Article

Regional-Scale Governance and Planning Support Transformative Adaptation: A Study of Two Places

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Abstract: The idea that climate change adaptation is best leveraged at the local scale is a well-institutionalized script in both research and formal governance. This idea is based on the argument that the local scale is where climate change impacts are “felt” and experienced. However, sustainable and just climate futures require transformations in systems, norms, and cultures that underpin and reinforce our unsustainable practices and development pathways, not just “local” action. Governance interventions are needed to catalyse such shifts, connecting multilevel and multiscale boundaries of knowledge, values, levels and organizational remits. We critically reflect on current adaptation governance processes in Victoria, Australia and the Gothenburg region, Sweden to explore whether regional-scale governance can provide just as important leverage for adaptation as local governance, by identifying and addressing intersecting gaps and challenges in adaptation at local levels. We suggest that regional-scale adaptation offers possibilities for transformative change because they can identify, connect, and amplify small-scale (local) wins and utilize this collective body of knowledge to challenge and advocate for unblocking stagnated, institutionalized policies and practices, and support transformative change.

Keywords: climate change; adaptation; scales; governance

1. Introduction

Social and ecological systems are “coupled”, and human activities have rapidly altered ecological systems and their ability to sustain human societies [1]. A prominent manifestation of such socioecological dynamics is anthropogenic climate change and its impacts. In addressing the impacts of climate change, it has become increasingly clear that municipalities and other local institutions can play a critical role [1–5], specifically, when it comes to climate change adaptation. The idea that adaptation is best leveraged at the local scale is well-established (perhaps even paradigmatic) in both research and policy; it is an idea that has also become institutionalized and expressed in formal governance structures and policy processes [6,7]. Underpinning this idea is an argument that the local scale is where the impacts of global climate change manifest, where they are experienced or “felt”, thus, requiring fitting, local knowledge, and contextualized responses [8,9]. This entails the
position that the local level is also the level where social networks, social capital, and collective action is best mobilized [10]. This argument is also supported by the principle of subsidiarity; that issues and problems should be decided upon and addressed as close as possible to the individual or group impacted by the problem and associated decision about possible responses [10,11].

At the same time, the complexities of socioecological systems and their unpredictable interactions with climate change demand coordinated action at a system scale. Multiple relevant systems can be identified, each with their own scope and boundaries, such as global climate systems, international systems of diplomacy and cooperation, national policy frameworks, and regional and local action and initiatives in combined top-down and bottom-up approaches [2,11–13]. In this complex context, it is important that the level where measures are taken and the actors assigned in some way “match” the scale of the problem [3,11,14,15]. One possible solution is that every policy problem needs to be assigned to a (nested) level of governance and scale of action, in addition to the same coordination across these [16]. This relates to debates of (de-)centralization in environmental policy [2,13,14,17].

The key challenge to the corresponding idea that climate change adaptation responses are best undertaken at the local scale is that, while many climate change impacts may be experienced locally, they also cross administrative and territorial boundaries, driving needs for collaboration, coordination, and policy development across many scales [3,11,14].

In this article, we bring together a range of theoretical perspectives from across the climate change adaptation, public policy, and governance literatures to critically reflect on current adaptation governance processes in Victoria, Australia, and the Gothenburg region, Sweden, to explore whether regional-scale governance can provide just as important leverage for adaptation as local governance, by identifying and addressing intersecting gaps and challenges in adaptation at local levels. We explore the argument that regional governance, as a subnational level of governance between the state and local political and administrative scales, can facilitate boundary work and create significant leverage through regional coordination and two-way mediation between local knowledge and expert adaptation knowledge (including the mediation between science and policy) [18]. In this way, we argue, regional governance has the potential to increase the salience of climate change adaptation in local government by facilitating co-production, that more effectively mobilizes and involves local actors in climate change adaptation. This would also entail a potential for addressing the lack of integration of policies observed at the local level [9].

Our aim is to study climate change policy making that we perceive as a multifaceted and complex adaptive system spanning across sectors, policy domains, jurisdictional and biophysical scales and levels of society. We focus on the dynamic, emerging policy systems, growing out of ongoing interactions in order to see if we can observe any tendencies toward long-term transformations. We focus on how “small wins” at local scales can be connected, how stagnations can be “unblocked” through different regional and multi-scalar governance arrangements. and if and how this can build momentum towards “systemic” transformative change. The central research question is whether, to what extent, and how adaptation governance at the regional scale enables or constrains stakeholders to deal with the institutional challenges of navigating and coordinating multilevel adaptation governance? To reach our aim and answer our research question we study two cases of regional-scale adaptation practices, one in Australia and one in Sweden.

In this paper, we show that the regional scale can be critical for facilitating transformative forms of adaptation, because it is at this governance level that intersections, gaps, and connections among local, regional, national, and international scales can most readily be identified and transformed. Regional level governance requires examining and understanding both local and national scale issues, and regional adaptation institutions and actors could be better equipped to work with the inherent dynamism of multilevel adaptation governance. Our case studies show that researchers and policy makers need to have greater concern for questions of scale, in particular how the scale at which adaptation responses are developed and decided limit, or open up, transformative adaptation options as well as outcomes.
2. Theoretical Perspective

Achieving sustainable and just futures under a changing climate require substantial transformation of the systems, processes, norms, and cultures that underpin and reinforce currently unsustainable practices and development pathways [14,19]. A growing scholarship argues that not only adaptive but more so transformative forms of governance, beyond merely adjusting to change, are needed to catalyse such shifts, enabled through processes of multilevel, multiscale learning, and connecting multiple boundaries of knowledge, values, levels and organizational remits [2,14,19–21].

Concurrently, it is also acknowledged that interactions between levels of governance are fundamental for the dynamics of policy making and the effectiveness of climate change responses [2]. Policy studies and public administration research highlight that public policy and its administration is a complex multi-scalar adaptive system. For example, Cairney [22] (p. 97) argued there is “evidence from policy studies that [policy] systems are complex, power is diffused across levels, and governments form networks to achieve a degree of consensus on action”. In any policy process, such networks “have their own rules on who and what sources of evidence to trust, and often a ‘monopoly’ on how to understand problems” [22] (p. 42). As a consequence of such monopolistic problem framing by government actors equipped with differing degrees of power, Cairney argued, larger configurations of ideas and understanding emerge out of a myriad of possible choices, which are reproduced by incumbent patterns of influence and power [22].

Consequently, while any policy system is emergent, i.e., characterized by ongoing interactions between separate parts, whereby small changes in some of the system characteristics can lead to different, often unpredictable outcomes [23], it is also an expression of the dominant, institutionalized policy frames and knowledges [24,25]. Therefore, a key question is “how can such institutionalized governance arrangements be transformed to effectively facilitate sustainable and just futures?” Termeer et al. [26] have advocated for forms of continuous transformational change that relies on a repertoire of governance interventions and that focuses on generating small wins, amplifying these and unblocking stagnation. A conceptual model of continuous, rather than radical transformational change, offers a more fluid understanding of how agency and empowerment is better able to explain the always emergent nature of governance transformation. On the one hand, in-depth change that requires challenging existing cultures, dominant rationalities, and habitual practices cannot be introduced at scale because those cultures and rationalities are institutionalized [26] (p. 563), such as those already dominating different policy areas [23]. Small changes, on the other hand, can amplify and cumulate, or reverberate into large-scale change, particularly in complex systems characterized by a high level of interconnectedness [23,26]. Bringing these two perspectives into conversation suggests that climate change policy work must recognize that, as a complex adaptive system, public policy agendas are not directly amenable to control but rather to influence, which is exerted particularly through dominant frames, ideologies, approaches, etc. [24]. It follows that, in seeking to identify “what action is needed at what level, and how different levels interact or not to retard of facilitate action” [2], there is a need to identify where such small transformative changes are occurring, connect those small wins, while also explicitly engaging with dominant frames and institutions across and within a policy system, some of which could be contributing to institutional blockage and stagnation [24–26].

This theoretical perspective recognizes the multifaceted nature of complex adaptive system policy and practice and, we argue, highlights the need to focus on distributions of power in terms of power with a focus on joint action in solidarity and power with a focus on single actors and separate groups that act [27]. This includes shifts within and across “adaptive governance systems”, and what this means for enabling adaptation policies. As we witness emergent, and potentially transformative, collaborations around joint climate change action, attention must be paid not just to sites of collaboration and empowerment, but to sites of contestation. Questions of who is involved, how power is granted, taken or exercised, and who gains and who loses must remain central to our analysis and practice as policy practitioners and researchers.
In this paper, we use the theoretical vantage point of continuous transformation of adaptation governance by focusing on the nested regional scale, as well as the following [26]:

- continuous change, reconceptualizing the divide between transformational change and incremental change by focusing on;
- small wins amplified and replicated through sensemaking, coupling, and integrating across different scales, facilitating;
- unblocking stagnant approaches by responses to climate change impacts that is difficult to overcome at the local scale only.

To illustrate the relevance of regional adaptation governance in the context of continuous transformative change, we draw on two case studies of regional collaboration.

3. Materials and Methods

The two case studies are situated in regional governance contexts in Australia and in Sweden. In each of the case studies, some of the authors were involved, facilitating ongoing scholarly exchange and comparison across the two different contexts. The Australian case study examines three intersecting regional-scale actors and processes in the state of Victoria, i.e., catchment management authorities (CMAs), local government greenhouse alliances (GHAs) and state government regional adaptation planning. Two of the authors have been involved in action research with all three of these regional actors through different projects between 2013 and 2019. Analysis of the Victorian case draws on document analysis, six group interviews, and seven workshops with state government adaptation planning teams, 24 interviews of CMA staff and 11 workshops with them and key natural resource management (NRM) stakeholders, including local governments. CMA interviews focused on current activities and barriers to adaptation planning and action in the region. All were recorded (with consent) and transcribed. Observational notes were taken during the workshops, with consent, regarding key themes or issues, attitudes, responses, and commonalities and differences between regions regarding adaptation. The methods informing the analysis of GHAs draws on two of the authors’ engagement with GHAs in Victoria on low carbon and climate change adaptation projects over ten years. In particular, one author has been partnered with the Western Alliance for Greenhouse Action (WAGA) in Melbourne since 2013, on a regional-scale project codesigning adaptation indicators for local governments (See http://adapt.waga.com.au/ ‘How Well Are We Adapting?’). As an action research project, the data draws on regular project meetings with WAGA, including eight local government representatives and other project partners (2013 to 2017), quarterly workshops with project partners (including representatives of 20 local governments between 2018 and into 2020), as well as desktop and document analysis focusing on initiatives and strategies developed and adopted by GHAs in their climate change work (undertaken in 2015 and 2019).

The Swedish case study, conducted in 2018, is based on document analyses and an interview study. The documents selected were municipal policy documents focusing on climate change adaptation. In most municipalities, this topic was included in broader documents related to risk assessments or environmental policies. The existing regional climate change plans were included, as well as reports from key authorities and organizations. Finally, the selection also encompassed national guidelines, government proposals, and Parliament decisions, and 18 semi-structured interviews that were performed in 13 municipalities in the Gothenburg Region with senior policy experts on the regional and national level. In total 22 individuals were interviewed, primarily selected on the basis of being responsible for or working in an ongoing capacity with climate change adaptation. In municipalities where no one had the specific task of working with climate change adaptation, spatial planners working with comprehensive planning were selected. However, in three interviews, planners involved in statutory planning were also present (for a more extensive description of this study see [28]). The material was analysed through several lenses using a content analysis, however,
the themes most relevant for the focus of this article are transformative learning, governance, regional government steering, and public administration strategies.

4. Results

In the following sections, we first present relevant background information about the two case studies, before critically reflecting on evidence of opportunities and constraints on continuous change in the governance of climate change adaptation in each of the cases.

4.1. Climate Change Adaptation in Victoria, Australia

Catchment management authorities (CMAs) and Victoria’s approach to natural resource management (NRM) are established under state legislation [29]. Guided by the concept of integrated catchment management (ICM) and implemented through Victoria’s Catchment Management Framework, the NRM approach is enabled by a state-wide Victorian Catchment Management Council (VCMC) responsible for the preparation of a state-wide catchment condition report and ten regionally-based CMAs. The primary statutory responsibility of each CMA is to develop and implement a five-year regional catchment strategy (RCS) that identifies priorities and targets for managing the region’s natural assets. CMAs are also responsible for waterway management and regional drainage and they are the custodians of the Environmental Water Reserve. The VCMC and CMAs are legally required to have a community-based membership (i.e., community members serving on their boards), broadly focused on “people working better together to coordinate planning, investment and on-ground activities as a more effective and efficient way to achieve a range of environmental, economic, and social outcomes” [30] (p. 14). Each CMA and their boards set regional strategic priorities, evaluate outcome effectiveness, monitor external and internal environments, and identify strategic opportunities. They are also responsible for developing and implementing on-ground works programs and for liaising with communities, government, and other organizations [30].

Currently expressed through the “Our Catchments Our Communities” strategy, Victoria’s Catchment Management Framework supports both climate change mitigation and adaptation by CMAs. As a requirement of a nationally funded program, CMAs have (re)developed climate change plans. Climate change represents both a considerable challenge and opportunity for CMAs. Limiting degrading processes and pressures on natural resources, let alone rehabilitating the consequences of European colonization, will be an increasing challenge because of the anticipated pervasive and complex climatic changes anticipated [20,31]. Moreover, because of their role in land management, CMAs are not only concerned with social and ecological adaptation; they are also engaged in facilitating carbon sequestration. Consequently, these organizations are exploring, at the regional scale, how to support sustainable transformations of landscapes altered to maximize production (often unsustainable, marginal, and monoculture) towards socioecologically-sustainable landscapes that can allowing for multiple possible futures [20].

In the local government sector, regional governance interventions have also gained momentum in the face of climate change. Currently, 70 of the 79 local governments in the state of Victoria are voluntary members of one of eight regional climate change alliances. The alliances consist of four or more adjoining local governments, with each contributing an annual membership fee to support a chief executive and some project work. Each alliance is typically constituted by an executive committee and a working group including representatives from each member council. Climate change alliances originally emerged in the early 2000s as informal “information sharing” networks amongst local government sustainability officers. In 2002, the then state government through a Regional Partnerships Program funded an executive officer for each alliance, with their initial work focusing on facilitating climate change mitigation initiatives within each member local government. Although a 2006 state government review highlighted the importance of these regional-scale climate change alliances in facilitating capacity building and progressing mitigation actions across local governments, the funding ceased in 2008. This left the alliances to operate independently of state government
support via ongoing contributions from their members’ local governments. Since then, member council contributions maintain a chief executive for each alliance and external grants are regularly sought to build capacity and staff in developing regional strategies and implementing climate change mitigation and adaptation projects.

Separate from the work of the local government alliances and across a different regional jurisdiction, the state government is also investing in a new program of regional adaptation planning and action under Victoria’s Climate Change Adaptation Plan 2017–2020 [32] and the underpinning Climate Change Act [33]. Initial scoping and planning for state government supported, regional-scale adaptation planning commenced in 2019. While it is still early days, because the approach is not a legislative requirement but rather an expression of a statement of intent by the government to work with regional communities in building their adaptive capacities, the regions (lead by state government regional representatives) are able to undertake a range of exploratory, experimental, and highly collaborative approaches. This governmental context is important to appreciate, while these planning efforts sit under the remit of the state, they are also one site where the CMAs’ work and the alliances can intersect at both regional and local scales.

4.1.1. Examining Regional-Scale Governance Practices through a Continuous Change Lens

The three intersecting examples of CMAs, climate change alliances, and state government regional adaptation planning can shed light on the question of whether Victoria’s emergent regional-scale governance arrangements and practices reflect and enable continuous change approaches to transformative adaptation.

Arguably, CMAs provide conditions for enabling small, in-depth wins because they guide and support an extensive array of community-led sustainability and adaptation actions that must address regional-scale priorities. The latter are themselves co-developed with local communities across each region. For example, CMAs support several community-based conservation programs, including Land for Wildlife, Farm Tree Groups, Australian Trust for Conservation Volunteers, and the long-standing Landcare program. Broadly speaking, these community-based programs seek to build community capacity, develop partnerships, and engage landholders, NRM community groups, networks, and their volunteers in undertaking effective on-ground works to increase ecosystem resilience and contribute towards enhancing the sustainability of landscapes. The multitude and diversity of partnerships and networks provide dynamic sites for local experimentation and innovations (small-scale wins) that are then connected at the regional scale and amplified into state level governance.

Similarly, the voluntary and self-governed nature of the local government alliances affords them the space to experiment with new approaches outside existing governance regimes, combined with them also being under pressure to develop and deliver feasible approaches for climate change adaptation. In doing so, alliances challenge the constraints of local governments around weak legislative power, limited resources, and local politics. They navigate horizontally across local governments, as well as vertically between local and state governments. In addition, alliances also work with other actors, including private energy companies and other industry organizations, as well as with community groups. As a result of this, much of their work is focused on instigating and catalysing continuous change, both within their member local governments and across these, by upscaling initiatives and thus “amplifying small wins”. However, the alliances’ ability to effect change relies to a large extent on the efforts of their executive officers to leverage grants and funding, which allows the alliances to employ project officers to increase their organizational capacity. If they are successful with attracting funding, this in turn secures their continued support and base funding from annual membership fees from local governments. These continue their support, recognizing the alliance’s value and importance in building local government capacities and collective power to influence change at the state level.

The importance of the alliances’ leadership and mediating role in climate change governance in Victoria has recently been recognized by the state government in their most recent Climate Change Adaptation Plan,
A closer relationship between the State Government and Greenhouse Alliances will improve coordination between state and local governments. Direct support for the work of the Greenhouse Alliances will increase their ability to support local governments in addressing climate change. [32] (p. 30)

From the perspective of Termeer et al.’s [26] continuous change perspective, the CMAs’ and alliances’ regionally focused efforts, combined with the recent (2019–2020) state government “regional adaptation planning program”, present both a challenge and opportunity for adaptation governance. While these three entities all operate at regional scales, their geographical boundaries are not aligned either institutionally or physically. While CMA boundaries are defined by biophysical catchments, the alliances are defined by groupings of adjacent local governments. The state’s regional adaptation planning boundaries are a result of a historical bureaucratic legacy and show no alignment with any other regional geographic arrangements. This presents a significant coordinative challenge that could limit opportunities for amplifying and upscaling small transformative wins. At the same time, however, this inadvertently polycentric, regional governance system also appears to be enabling “midrange wins”, in regions where the different entities are connected (and this currently appears ad hoc). Here, the increase in regional-level activity could enable transformative change towards greater sustainability. The question of whether such actions are addressing questions of equity remains unanswered. We set out some burgeoning evidence of these critical reflections in the following sections.

4.1.2. Amplifying Small Wins through Sensemaking, Coupling, and Integrating

One of the challenges of amplifying small wins through regional- or state-scale governance, is that “the benefits of community participation and collaboration that arise at the local level can be lost when these approaches are up-scaled to the regional level unless there is an intermediary or ‘mediating structure’ to facilitate communication and create the link between different types of collaboratives” [34] (p. 711). Because they are legally constituted to operate between local concerns and state and national government policy realms, CMAs provide one form of this necessary “mediating structure”. For example, CMAs support individual landholders with their revegetation efforts while also ensuring those efforts connect with other local efforts aimed at supporting the adaptive capacities of landscapes at a regional scale. Within this formalized construct, they also have a broad, somewhat self-determined, remit to connect regional and local concerns. This formalized regional position allows them to bring regional and local concerns, including land managers, different industries, and environmental interests, and research, directly into discussions, negotiations, and debates with state and national level policies. In many senses, as boundary organizations [35], CMAs are also able to mediate (to greater and lesser extents) state and national government policy and program prescriptions at regional and local scales because of their legislative requirement to be concerned with “the regional”. CMAs can, thus, also act as a collective network that can connect and amplify small wins through presenting a united front in the aforementioned engagements with state and national policies. Consequently, while there are situations where watershed boundaries do not align with problem sheds, or policy sheds, making effective participation and accountability difficult [36], this regional-scale governance at this scale can provide processes that are “adaptable to different viewpoints and robust enough to maintain identity across them” [37] (p. 2208).

While initiated by local government sustainability officers as an informal network, the local government climate change alliances were formalized through state government “regional partnership” funding in the mid 2000s. Recognition of the alliance’s capacity to help drive reductions in GHG emissions through street lighting initiatives and energy efficiency programs, saw the participating local governments agree to continue to support many alliances going beyond the cessation of state funding. Moreover, for several years, changes in political leadership saw an absence of a state-level coordinated response to climate change [38] and the alliances played a crucial leadership role in this vacuum, building local government capacities and momentum to develop climate change strategies and implement emissions reduction projects. The alliances also seek to influence and change local
and state government processes and policies, including shaping policy or regulatory mechanisms to enable the uptake of rooftop solar, improving commercial building’s energy efficiency or developing strategies for adaptation. Importantly, small wins from within one alliance or one council within an alliance are amplified through the learning and advocacy network created across the alliances. In one example, the alliances played an important role in amplifying the “small win” from the City of Melbourne’s adoption of “Environmental Upgrade Agreements” (EUAs) (a financial mechanism to encourage private sector commercial building owners to carry out energy efficiency measures through local government lending programs). Through a long process of advocating to state government for changed regulations, now all local governments in Victoria can implement such a mechanism. Another example is the “Solar Savers” scheme initiated by the City of Darebin within the Northern Alliance for Greenhouse Action (NAGA), where low-income pensioners can install and pay for rooftop solar through their council rates scheme. In building the case for “solar savers” as a viable business model for local governments to support low income households reduce their emissions and energy costs, the Eastern Alliance (EAGA) “amplified” this small win, attracted state funding, and helped roll out the program across four regional alliances involving 25 local governments. This type of leadership and capacity to amplify and up-scale successful local initiatives to regions across the state, arguably reflects a governance repertoire that can support transformation, such as allowing shifts (although slow) in Victorian’s energy production profile.

In many ways, the state-funded regional adaptation program is explicitly aimed at “amplifying small wins” by connecting efforts of organizations from across diverse areas such as the CMAs and alliances. This not only connects “small wins” across a policy sector such as NRM but allows for connections (and sharing of lessons) across interrelated issues such as adaptation in NRM and mental health. As such, the regional adaptation program can be considered a policy program that seeks to support, connect, and learn from diverse “small wins” at a regional, place-based scale, which can in turn, inform state-level policy and practices. There is, as yet unproven, potential for these processes to challenge stagnations regarding sustainability or equity efforts.

4.1.3. Unblocking Stagnations by Confronting Social and Cognitive Fixations with Counterintuitive Interventions

Finally, the three key regional actors in Victoria’s climate change adaptation governance landscape are exhibiting the potential or actual ability to “unblock” institutionalized interventions. One way in which the CMAs are working to engage in shifting institutionalized stagnations (unsustainable practices and outcomes) is somewhat counterintuitive, i.e., through their legislated stature. This legally institutionalized position appears to have embedded their basic function and continuity despite changes in governments, departmental restructures, and in policy and legislation. Because they are legislatively enabled to work with a multitude of partners across multiple boundaries, CMAs (and their stakeholders) have been able to share their climate change work, which is receiving greater attention from both private landholders and the state government, and thus supporting a profound shift from a resistance to climate change action seen in Victoria’s recent past.

In the case of the climate change alliances, their role in enabling local governments to work across municipal boundaries, develop capacities and skills in adaptation planning and embedding, for example, requires that they work to “unblock stagnations” through identifying organization or system blockages and working to address them. For example, obvious stagnations for local governments is simply a lack of resources committed to the work of climate change where, for example, many rural councils have one sustainability officer to manage all environmental challenges, including climate change. This is a significant blockage in progress for local governments. More broadly, however, alliances can operate more strategically to directly address blockages limiting local governments capacity to make adaptation decisions. For example, the Western Alliance for Greenhouse Action (WAGA) developed an online tool and tailored indicators for and with their member councils to help track progress on adaptation. This “How Well Are We Adapting” tool was developed through a state
government grant and in its second phase now involves 20 local governments. This tool addresses a key blockage in local adaptation planning which is a way to access, use, and interpret relevant data and indicators to help inform decision making.

4.2. Climate Change Adaptation in Sweden

Sweden is often considered a pioneer in environmental governance [39] combining nationally high ambitions with strong local government [25]. In the following sections, we first provide a short introduction to Sweden’s climate change adaptation governance context with a special focus on regional and local governance, before examining an in-depth case study of the Gothenburg region from a continuous transformative change perspective.

4.2.1. Examining Regional-Scale Governance Practices through a Continuous Change Lens

On the one hand, the research on Swedish climate change adaptation shows that progress in terms of both policy and implementation has been slow at the national, regional, and local level [40–42]. As there are numerous public actors working with climate change adaptation in Sweden, coordination and clarification of roles, mandates, and responsibilities have been particularly challenging. On the other hand, there has been continuous work with regards to policy proposals, strategies, and discussions concerning the distribution of responsibility. Therefore, Sweden is an interesting case to study when it comes to the dichotomous discussion of large-scale paradigm shifts versus continuous change and small wins, and therefore what has been done to enable climate change adaptation particularly on the regional level?

As in many countries, policies on the national level are closely linked to international policy making and cooperation, such as the Paris Agreement and also to the work of the Intergovernmental Panel on Climate Change (IPCC). The global agreements, the slow national pace of progress and experiences of climate-related events in various locations in Sweden, have triggered specific measures such as national inquiries but also local action plans [25,43]. An early attempt at coordinating climate change action was the establishment of the national authority network for climate change adaptation in 2005. Today, the network consists of 19 national authorities, as well as representatives from all the 21 county administrative boards (CABs), (e.g., Länsstyrelsen, the national government’s regional branch) and The Swedish Association of Local Authorities and Regions (SKL). The network oversees the progress in both climate change mitigation and adaptation. Every authority is responsible for climate change action within the specific sector they have general responsibility for. For example, the National Board of Housing, Building and Planning are responsible for climate change adaptation issues related to housing, the built environment, and urban development; the Swedish Environmental Protection Agency is responsible for biological diversity; and the Swedish Civil Contingencies Agency for natural disaster management and so on.

Another key step in the development of climate change adaptation was the mapping of adaptation challenges and an important contribution stemming from this mapping was the report from the state commission on risks and vulnerabilities presented in 2007 [44]. The commission concluded that concrete and immediate action was necessary and highlighted a number of climate-change induced risks, such as increased flooding, landslides, and risks related to water quality. It emphasized the need for allocating considerable resources to climate change adaptation in order to achieve long-term results in terms of reduced vulnerabilities. The commission perceived the CAB as central in coordinating and facilitating adaptation. Hence, the CAB became the lead public agency for coordinating climate change adaptation from 2009 onwards.

In 2012, the Swedish Meteorological and Hydrological Institute (SMHI) was assigned to serve as a knowledge centre for climate change adaptation. Since then, SMHI has been regarded as a central actor in the development of measures and for pushing climate change adaptation forward. The SMHI has, as part of its assignment to be a knowledge centre, issued special advisory material for Swedish municipalities while also working to ensure that local governments have sufficient knowledge to
implement climate change adaptation measures. The SMHI also gives advice to other authorities, as well as administering a central website for the national network called the Climate Portal [45].

The contemporary Swedish ambition for adaptation is expressed in the government’s 2017 proposal National Strategy for Climate Change Adaptation [46] that mainly focuses on strategies for coordination, on clarifying chains of responsibility, and on support for the implementation of climate change adaptation measures and priorities. The proposal reiterated the leading role of the CABs in coordinating regional and local adaptation measures and activities. The importance of local government is emphasized, particularly in relation to planning issues, and it is stated that climate change adaptation and risk reduction should be included in statutory comprehensive plans.

Because the national government is still developing its work with climate change adaptation, essentially, CABs are leading the process on the regional level and providing hands-on support to the municipalities. This mainly takes place through the development of regional climate change adaptation plans, seminars, networks, but also through visits to the municipalities. Other kinds of regional networks, specific to each region, also play a role in serving as arenas for knowledge exchange and learning.

In particular, the CABs are pushing for a continuous development by providing regional guidelines that enables all municipalities to work towards the same goals that are clearly connected to both national and global ambitions. The CABs connect key actors to each other by creating specific arenas and they are formally expected to make sure progress is made in each municipality. We will now turn to how the CABs and other regional actors interact with municipalities by taking an in-depth look at the Gothenburg region.

4.2.2. Amplifying Small Wins through Sensemaking, Coupling, and Integrating

Many of the populated areas in the Gothenburg Region (GR) are situated on the banks of large rivers or by the sea. Hence, the main climate change risks are coastal and riverine flooding and landslides. Changing vulnerabilities, due to these risks, cross territorial and administrative boundaries, rendering coordinated adaptation planning across constituencies crucial for effective and equitable adaptation. The sensemaking process in the region is linked to both national strategies and the regional climate change adaptation plan. The CAB of Västra Götaland (CAB-VG) has the overall responsibility for climate change adaptation guidelines. In 2017, the CAB-VG concluded that progress among local governments in the region is uneven. As a result, the CAB-VG has been actively working with member local governments to highlight the importance of having clear strategies in the form of a climate change adaptation plan or including adaptation priorities in other policy documents [47]. Producing these kinds of plans brings climate change adaptation on the local agenda, particularly as these plans are also connected to a wider government effort through the CABs. The plans, therefore, can be understood as a form of incremental change or small wins.

Sensemaking but also coupling takes place through the support system of the CAB-VG which consists of meetings and by CAB-VG officials visiting the municipalities. At such meetings, the CAB-VG facilitates learning processes. There is an expectation that the municipalities participate in these meetings as the CAB-VG maintains a formal coordinating role. Interviews with municipal representatives reveal that the support offered by the CAB-VG is perceived as positive, facilitating progress and giving municipal administrators leverage in their discussions about adaptation priorities with local politicians. In fact, a widely held view among the municipal administrators is that the CAB-VG could push even harder for the issues of climate change adaptation, as many of the municipalities in the region do not prioritize climate change adaptation [28]. Hence, the regional level is perceived as important with the potential to drive climate change adaptation forward in the region.

The municipalities in the region are members of the GR that coordinates several networks. The GR is an organization controlled by local politicians representing each municipality. Climate change adaptation does not yet have a dedicated network but there are preliminary plans to establish such a forum. Climate change adaptation is nonetheless discussed in other networks coordinated by the
GR. On the one hand, a problem raised in the interviews is that few of the municipal representatives have the time to participate in these networks as often as they would like, and therefore the exchange becomes sporadic. On the other hand, regional networks are seen as crucial for keeping up with new ways of working with adaptation and for discussing common regional climate change related risks [28]. Therefore, sensemaking and coupling takes place in various regional forums, as well as in cooperation with national authorities such as SMHI, Geological Survey of Sweden (SGU, the government authority in charge of investigations of the Swedish bedrock, soil, and groundwater), The National Board of Housing, Building and Planning, the Swedish Environmental Protection Agency, and so on. In addition to these national authorities, many municipalities utilize the services of consulting firms for comprehensive planning and various types of investigations and reports. Finally, yet importantly, Swedish municipalities also participate in a number of national and international environmental and climate-oriented networks for transfer of knowledge and experience [48–50].

There are a number of new adaptive measures in the region integrated with existing structures. This study has shown that this is taking place at a smaller scale but that these small wins can have an in-depth impact leading to stepwise continuous transformative change. The introduction of climate change adaptation plans is one example but only three out of the 13 municipalities in the region had established specific plans in 2019. All municipalities had recognized the request from the CAB-VG to establish such plans but few had made it a priority. The respondents from the municipalities who had initiated plans stated the issue had been given priority during the process of establishing the plans, but not necessarily after completion. Another regional level measure discussed is the establishment of specific climate adaptation strategists. The CABs do not fulfil this professional role but the respondent representing the CAB-VG view it as positive since it could facilitate mainstreaming of climate change adaptation issues. Four out of 13 municipalities in the region have established this position in the central administration of the municipality. These are innovative measures related to the organization of climate change adaptation representing stepwise change but there are also more concrete adaptive measures discussed within the regional networks that have spread or have the potential to spread further facilitating change. Such measures have mainly been connected to the responses and crisis management concerning flooding.

4.2.3. Unblocking Stagnations by Confronting Social and Cognitive Fixations with Counterintuitive Interventions

Swedish municipalities are required to work with climate change adaptation [25], and the CABs oversee that they are working with the best possible organization for climate change adaptation, as well as specific strategies and policies [46]. In a study from 2009, SKL concluded that few local governments had clear guidelines for climate change adaptation and not much had changed when the study was replicated in 2011 [51,52]. Research indicated slow progress and a tendency to work within existing structures and institutionalized approaches instead of re-evaluating these structures [41]. Few municipalities in the study have undertaken in-depth changes. As of 2019, many municipalities are still mapping the risks instead of implementing specific measures [41]. The Swedish case shows that there are social fixations when it comes to organization, structures, and responsibility. The knowledge about climate change adaptation is often concentrated to a few key actors and not evenly distributed within a municipal organization [53]. Specific sectors, mainly urban planning, are expected to take the lead when working on climate change adaptation. Revision of the legal framework has entailed, in the case of the Planning and Building Act, that climate change risks and adaptation shall be included in statutory comprehensive planning [54]. One measure that has the potential to unblock static organizations is creating new roles, such as the adaptation strategists discussed above.

The Swedish case also clearly indicates cognitive fixations. On the basis of the analysis of the answers from the respondents, most resources for climate change action are (still) directed towards mitigation. Adaptation is not seen as an urgent issue in most of the studied municipalities. Other studies show that local governments are increasing risks and vulnerabilities through political priorities in
urban redevelopment that is focused on growth and attractiveness where development of waterfronts is supported [25,54]. The Swedish case study also reveals that many municipalities are merely reacting to specific events, such as flooding. At the same time, other municipalities are more proactive working with policies, guidelines, and visions for the future. These municipalities are attempting to reframe climate change adaptation into a more urgent policy area concerning all sectors in ways that could enable transformational change. Climate change adaptation strategists working on a central level with all sectors could be considered a small win and components in more long-term change.

The municipal respondents see the government-induced CAB coordination as crucial at a point when they are struggling to bring climate change adaptation onto municipal agendas. These administrators are hesitant in becoming “lobbyists”, and therefore see the CAB as an important tool highlighting climate change adaptation and putting it on the agenda. They emphasis the need for binding guidelines and legal obligations. These are perceived as a prerequisite for establishing more long-term governance structures where all actors affected by climate change adaptation are enabled to participate. Hence, institutional factors are important in the Gothenburg region as they influence climate change adaptation policy, measures, and organization. As stated in the introduction, transformational change, therefore, takes time and smaller incremental change can be transformational in the long-term [26,55]. Accordingly, some of the observations in the Gothenburg region are indicative of a continuous transformational process. At the same time, however, it is difficult to judge where in that continuous process the region is situated and to what extent the long-term impacts of the process will be truly transformative. Clearly, the municipalities look to the regional and national levels for further support and guidance.

4.3. Climate Change Adaptation in Australia and Sweden: A Comparison

In Sweden, local government has a stronger position, a greater mandate, and more resources and responsibilities. In Australia, the mandate of local governments is weaker and drives the need for collaboration more clearly than in Sweden. Both these aspects are clearly illustrated by our cases. All three examples of regional climate change adaptation governance in Victoria involve different boundaries, actors, mandates, capacities, and approaches, however, all recognize the need for regional-scale interventions and collaborations for different reasons such as to enable effective NRM regional collaborations (CMAs), build local government capacities (the alliances and GHAs), and enable the mediating role of the state government to operate between local and state actors (regional adaptation planning teams). Each regional actor is constituted differently with varied power to act. There are potential democratic tensions between CMAs and local governments to consider; in that CMA Boards (consisting of a chair and five to eight other members) are appointed by an incumbent Minister, whereas local governments are democratically elected. It also raises questions as to whether a formalized constitution will provide CMAs a degree of “institutional anti-fragility” [56] or robustness [57]. For example, Benham et al. [58] argued that while a recent shift in national funding from broad scale to “short-term, single-issue focus” placed pressure on collaborations between regional NRM bodies and other groups, NRM planners and community stakeholders actively managed those limitations to optimize catchment outcomes for communities and the environment. There is also the ever-present risk of a loss of funding from national or state governments, and the regional coordinative role with any change of government. However, the networked, polycentric, non-boundary aligned nature of Victoria’s adaptation governance arrangements may actually provide some political ballast to regional adaptation actions that is harder to shed by an incoming government with different priorities. This might actually help build new institutionalized norms and cultures as small wins of various local actions are increasingly connected.

While climate change adaptation continues to struggle with finding its way onto local political agendas in the Gothenburg (and based on research, presumably elsewhere in Sweden), data from respondents and policy documents point to a number of potentially transformative achievements. Swedish local governments are required to work with climate change adaptation in both statutory...
comprehensive and detailed planning. At the time of conducting the research, however, climate change adaptation was not a prioritized issue in most of the studied local governments. The support and pressure from the regional level could guide local government action. One issue is that very few administrators and experts are dedicated to climate change adaptation within local governments, making the achievements made in adaptation less sustainable and sensitive to changing political agendas and administrative priorities.

The CAB-VG does not necessarily demand organizational change but the experiences of cross-sectoral work is spreading in the regional networks. Local government learning takes place at all stages of the climate change adaptation process and there is a keen interest in participating in regional and national networks focusing on climate change adaptation. The respondents see these networks as crucial in pushing the adaptation issue forward and possibly unblocking the cognitive fixations. According to the respondents, more regional cooperation is central in this regard. Many of the respondents argue that Swedish local governments have to start thinking about climate change adaptation in new ways. This entails focusing on whether the necessary institutional setup is in place or whether transformative changes are necessary.

The theoretical discussion on updating existing structures and staying in motion becomes applicable here. The input from CABs as well as other national, regional, and local authorities would be helpful in this process. It is clear that the local governments in the Swedish case study are still in a formative phase where the organization for climate change adaptation is going through a continuous transformation. This process is clearly taking small steps in terms of plans, staff, and scope but if these small steps are also small wins there is a greater chance for in-depth changes.

We have sought insights into climate change adaptation by comparing experiences at the local and regional scales in Sweden and Australia. We find that there are many similarities in understanding and interpreting the challenges of climate change impacts and in the resulting policy responses by governments. It is also clear that there are contrasting approaches to governance and in actions and designs of key public policy institutions. The Table 1 below we give a comparative overview of our two cases.

<table>
<thead>
<tr>
<th>Sensemaking</th>
<th>Australian Case</th>
<th>Swedish Case</th>
</tr>
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<tbody>
<tr>
<td>Member-based alliances focusing on establishing common projects, shared funding, and policies</td>
<td>Regional organizations and networks provide a mediating structure</td>
<td>Regional government authorities present new ways to work with climate change adaptation</td>
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<tr>
<th>Integrating</th>
<th>Australian Case</th>
<th>Swedish Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building capacities, resources, developing new tools and ways of working</td>
<td>Regional networks complement local authorities by establishing programs and strategies</td>
<td>Regional actors promote strategic changes in existing structures in the municipalities</td>
</tr>
</tbody>
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<tr>
<th>Unblocking social fixations</th>
<th>Australian Case</th>
<th>Swedish Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocating through new types of partnerships</td>
<td>Introducing new roles and structures</td>
<td>Regional government setting standards for local climate change adaptation</td>
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<tr>
<th>Continuous transformation</th>
<th>Australian Case</th>
<th>Swedish Case</th>
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<tbody>
<tr>
<td>Ad-hoc, sporadic and reactionary changes towards transformation</td>
<td>Slow but steady pace of change through stepwise policy improvements</td>
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</table>

### 5. Discussion

The empirical base for this study is geographically limited to two settings but the principal issues observed may have implications beyond our studied cases and for the research field as a whole. As described in the theory section of this paper, achieving sustainable and just climate futures require transformation of systems, processes, norms, and cultures underpinning current practices and
pathways. Such development can be enabled through processes of multilevel, multiscale learning and connecting multiple boundaries of knowledge, values, and organizational remits.

Current research in policy studies and public administration research highlight the complex multi-scalar characteristics of the adaptive system. One insight from this study is that the primacy of the local scale in climate change adaptation may not be universal. Our study shows that context-specific explorations of whether regional-scale governance can, in certain circumstances, provide better leverage for adaptation and transformation than the ongoing emphasis on local-level adaptation [5,9,18]. The questions of scale, in particular how the scale at which adaptation responses are developed and decided, impacts the potential for transformative adaptation. Our study shows that researchers and policy makers need to have greater concern for questions of scale, first in terms of challenging the dominant mantra that adaptation is a local level issue, and second, in terms of examining more closely the dynamics between scales and jurisdictions in the governance of adaptation [59]. Our study focuses, in particular, on the dynamic between local and regional scales and reveals the greater potential for coordinating, sensemaking, and continuous transformation through regional-scale processes and governance mechanisms.

Through this study of two cases of regional adaptation governance in Australia and Sweden, we have highlighted how different types of regional-scale governance can contribute to the identification of intersections, gaps, and connections among local, regional, and national scales. We show that regional actors and institutions can and are working to mediate the inherent dynamism of multi-scalar adaptation governance. The two case studies highlight how some critical institutional and coordinative challenges of adaptation have been addressed at the regional scale, in ways that can support transformative governance through continuous change and learning processes [22,26]. Hence, we reveal that regional-level governance can support and enable local level implementation through boundary work which is necessary for adaptation but inherently challenging for those operating at local scales.

The framework used in this analysis of both the Australian and Swedish cases certainly reveals the importance and mediating work of regional-scale governance. However, in constantly changing adaptive systems, this analysis does not necessarily lead to clear conclusions around the necessary or appropriate models of governance to manage the complexity of the adaptation. In both cases and perhaps in most contexts across the world, the question of roles and responsibilities for adaptation remains unclear and this remains a significant factor inhibiting transformative outcomes. The question of how to ensure an appropriate distribution of decision-making capacities, competencies, and resources at different scales could likely remain a persistent challenge, as well as how to ensure coordination across actors and scales. Our cases reveal that regional-scale governance can constitute formal and informal arrangements and that without regional collaborations local actors, in particular municipalities, will be limited in their capacities and power to act. It is this lack of resources and capacity among local actors that is driving the need for collaboration horizontally and vertically. Further exploration of how and where effective adaptation action takes place within these regional (horizontal), national, and international (vertical) networks is warranted to help progress transformative outcomes.

6. Conclusions

Collaboration among multiple local actors is needed for effective adaptation because the implications of climate change cut across administrative and territorial boundaries, which drives the need for coordination that does not lose relevance at the local scale. In this study, therefore, the central research question has been, “to what extent and how might adaptation governance at the regional scale enable or constrain the navigation and coordination of multilevel adaptation governance?” Our findings suggest that the regional scale may be a powerful site at which to enable such coordination. It also seems clear from our observations that a narrow focus on the local scale could be at best, counterproductive and, at worst, maladaptive. Accordingly, the local scale as the foundation for climate change action needs to be enabled, coordinated, and problematized through actors and institutions from other scales.
Our cases reinforce arguments that climate change policy making is a multifaceted and complex adaptive system that spans across sectors, policy domains, jurisdictional, and biophysical scales and levels of society. Our comparative study also highlights that these dynamic policy systems, emerging from ongoing interactions, may be an indication of initial steps toward long-term transformations. Continuing attention is, therefore, required to better understand how “small wins” at local scales are or can be connected, and how stagnations can be “unblocked” through different regional and multi-scalar governance arrangements to build momentum towards “systemic” transformative change.

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