision-making, inclusiveness, and transparency and openness. These design features were present throughout the whole process.

At the start of the collaboration, very little investment was made into knowledge sharing, joint fact finding, and aligning interests between participants. However, this shifted over time such that alignment of interests and values as well as knowledge sharing and joint problem-solving was seen as very strong. Initially, trust was extremely low and relationships adversarial between participants. However, over time, trust was built gradually to produce a constructive compromise.

Participants initially felt only moderately interdependent, however by the end of the collaborative process, they felt a very high sense of interdependence, particularly as it became clear to participants that win-win outcomes could be negotiated.

Outcomes

The participants developed a plan that both preserved the tortoise habitat while also allowing for development on less valuable habitat areas. Further, as the participants worked through the collaborative process, they realised the potential of the innovative nature of their plan and extended it to be a multi-species planning process rather than solely focused on the desert tortoise. Thus, the success of the process convinced participants that they could work together for mutually beneficial outcomes.

Source: (Ansell, consulted [2021 07 07])

4.4. Delaware Inland Bays, United States

The collaboration sought to address nutrient loading and habitat loss in the Delaware Inland Bays as a result of urban land use decisions, development, and agricultural run-off from the surrounding area. The collaboration was founded when the Delaware Department of Natural Resources and Environmental Control (DENREC) and other state officials became aware of the creation of a National Estuary Program (NEP). The collaborators lobbied to be considered a priority consideration in the NEP and hoped to receive federal funding to support ongoing efforts to improve the bay. At the start of the collaboration, 6-10 actors were involved. This number swelled to over 20 in the middle of the collaboration, and then returned to 6-10 at the end. Participants included political organisations and politicians, public organisations, private for-profit organisations, private non-profit organisations, and citizen groups through the beginning and middle of the collaboration, but at the end, no private for-profit organisations participated.

The collaboration was required to use consensus decision making, however it never defined consensus, so in practice, they used an iterative process involving multiple draft plants to agree on wording. The process was mostly transparent, however there were closed-door meetings at the end of the collaborative process to address issues that the agricultural industry had with the plan. Participants were not made aware until they saw the final plan and felt this meant the plan caved to the agricultural industry. The Environmental Protection Agency (EPA) also forced changes to the plan and planned to reject the plan until some political manoeuvring by the Governor resolved the issue and the plan moved forward.

The collaboration only somewhat embarked on joint-problem solving and joint fact finding. In fact, the plan the collaboration sought to develop was never focused on formulating shared goals or outcomes because the agricultural industry feared the plan would be used for regulatory purposes by the DENREC or EPA. Trust was high initially, however declined when the agricultural industry joined the collaboration as a participant because the agricultural industry was seen as powerful and having intervened in the collaborative process to achieve its own agenda (i.e. not be held accountable for its contribution to the nutrient loading of the bays).

At the start of the collaboration, interdependence was strong, however this declined over time. The initial participants, including DENREC and local officials, felt a reasonably strong sense of interdependence, however the collaborative forum was not particularly inclusive, having left out important players such as the agricultural industry and the Department of Transport. While the collaboration initially sought to understand the ecology of the bays to address water quality issues, it became increasingly clear that land use decisions were affecting water quality, and therefore, new stakeholders from the agricultural industry needed to be involved. This, however complicated the collaboration, as agricultural interests were largely not included in earlier collaborative efforts, and the industry is very powerful.

Outcomes

The problem has remained largely unaddressed, as development continues and the agricultural industry does not engage significantly with addressing the issue at hand. Another collaboration, the Center for the Inland Bays (CIB), was founded as a result of the case study collaboration. The CIB serves as a forum to discuss Bay problems, provide oversite into how EPA funding is allocated, and provides a mechanism to create future collaborations between organisations in the watershed, however the plan developed by the collaboration detailed in this case study was not useful for the CIB due to its lack of relevance to the local context.

Source: (Imperial, consulted [2021 07 07a])

4.5. Twin Lake, Taiwan

Twin Lake is an ecologically significant environment in the mountainous north-eastern region of Taiwan. The lake was privately owned for decades, and when the owner sought to develop the land and destroy the ecosystem, including the floating island, collaborative efforts to rescue the unique ecosystem commenced. Initially, environmental NGOs and citizen groups informally worked with local government to protect the lake, and later local farmers became incentivised to support the conservation effort. This case is unique because a formal collaboration was never established, so the structural features of the collaboration are not discussed. However, lessons related to the key collaboration processes can be derived from this case.

The government's initial attempts at protecting the lake through acquisition, which were done without participatory processes, were strongly resisted by local farmers as well as the owner of the land on which the lake was located, who successfully litigated against early attempts by the government to seize the land on which the lake was located.

It wasn't until local NGOs and environmentalists engaged community members in collaborative projects that community support for conservation occurred. One such example was demonstrating how the ecosystem could contribute to local farmers' livelihoods by producing a unique crop indigenous to the lake with high economic value. These collaborative projects resulted in renegotiating the perceived stakes at hand, and established a shared understanding of the significance of the ecosystem,

Local farmers initially distrusted the government and the conservation effort and sided with the property owner because they feared the government would attempt to acquire their land in a similar fashion. They also fiercely resisted the zoning of land in the area, some of which was private and some of which was public, to protected zones because they felt doing so would reduce the property values of their land. Government attenuated these fears by excluding private lands from the protection zone. While some environmentalists felt this was a disastrous policy, others saw the opportunity to collaborate with the farmers to grow high-value, environmentally friendly crops based on the unique ecosystem in the area, which ultimately resulted in converting the farmers to the lake conservation effort. Through compromise, trust was established between the farmers, government, and the environmentalists.

Once the shared understanding of the ecosystem's significance was established through collaborative projects with local farmers, the farmers shifted their support towards the conservation effort. A strong sense of interdependence emerged between conservationists and the community members as local businesses increasingly benefitted from tourism generated by the unique ecosystem, as did their shared motivation to protect the ecosystem. Without the farmers' support, conservationists would not have been able to protect the unique ecosystem. And likewise, without the conservationists' demonstration of the value of the ecosystem to the farmers, the farmers would not have realised the economic security they have now attained as a result of the unique agricultural products they can produce thanks to the lake.

Outcomes

The lake and surrounding wetlands were ultimately purchased from the property owner by the government at what was deemed to be a fair market price. Conservationists are now working to restore the ecosystem, and one of the participant organisations is working with local farmers to continue to bring them regular business through environmental programming.

Source: (Tang & Tang, 2014)

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