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Understanding Perspectives on Climate Hazards, Water Management, and Adaptive Transformation in an Exurban Community

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Understanding perspectives on climate hazards, water management, and adaptive transformation in an exurban community

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ABSTRACT

Climate change and exurban development pose challenges for water resources. This paper examines the perceptions and adaptive responses to those stressors among stakeholders engaging in exurban water management. Drawing on 42 interviews with planners, water managers, and local experts, we analyze perspectives on water-related hazards in the Hood River watershed, Oregon, and identify contrasting approaches to adaptation. Interview subjects identified climate-related hazards as most significant, with relatively less – although not insignificant – concern about development. Interviewees understood the role of the Watershed Group in four different ways: resistance to change, sustaining the present system, adapting to improve resilience, or transformational adaptation. Despite tensions between these approaches, the Watershed Group empowers local actors, offering grounds for social development. This study indicates that exurban areas may be poised to experiment and develop methods of collaborative resource management that reconcile different interests toward transformational adaptations to the dual challenges of climate change and urbanization.

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Hydrosocial; collaborative water governance; climate change; urbanization; exurban political ecology; resilience

1. Introduction

Exurban areas have experienced substantial growth and development over the last decade, and concomitant developments in Exurban Political Ecology (EPE) have produced innovative ways of understanding socio-spatial change (Keil, 2017; McKinnon et al., 2019). As populations increase and disperse in manifold ways and to myriad places throughout the United States, EPE seeks to understand socio-ecological change in places at the urban-rural interface (Bastian et al., 2014; Linkous, 2017; Olson, 2016; Tilt & Cerveny, 2016). Studies of EPE have examined the dynamics of and responses to urbanization in rural areas, showing that conflict often accompanies exurban development. The impacts of exurban development on water resources in particular presents a frequent source of conflict (e.g., Cantor, 2021; Cantor & Ross, 2021). While there have been studies pertaining to rural-urban water struggles and peri-urban places (Hommes et al., 2019), we additionally utilize EPE to examine more specific, understudied phenomena involving resource governance and contestations specific to the exurban context (Cantor & Ross, 2021). This research uses EPE to draw attention to the specific and unique hazards facing water resources in exurban areas as a result of intersecting climate change and urbanization processes.

In this article, we examine varying perceptions of community members and stakeholders in water resource management in a rapidly-growing exurban community that faces not only challenges related to development, but also climate change. By examining stakeholder perspectives on the relationships between urbanization, climate hazards, and water resource management, we contribute to a stronger understanding of the unique and complex challenges facing exurban communities, which consist of dynamic and rapidly-changing places, involving the overlapping and diverging imaginaries of different stakeholders.

Here, we examine water infrastructure as including not only physical infrastructure, but also social and political infrastructure, including institutional structures, communications, and community organization across different, partly-overlapping social, economic, and political scales to develop different understandings of place and perspective (Smith 2013, Anand, 2017). In the words of Carl Smith, 'An urban reservoir or pumping station is a work of hydraulic engineering, but in its design and the way it is managed it also expresses the beliefs, values, and aspirations of the city that created it' (Smith 2013). It is in this spirit that we examine those different stakeholder perspectives held by water managers in Hood River on responses and adaptations to these intersecting changes and hazards, hoping to

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uncover the workings of collaborative groups that become social representations of that water infrastructure that acts as expressions of shared 'beliefs, values, and aspirations' – i.e., a kind of 'hydrosocial infrastructure' (Boelens et al., 2016; Jaramillo, 2020)

Rather than only seeking to understand individual stakeholder perspectives, then, we focus on the role of collaborative resource management groups in promoting transformational adaptations to changing conditions. Collaborative organizations can play a key role in navigating and adapting to socio-ecological hazards and changes. We focus on a local watershed group in the exurban community of Hood River, a glacier-fed river in Oregon, USA. Oregon's watershed groups are often developed with the goal of bridging between the public and scientific community while also affording local water managers and stakeholders the space to combine resources, set a collective agenda, and engage in mutual aid. Understanding the role of collaborative organizations such as Hood River's Watershed Group can help set into place the hydrosocial infrastructure needed to implement transformative solutions and adaptations to challenges such as climate change and urbanization, showing how institutions play a role in navigating hazards. We focus on understanding different perceptions of members of this organization and other stakeholders on issues pertaining to water governance, climate change, and development changes in the watershed. We ask:

(1) What are the challenges that the region's stakeholders (water managers, policy makers, conservationists, orchardists, federal agencies) perceive in terms of urbanization and climate change?
(2) What types of transformative potential exist in stakeholders' relationship to exurban development and climate change?
(3) What is the role of the Watershed Group in enabling adaptive transformation?

To answer these questions, we conducted stakeholder interviews to understand perceptions of risk and resilience by members of the Watershed Group. The interviews were designed to reveal stressors and tensions between perspectives of different stakeholders. We hypothesized that while many actors recognized the need for transformational adaptation in order to address regional risks and hazards, different stakeholders perceive risks and hazards differently and thus transformative potential would be different by different people even within the same organization. We argue that while collaborative watershed governance can provide a useful forum for negotiating power relations in dynamic socio-ecological systems, moving towards adaptive transformation is difficult without an explicit understanding of the sometimes-conflicting perceptions and goals of different stakeholders.

2. Theoretical framework

Our theoretical framework integrates EPE (P. Walker & Fortmann, 2003), hydrosocial territories (Boelens et al., 2016), and transformational adaptation theory (Ajibade & Adams, 2019). This synthesis of approaches provides a theoretical framework suited to understanding hydrosocial change and associated risks and hazards in exurban areas. Integration of these approaches offers an important way to comprehensively analyze the implications of water-related hazards and resilience in a growing exurban area.

Exurbs are typically defined as more-prosperous peri-urban places that lie beyond the suburbs but include more amenities of urban life than most rural areas. Thus, exurban places exist on the threshold between rural and urban, making them particularly interesting case studies for understanding political ecological change and contestation (Angelo & Wachsmuth, 2015; Johnson & Schultz, 2011; MacGregor-Fors, 2011; McCarthy, 2002). EPE often focuses on relations between long-time rural residents and 'amenity migrants' seeking calmer lives free from the hustle and bustle of urban metropolises, remote from the city but not entirely removed from the city's conveniences (Cadieux & Hurley, 2011; Finewood, 2012; Gosnell & Abrams, 2011; Lekies et al., 2015; P. Walker, 2011). Describing tensions between old and new-comers, rural and urban livelihoods, and extraction-based and post-extractive economies, EPE tends to study tenuous negotiations of multi-scalar networks involving complex relationships between social, cultural, economic, and political groupings on differently-conceived but often-overlapping territories and jurisdictions (Perreault, 2003) amid diverging but overlapping processes of urbanization and ruralization (Cantor, 2021).

Scholars of EPE often assess the implications of population changes on the physical environment, and vice versa. In-migrants can alter not only the landscape but the way that it 'should' be used, appreciated, and perceived (Walker and Fortman 2003, Hurley et al., 2017). The appearance of urbanization and development, change of planning regimes, and alteration of territorial thresholds can stoke conflicts and disputes between long-time residents and in-migrants, leading to a need to for solutions that make use of not only science-based planning but social interventions (Cadieux, 2008; Hurley et al., 2017). While some EPE

studies have offered solutions to conflicts based on spatial compromises (Cadieux, 2008), while other case studies indicate that richer understandings of micropolitical relationships inclusive of power dynamics within contested places can help 'shift the focus from the discourses used by exurbanites and locals by situating those discourses within flows of capital and materials,' thus contributing to reckoning with sustainability in the context of 'the ways that natural limits shape social responses, the role of complexity, and produce emergent responses in both human and natural systems adapting to changing conditions' (MicKinnon et al., 2019).

Such elements within EPE prove critical in assessing the relationship between growing exurban areas, existing rural areas, and water issues, vis-à-vis hydrosocial territories. 'Hydrosocial' perspectives take an integrated view of water and society, examining physical water systems in conjunction with social power, politics, and economics (Linton & Budds, 2014). Hydrosocial territories are described by Boelens et al. (2016) as both a material and imaginary phenomenon constantly negotiated across different scales by people through socioeconomic relations as well as legal and cultural institutions. As an object of analysis and as a process, hydrosocial territories include not only human society but also natural systems, particularly water, which plays a crucial role in human systems (Boelens et al., 2016, p. 2). This concept offers insights into how coupled human-water systems don't simply exist in but create territories comprising multi-scalar networks, thus creating the space for the negotiated ways of thinking, being, and relating that produce governance structures. Here, we differentiate water governance, as the 'rules of play' between regulative mechanisms, and water management, as 'their detailed elaboration and implementation' in accordance with Dukhovny (2009).

Cantor (2021) reconciles hydrosocial theory and EPE through an analysis of 'hydrosocial hinterlands' comprising flows through which urban and rural co-construct and change one another. Similarly, McKinnon et al. (2019) discuss sustainability in terms of the tacit tensions of exurban processes, noting that EPE often focuses more on amenity migrants than other stakeholders and community members. The present study moves beyond the 'amenity migrant' dynamic commonly studied in EPE literature to study collaborative water governance, and extends Cantor's examination of hydrosocial territories in exurban areas.

Rapid growth within exurban areas can result in dynamic and fast-changing socio-ecological systems that face risks and hazards. In the context of such complex, coupled human-water systems and the networks that they involve, resilience becomes an imperative concept for framing management and adaptation. Resilience involves the extent to which a system can 'bounce back' from perturbations without collapsing or changing (Alberti & Marzluff, 2004; M. Scott, 2013). When stressors, hazards, and shocks appear consistent, systems can adapt to increase resilience, and the extent to which a system can adapt is understood as its adaptive capacity (O'Brien, 2011). More adaptive systems can even transform in order to change potentially destructive forces into the impetus for greater performance, i.e., transformational adaptation (Ajibade & Adams, 2019).

Collaborative organizations can serve as a key form of social infrastructure, playing a key role in connecting stakeholders within complex social systems to articulate needs and hazards on the group level in order to adapt and build resilience. Standard governance regimes created to adapt to climate change often simply reinforce existing and inequitable top-down power relations (Mills-Novoa et al., 2017). In studying gender norms in watershed governance, Eaton et al. (2022) show that social relations can contribute to inequities in watershed governance. In the case of exurban natural resource governance, some stakeholders seeking to reconcile different community needs and priorities draw from *in situ* social networks rather than top-down, technocratic administration (Abbruzzese & Wekerle, 2011; Hartman & De Roo, 2013; Martin et al., 2019; Tilt & Cerveny, 2016). Such efforts look to the integration of adaptive management and integrated water resources management to ameliorate conflict through the implementation of 'participation, democracy, deliberation, diversity, and adaptability,' using incentive-based resource management mechanisms like ecosystem services (Engle et al., 2011; Jewitt, 2002). Through meeting such challenges of human-water systems, exurban areas can act as socio-ecological petri dishes for 'another' form of multi-stakeholder governance (McKinnon & Hiner, 2016). To minimize the risk of stalemate (Boucquey, 2017; Hurley & Walker, 2004; P.A. Walker, 2003), both environmentally and politically, exurban water governance focuses on adaptation to existing hazards and resilience to potential hazards amid large-scale transformation (Alberti & Marzluff, 2004; Craig & Ruhl, 2019; Morehouse et al., 2008).

In mountain societies, climate-induced water issues like glacial retreat can cause significant strains on multiple sectors of both upstream and downstream economies from agriculture to tourism (Carey et al., 2017). Yet standard hydrosocial programs created to adapt to climate change simply reinforce existing and inequitable top-down power relations (Mills-Novoa et al., 2017). Goals of alternative, collaborative management and

planning often attempt to balance participants' social and economic class with lifestyle benefits (Bastian et al., 2014; Locke & Rissman, 2015). Different actors representing alternative narratives, interests, and needs instantiate 'mutually constitutive' scales both endogenously and exogenously as competition and collaboration are negotiated with regards to both internal and external boundaries (Hoogesteger et al., 2016). Thus, stakeholder's identities and sense of place, bound to both the water resources and to one another (Hurley & Arı, 2018), constitute multi-scalar networks in hydrosocial territories as complex adaptive systems defined by the coevolution of humans and water resources (Boelens et al., 2016; Cook et al., 2012; P.A. Walker & Hurley, 2004). Along with scale, stressors, actors, networks, and their phenomenological associations (e.g., 'waterscapes') must all be considered holistically to appreciate resilience in terms of adaptive capacity and the potential for transformation (Zanotti et al., 2020).

Here, we take resilience and transformational adaptation to correspond to the ideas of 'bouncing-back' and 'bouncing forward.' While resilience might involve adaptations to climate hazards that ensure the sustainability of system-normal equilibrium following perturbations, 'bouncing forward' involves transforming the system's equilibrium in order to improve the system and, potentially, turn risk into potential gains (Kates et al., 2012; Rickards & Howden, 2012). One case study from Argentina, for instance, shows how increased glacial melt led to the juridical production of a new scale, integrating local communities with new institutions and laws in order to improve social conditions and manage the water supply (Warner et al., 2019).

While the literature on sustainability, resilience, and transformational adaptation appears robust with regards to rural, urban, and peri-urban studies, particularly in agricultural systems (Vermeulen et al., 2018), fewer studies focus on its implementation using an EPE framework, which contributes a stronger understanding of power dynamics. Previous studies have examined the role of watershed councils and groups in rural areas (for instance, as Community-Based Water Resource Management; Habron, 2003; Lurie & Hibbard, 2008), but have not examined their role in relation to resilience or transformational adaptation. Exurban development remains a relevant subject to pursue, given global growth patterns and trends, expanding need for adaptation to water distribution for residential areas from traditional rural areas, and many exurban areas lie within waterscapes facing intersecting hazards including sanitation, flood, and drought. As such, it becomes imperative to analyze forms of collaborative water governance and stakeholder engagement in the context of transformational adaptation.

Importantly, the present paper recognizes that post-positivist approaches of 'Adaptive Management' and 'Integrated Water Resources Management' cannot always be smoothly integrated with power-critical frameworks like 'political ecology' (Beymer-Farris et al., 2012). While they often have deeply diverging political-philosophical approaches, epistemological mainstays, and conceptual-analytical tools, they also share fundamental conceptions of the coevolution of human-water systems, critical approaches to systemic inequities, and deeper commitments to resolving the crises posed by climate change (Ross & Chang, 2020). Hence, while acknowledging important divergences, the present study also seeks to recognize that discontinuities and incongruities do not always cause incompatibility. Here, the framework of EPE contributes to the assessment of the multiple and sometimes-competing goals of stakeholders regarding resilience and adaptive transformation in an exurban hydrosocial territory.

3. Case study: Hood River, Oregon

Hood River is an example of an exurban community, lying just 100 kilometers east of Portland, Oregon. Hood River County comprises a rural valley and peri-urban city in the shadow of Mount Hood to the south where the Hood River begins. Because of anthropogenically-caused climate change and exurban growth, the Hood River Valley faces water management challenges linked to development and climate change. These challenges include increased temperatures contributing to glacial retreat, as well as a later snow season, with a corresponding shift in timing of peak snowmelt toward earlier in the year, leading to lower streamflows during the growing season, more difficult conditions for farmworkers, a decline in water quality, and corresponding problems for wildlife, including endangered species and benthic microinvertabrate species that tend to live in glacial water flows (Bureau of Reclamation, 2015; Ross & Chang, 2021). The County is drained by the Hood River, which flows north from Mt. Hood about 40 km^2 to meet the Columbia River at the City of Hood River, containing a population of about 8,000 residents. The County's 23,000 population is predominantly white, although the percentage of Hispanic or Latino people has increased over the past two decades (from 25% in 2000 to an estimated 32.1% in 2019). The population of Hood River County is projected to increase to nearly 35,000 people by 2050, a 50% rise from 2019 (Ruan et al., 2016).

The population of the basin increased steadily with agricultural productivity throughout the mid- and late-20th Century, as expanding orchards brought in more migrant labor, leading to a burgeoning Latino community and in-migrants drawn by water-based recreation like kayaking, boating, and wind surfing on the Columbia River. Compared to the conservative climate of the 1940s and 1950s, in-migrants brought a liberalizing tendency with them, and the tech industry rapidly grew into a profitable multinational enterprise. The region has also been shaped by the subsequent growth of small businesses, as well as investment from military industries.

The recreation and tech boom has added to concern over the loss of farmland and tradition to urbanization practices, according to a number of conservationists and irrigators who live in the valley (Figure 1). Meanwhile, the retreating glaciers that feed Middle Fork of the Hood River drove farmers and conservationists to collaborate on new efforts to improve ecological and economic sustainability (Bureau of Reclamation, 2015; Salminen et al., 2016). Thus, Hood River lies at the intersection of two hydrosocial problems: first, retreating glaciers and shifting hydrological regimes caused by anthropogenic climate change, and second, urbanization processes that threaten wetlands and alter the urban-rural relationship in the valley.

The Hood River Watershed Group (the 'Watershed Group') emerged in the 1990s out of efforts of the local Soil and Water Conservation District and associated farmers, conservationists, and regulatory agencies to resolve the most pressing hydrosocial problems in the area. As the state government established the Oregon Watershed Enhancement Board (OWEB) to fund local

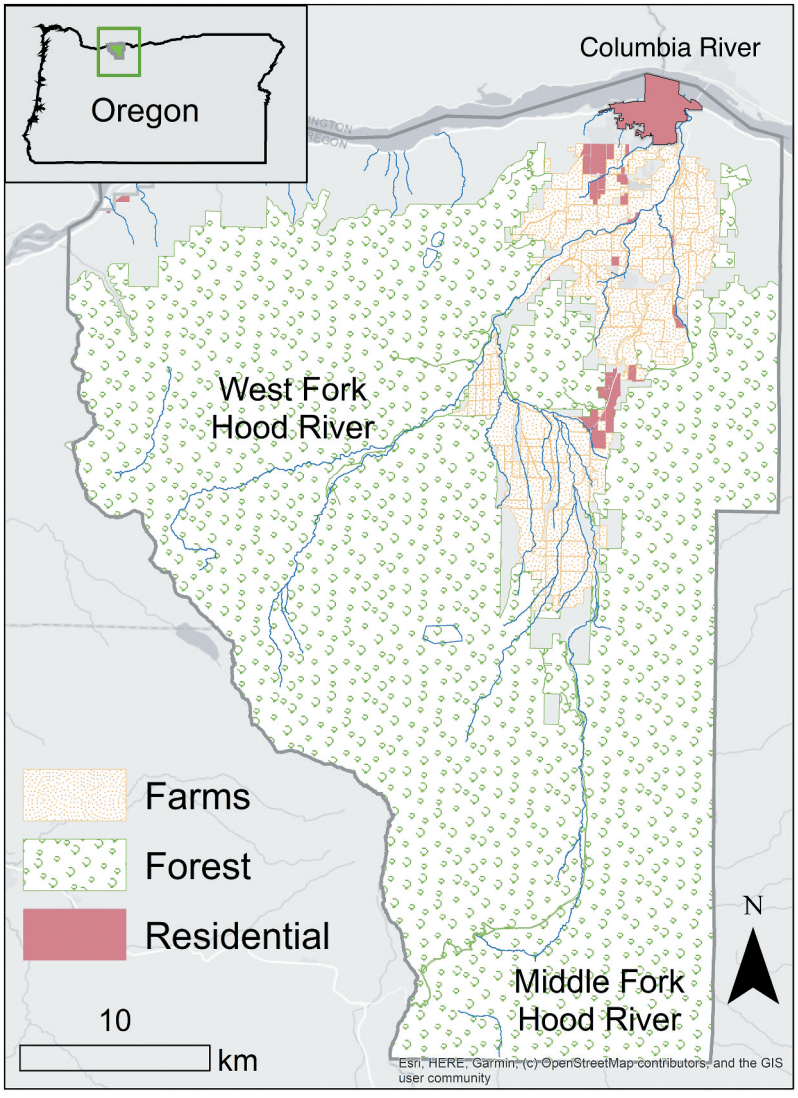

Figure 1. Hood River county, showing city limits and designated farm and residential zones.

joint agricultural and conservation efforts, watershed councils formed around the state based on collaborative resource management strategies. The Watershed Group drew together stakeholders from agriculture to conservation and habitat restoration interests, developing a political strategy distinct from the Conservation District, and obtaining funds for local projects through OWEB and other governmental and private sources.

The largest share of stakeholders who attend Watershed Group meetings are local irrigators, as local farmers sometimes attend along with the water managers from each of the four irrigation districts. A representative from the Tribes attends virtually every meeting, often to discuss in-stream habitat restoration projects, as do agents from local, state, and federal regulatory agencies to discuss relevant projects, city officials, business owners, and members of local environmental groups. Active and regular participants in meetings usually ranged from 20–30 people, with a broader community of participants of about 50–100. Different groups of stakeholders often included different foci based on their locations and the challenges within them (eg, urbanization, water storage, covering ditches). However, the groups interfaced on supportive terms, recognizing the relevance of one another's conscientious efforts. Functioning through double-consensus, the Watershed Group welcomes as a member anyone who attends more than one meeting, and is steered by an elected board with a full-time, paid Coordinator. The Watershed Group can, then, be seen as an effort to rescale governance from federal agencies to local stakeholders without disaggregating the scales entirely.

4. Methodology

4.1. Study design and data collection

Semi-structured interviews were conducted to understand perceptions of risk and resilience by members of the Watershed Group. We located interview subjects using a snowball sample in order to obtain different voices from diverse stakeholders, making sure to give adequate opportunities to all involved to express themselves independently, honestly, and directly (Noy, 2008). Sampling began during participant observation, which included attending and participating in meetings, visiting subjects on site, and going to functions (Bernard, 2006). The interviews and participant observations were designed to reveal stressors and tensions between perspectives of different stakeholders.

Interview subjects included policy makers, planners, infrastructure developers, and asset owners, as well as actors in the timber and recreational industries, the Confederated Tribes of Warm Springs, farmworkers, and environmental groups. These subjects came from both beneficiary and suffering communities, particularly as the interests of conservation are seen to oppose expansion of residential developments. We established the inclusivity of the sample in order to ensure a robust set of perspectives from which better, more comprehensive conclusions could emerge.

Interview questions covered Hood River's relationship with nearby Portland, Oregon, as well as stakeholders' perceptions of contemporary changes, hazards, and threats. The questions elucidated different opinions on hazards pertaining to climate and development across scales, the effectiveness of collaboration, different styles of integrated management, and perceptions of community-forming practices associated with water management. We sought to understand different stakeholders' characterization of the Watershed Group and its mission of social outreach and resilience to climate change. [Appendix A].

From September 2019 to February 2020, the lead author conducted 42 separate interviews ranging from half an hour to two hours with 32 individuals involved in collaborative water governance in the Hood River Valley (some interview subjects were interviewed twice). Interviews ranged from half an hour to two hours and were conducted on-site in farms and in private residences, places of business, at the local library, and at local coffee shops. We categorized the 32 subjects into six stakeholder groups – water managers, conservationists, tribal representatives, industrial actors (e.g., agriculture and timber companies), city officials, and local business interests (Figure 2) – by ascertaining their closest association to water issues. In the few cases where participants held multiple identities, they were either allowed to choose or their predominating position was selected. Participant observation included attendance at monthly meetings and events from April 2019 to April 2020, during the planning of the Hood River Watershed Group's new Action Plan.

4.2. Data processing and analysis

We used Trint, a transcription software that utilizes artificial intelligence, to transcribe all interviews and deployed an inductive analysis to draw out leading themes and codes (Fletcher & Shaw, 2011; Palys & Atchison, 2012). The software Atlas.ti was used for data processing, focused coding, memo-writing, and visualization (Basit, 2003). This inductive approach means that the process of ascertaining the most important codes and their meanings relies on the raw data,

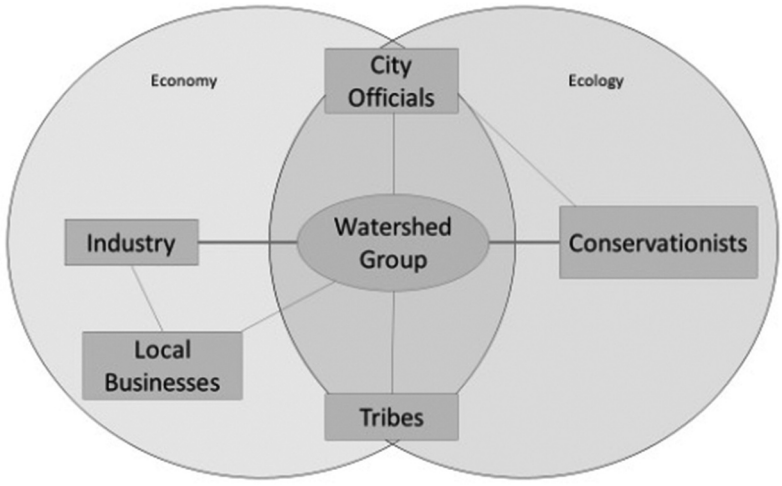

Figure 2. Diagram showing the connectivity of different stakeholders through the Hood River Watershed group based on 32 interview subjects. Lines with more weight indicate larger member cross-over between sectors.

rather than a preconfigured analytical framework, to understand ways identities are constituted and differentiated from one another (Thomas, 2006).

Through utilizing the inductive framework, it became particularly important to code for the importance of ideas such as resilience and collaboration among the interview subjects, as well as development and climate change. We created three code groups, including indicators for exurban development, hazards, and the Watershed Group. The hazard perception group included key issues such as natural disasters, climate change, and concerns about glaciers, while the exurban development group included such frequently-discussed topics as amenities, planning, housing, and infrastructure. Lastly, the Watershed Group code group incorporated issues directly pertaining to the organization, inclusive of some of the codes belonging to the prior two categories, as well as separate codes pertaining to Watershed Group business and dynamics. The different understandings of situational shifts among the Hood River population were also approached in relation to the value placed on collaboration by different groups and stakeholders.

Given the diversity of stakeholders involved in the watershed group, we expected to find a range of priorities and interests within the group's membership. In conceptualizing the urban/exurban relationship, we asked questions about Hood River's economic, social, and political relationship to nearby metropolitan center, Portland, Oregon, as well as the subject's relationship to the local community of Hood River. Interview subjects were virtually unanimous in viewing Portland in a friendly way, as a place to go over the weekend, to visit friends and attend public events. The more interviews we conducted, the more we understood the importance of the final question: 'What are some potential political, economic, and/or environmental hazards that might concern you?'

Responses were varied and tended to be multifaceted. Therefore, to assess the answers to the question about potential hazards, we used a weighted ranking system in which a subject's first hazard priority was considered 1 point and the second priority was considered 0.5 points. This scoring system enabled us to assess and categorize different people's interests into clusters, while also gaining a greater understanding of the prioritization of different needs based on the perceptions of different stakeholders.

5. Results: membership of the Watershed Group and their perceptions of hazards

The Hood River Watershed Group consists of members from various stakeholder groups who converge for monthly meetings to discuss current challenges and opportunities for collaboration. Its capacity to connect scientists, regulatory agencies, irrigation districts, and lay participants makes the Watershed Group a 'boundary organization' that can both actively produce a watershed scale by integrating different scalar actors and open the space for outside actors to 'jump scales' by working with other groups without being subsumed under its auspices (Guston, 2001). Using the Hood River watershed as its area of operation, the Watershed Group maintains consistent funding from the Oregon Watershed Enhancement Board, as one of a number of watershed-scale resource management organizations in the State of Oregon, and much of its activity involves writing grants from federal, state, county, and private sector groups for further funding

for stakeholder projects. Hence, the Watershed Group remains autonomous from but not financially independent of the State government.

At meetings, the Watershed Group discusses potential adaptations to climate change, actionable grant opportunities for management plans, and hears updates about ongoing projects like reservoir expansion, piping infrastructure, and endangered species habitat restoration. Meetings typically begin with a presentation from a member of the group, a consultant, scientific organization, or government agency on a matter relevant to the attendees. The presentations are followed by decision-making, during which the Coordinator runs through grant proposals, disbursals, and projects, and the members, sitting in a circle around the room, make decisions based on a double-consensus system. Through this double-consensus, a proposal is developed ahead of time by an interested party and put on the agenda. The group members present at the meeting vote, and the proposal must obtain the full consent of the group. The proposal is then passed on to the next monthly meeting, at which the attendants must fully accept it a second time. While the Coordinator tends to speak the most, everyone is offered a chance to speak or oppose any decision, and participants in ongoing projects are invited to give updates on their projects in an informal and supportive environment.

One interview subject reflected fondly on the monthly meetings as both a social and economic boon, referring to them as an 'open forum':

> "It's not just stuffy staff meetings, so to speak. You've got people coming in that are concerned citizens bringing their ideas, bringing their knowledge and then also participating . . . They're getting out, educating people and then also getting projects on the ground, leveraging a lot of the money that's in the basin to apply for additional grant money." (Interview 3, 28:01)

While the group is open to all, we observed that those who attend regularly know one another well; they are the irrigation district managers, regulatory agency supervisors, environmentalists, and farmers from the valley who represent the interests of their respective stakeholders (see, Figure 2). The establishment of community around the coupled human-water system is, in turn, viewed as one of the major accomplishments of the group:

> "I think one of its biggest accomplishments and ongoing work is really getting ahold of these folks saying we're not talking to each other, and getting to know each other as people and building trust between those organizations where there obviously—certainly if we go through climate change, there's going to be more disagreements between some of these entities." (Interview 9a, 17:22).

The Watershed Group can be conceptualized as a central hub in the multi-scalar network, but not the only node in the broader network of actors governing and producing exurban hydrosocial territory. The specificity of the watershed group is useful to maintain consensus around focused issues, rather than endeavor into more conflictive issues around urban development that might create disagreement. Thus, the double-consensus process serves to promote a congenial space of decision-making, but it also ensures that controversial subjects tend to be left off the agenda.

We found that hazards related to climate change presented the most significant concern among interview subjects (Figure 3). However, development was also an important, if secondary, problem. Studying the stakeholders' understanding of development and climate change together, then, elucidates how urbanization and ruralization create contentious issues involving intersecting and sometimes conflictive interests, which require integrated approaches to water governance to expand adaptive capacity.

5.1. Primary hazard concern: climate change

Interview subjects were nearly four times more concerned about climate-related hazards (including snowpack and glacier loss, wildfires, and degradation of water quality and quantity) than non-climate related hazards (e.g., housing or out-migration) (Figure 3). In light of these different interests, which sometimes overlap, different sites of struggle emerged in the county and city, as various non-profits either oppose or support development, while the Watershed Group retreats from contentious development-related topics to primarily focus on less controversial measures pertaining to biodiversity, habitat, and irrigation or riverine infrastructure.

Some interview subjects noted that climate change will produce unpredictable outcomes, but they agree that climate change will likely cause earlier peaks in the annual hydrograph, leading to longer and drier summers and placing more of a burden on farmers during the later part of growing season. The loss of glaciers and snowpack would mean the loss of water storage for the summer, thus the Irrigation Districts join together in the Watershed Group to apply for grants to fund projects that will build more infrastructure such as reservoirs, and enhance existing infrastructure (Bureau of Reclamation, 2015).

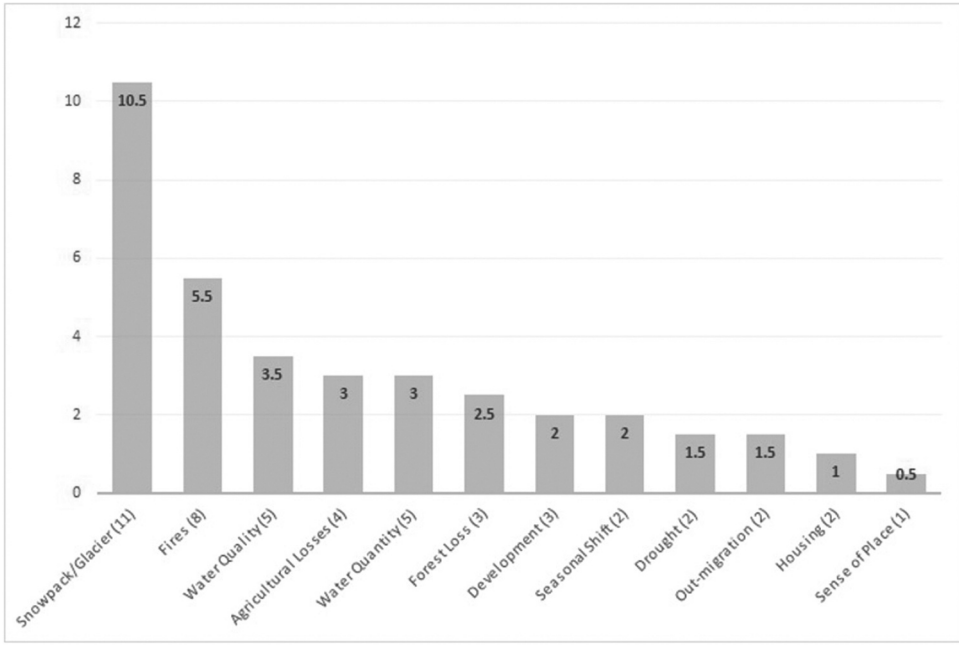

Figure 3. Hazard priorities index according to interview subjects (Total number of respondents in parentheses).

Melting glaciers and snowpack concerned the highest number of interview subjects (37%), all of whom assessed that most residents of the valley recognize the priority of conserving water. Small businesses like local shops and tourism agencies were most represented in concerns over forest fires, likely because they stand to lose the most in the event of a decline of tourism and recreation activities. Industry actors were the top group concerned with forest loss, as the timber companies have a vested interest in maintaining healthy stocks of forests for future harvests. Tribal stakeholders voiced the most concern over water quality, along with city officials, due to their interest in salmon habitat.

5.2. Secondary hazard concern: development

Development concerns clearly ranked far behind climate concerns in the hazard priorities index (Figure 3), yet these concerns still came up frequently in interviews. In addition to issues related to water availability and quality as they pertain to climate hazards in the Hood River basin, development presents clear tensions involving economic, political, social, and territorial aspects of water governance that play out between different actors (Table 1). Regarding dynamics within the City of Hood River, one interview subject spoke about a 'divide, if you will, between the rich and the poor': 'There's those people in this community with a lot of money they can afford to buy second homes and they do it. And the rents go up. And then there's all those folks who work in the service economy. Having to work two, sometimes three jobs and they can't afford a place to live' (Interview 19, 11:46). Here, perceived housing scarcity fosters tension between stakeholders by constituting an economic axis that distinguishes rich from poor and forces new construction beyond the city limits.

This contrast between rich and poor contributes to a spatial dimension determined by competing values between ruralizing and urbanizing residents. One resident explained, 'It's a very rural [versus] urban thing' (Interview 6, 6:29). While conservationists may work to protect riparian integrity in the valley and compensate for a lack of tax-born funding, some have also worked to block a local low-income housing development on the site of a local park, bringing the ire of younger interview subjects who cannot afford to live in Hood River. According to one interview subject,

> "The Morrison Park stuff is definitely a very interesting kind of partnership between the folks that are against government subsidy, affordable housing—that conservative/liberal thing—and very green liberals [who think] 'Every tree is sacred and cutting down a tree to develop housing is bad'" (Interview 9, 32:38).

Although conservationists seek to limit it, the lack of low-income housing may contribute to trends of development outside of the city on irrigation district land, impacting wetlands.

Table 1. Topics of contention over urbanization process (low-income housing) in Hood River.

Aspect	Actors in tension	Position 1	Position 2
Economic	Rich and Poor	Wealthy keep property values high	Poor seek place to live in Hood River
Cultural	Rural and Urban	Profitable farming becomes more difficult; strong traditional opposition to taxes	New taxes will bring new services and could free up budget for affordable housing
Ecological	Green liberals and Housing Advocates	New housing will destroy valuable parks and green spaces	Housing in the city might mean less commuting and traffic in city
Social	Residential water users and Irrigators	Expansion outside of the Urban Growth Boundary is necessary	Water provisions for residential areas could promote more development on farmland
Territorial	Farmland defenders and Developers	Farmland produces food for people, and development removes farmland	People want to live near farms that they view as panoramic and peaceful.

People displaced from the city might find cheaper land further up the valley, leading to the conversion of farmland and, in some cases, development on ecologically sensitive areas. A Watershed Group member explained, 'You know, people are going … this little swale or this wetland, they [developers] may or may not even know it. Probably don't even realize that it's what they're doing is, you know, filling a wetland' (Interview 7, 25:24). One interview subject noted the combination of a land squeeze and new developments:

> "[A]ny little orchard that's kind of still in town or right next to town is definitely under threat … In fact, there's a there's a new development going it potentially going in right down my street. And if it goes in as planned, it would totally change the nature of our little neighborhood into a 25 unit, a high-end housing place." (Interview 6, 14:31).

Some in-migrants hope to buy farmland to build properties and develop hobby farms or smaller gardens but find it difficult to locate an unprotected area.

At the same time, pressure is building to keep farmland and avoid unwanted transformation. As one longtime farmer put it, 'They don't make land anymore' (Interview 4, 14:29). One person who has lived in the area for decades mentioned, 'Ag is still a big thing, but in terms of the town, the tourism, the recreation and the tourism that are associated with it have really overtaken it. And then in addition to that, as people move here, the prices have skyrocketed' (Interview 8, 22:11). Hence, localist conceptions of agriculture as an older power base view tourism as compromising the traditional economy, leading to new development demands at the expense of traditional farmlands.

Meanwhile, water managers in one irrigation district noted that development outside of the Urban Growth Boundary has brought an influx of urbanites who do not know the basics of agricultural water rights and water infrastructure systems. Though the irrigation district has scanty resources to service residential subdivisions, they must now contend with the possibility of water-stressed farmers selling parcels of their land and water rights. On the other hand, residential users tend to use less water, offering some respite to districts facing constraints due to the intensification of drought cycles.

On the other hand, the economic aspect of agricultural precarity tied to a lack of low-income housing within the Urban Growth Boundary also involves farmworkers, who are being pushed further up the valley to find cheaper houses. One Latino activist and former farmworker stated, 'I know it's not just the Latino community, but in general … because of the cost of housing, it's increasing and low-income people as well as the Latino … We can't afford to live in town. So a lot of these communities have been displaced from downtown' (Interview 12, 11:24). A feedback loop can emerge where rejection of taxes in rural areas and housing by conservationists backfires by pushing out farmworkers and poorer people, causing development in cheaper parts of the valley where wetlands may be sacrificed.

Most interviewees described the City of Hood River as an evolving place, as perceptions of farms blend into the panoramic scenery of tourism. The farmland may be appreciated, but as a novel driver of tourism rather than a world-class commercial producer of pears. Hence, the farms themselves engage with the networks comprising productivist and post-productivist economies. Yet, residents are keenly aware that knock-on effects of climate change's impacts on the intrinsic connection between the sense of place that drives exurban growth and Mt. Hood's dramatic glaciers and snowpack could involve cascading problems due to water shortages, a steep decline in the economic benefits of in-migration and tourism, and a movement out of the exurb (Hausman et al., 2016; Magee et al., 2016).

6. Discussion: understanding conflicting perspectives on resilience and transformation

The looming problem of climate change and the issues of urban development and conservation of farmland converge with the need for water infrastructure

adaptations, feeding into stakeholders' perceptions of resilience to hazards. However, larger, motivating ideas for the future remain divergent. Stakeholders generally believe that their efforts to build water storage and infrastructure will stave off the worst hazards of climate change and maintain the present course of agricultural production. However, the implications of climate change seem more difficult to solve when coupled with exurban development. The question of community resilience, then, becomes one of creating a water governance framework to encourage a form of development that would involve successful adaptation to the hazards of climate change by resolving stakeholder concerns with incentivized tradeoffs (Grove, 2018).

More specifically, we identified four different understandings of transformational potential relative to the clustering of stakeholders' opinions on exurban development and agricultural issues the basin (Figure 4). We organized these understandings along two axes: first, whether stakeholders were generally optimistic or pessimistic about the region's future; and second, whether stakeholders generally thought the region would or should prevent or welcome future urbanization and development. These axes indicate stakeholders' eagerness to address equity within their ecological restoration and conservation projects, as well as their faith in mobilizing effective projects together toward a combined program that can contend with the impacts of climate change in a way that enables not only sustainability but growth and improvement. We label these understandings as Resistance (Resisters), Sustainability (System Sustainers), Resilience (Bounce-Backers), and Transformational Adaptivity (Bounce-Forwarders). In the following sections we explain these different understandings in greater detail.

6.1. Resisters and unwanted transformation

Resisters tend to regards ecological catastrophe as immanent and view liberal efforts to conserve parks over low-cost housing as senseless in light of the massive potential impacts of climate change. However, they are not entirely defeatist in that they view the climate-caused catastrophe as an opportunity that might nourish deeper community bonds. This understanding most closely approximates 'resistance' to the hazard because it does not affirm a way of maintaining the system or adapting to prevent crisis (Chang et al., 2021; Hurley et al., 2017).

Unwanted transformation indicates that resilience might be impossible, and that a system change may happen regardless of socio-cultural change in the area. Lingering doubt remains over the capacity to scale back ongoing changes generally perceived as negative. One resident active in a collaborative group compared the situation to the eruption of Mt. St. Helens in 1980: 'You saw what happened after St Helens. There was an incredible amount of resilience in those systems in the face of climate change . . . Maybe, you know, we might be a total regime shift, right?' (Interview 24, 6:54).

One interview subject opined, however, that such an economic plight could help bring people together in the basin toward a sense of shared purpose. A positive transformation might occur due to 'some sort of

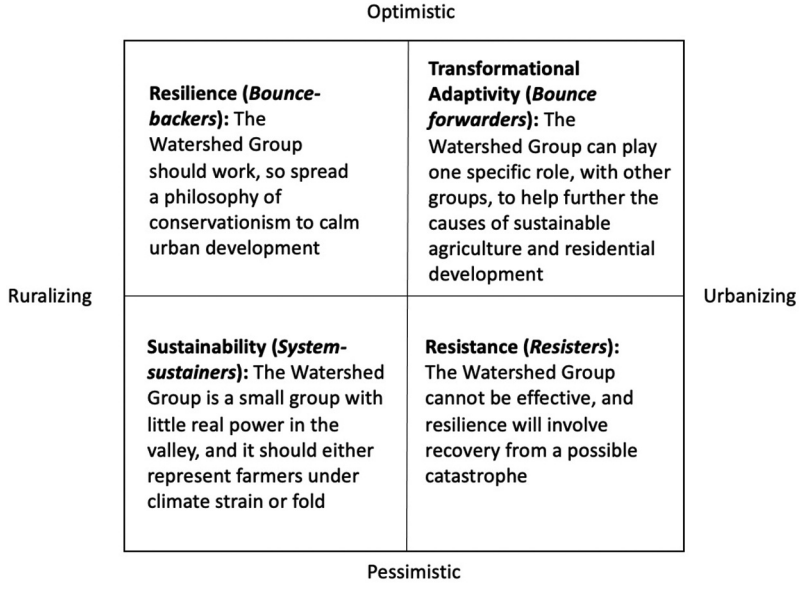

Figure 4. Different positions regarding climate change and residential development in Hood River, OR.

reactionary thing where, you know, we have three years of bad drought in a row and nobody has any water and farms are going belly up and people aren't coming to the area to recreate because there's no snow and things of that nature' (Interview 3, 26:21). This interviewee's position theorized that unwanted transformation could pave the way for an ensuing socio-political transformation.

6.2. System sustainers

System Sustainers believe that the Watershed Group and associated stakeholders should not endeavor to meddle in issues of development, and should remain concentrated on issues directly related to the watershed. This group does not view exurban development as positive, and does not support reaching out to attempt to make development more ecological. Instead, it seeks to stop development *and* short-term property rentals, while focusing matters of resilience on irrigation and biodiversity restoration. As one long-time resident explained,

> "I mean, the housing thing is a huge component . . . But traditionally, farmers became farmers because they really didn't want to deal with all these issues. They . . . wanted to go out in the field and run their tractor or get on their horse and chase their cows. And that's traditionally how farmers have been. They've been very independent in a lot of cases, not particularly social" (Interview 15, 30:10).

Here, valley residents attempt to maintain an individualist, traditional way of life, with political and economic power remaining in the agricultural areas. System Sustainers tend to appeal to the capacity to hold and maintain power within their limited organizational capacity, believing efforts to disperse their endeavors and interests could lead to a 'thinning out' of their capacity to act (Manyena et al., 2011). System Sustainers and Resisters tend to agree on the need to act locally, but Resisters have a more pessimistic view on the sustainability of the system (i.e., they seek to organize for a new system after the collapse of the present one).

6.3. Bounce-backers: resilience

'Bounce-Backers' hope for system-wide resilience. This group of people from different stakeholder groups wish that exurban development could be 'done right,' following ecological ways of growing the area for future generations without changing the lifeways and character of the area. While viewing the current conditions of housing prices, traffic, and a shift of priority from the valley to the recreation industry in the city negatively, they propose the Watershed Group can work with locals to spread a philosophy of conservation of natural resources based on a simpler time in the past.

The usage of Hood River by recreationists for hiking, kayaking, and other activities is viewed with some concern over the philosophical problem of exploitation and commodification, which loses or even destroys the intrinsic value of the place by bounce-backers. For these resilience-minded individuals, broader political change might occur within the valley to bring civil discourse away from economic and proprietary gain and toward a more rustic vision of the way things were and how to protect them. This desire for a return to past, simpler ways of life, and an appreciation for nature in-and-for itself, can adapt to a number of political positions in the area. For instance, the rejection of building new low-income housing in parks or beyond the city limits might fall under the rubric of environmental conservation and reduction of issues associated with urbanization (Cantor 2021).

In this sense, bouncing back does not challenge socio-economic norms or political power structures. However, it also tends to resist the scalar shifts of power in the basin from rural to urban. Instead, bouncing back seeks to expand the existing norms of conservation to developing areas as a method of ruralization to counterbalance urbanizing tendencies (M. Scott, 2013).

6.4. 'Bounce forwarders': adaptive transformation

While their different ideas contribute to some creative tension within the Watershed Group, the independent approaches to water governance also bring the group its richness and capacity for negotiation, collaboration, and productivity. In this sense, collaborative management is developed through ongoing discussions about larger-picture strategy amid a practical movement toward accomplishing shared goals. The Watershed Group can help facilitate ongoing transformation in the area by advocating for ecologically-minded development, 'bounce-forwarders' proclaim.

This group, most closely oriented toward adaptive transformation, hope to see the area rejuvenated by development for lower-income people, as well as ecological conservation, and adaptive measures to ensure the continued productivity of agriculture. This alternative form of transformation, which would encourage 'moving forward' through the present changes, involves building more housing, infrastructure, and transit to-and-from Portland in order to bring down the cost of living and make more people's lives easier. Some argue, for instance, that residential developments would

consume less water than irrigated farmland, making carefully planned expansion a potential conservation measure that could lower the cost of living and make the exurban community more accessible. Bounce forwarders tend to take a more optimistic approach toward their peers, believing in the Watershed Group's potential to play an important role in improving socio-economic as well as environmental conditions despite stressors and challenges.

While this approach may irk some stakeholders, the 'bounce forwarders' view development as inevitable, and hope to influence its progress rather than attempt to prevent it. Outreach on this level would include fostering broader community with businesses in the city to connect people on a watershed scale that bridges the urban-rural gap. The draw-back to such endeavors appears to many the lack of resources to carry the project. 'It's a "Catch 22" situation,' one conservationist noted. 'I think one potential result of getting more people and more businesses involved is getting a bigger budget, getting people to contribute money. But it's hard to go out and do that if you don't have the resources to do that' (Interview 5, 16:28). Thus, while adaptive transformation would shift some of the balance of power in the area to the urbanizing areas, it is more difficult, because of problems of resource allocation.

6.5. The role of the Watershed Group in navigating transformation

The visions of transformation promoted by different stakeholders at varying times point to tensions between ideas as well as specific stakeholders or groups. All stakeholders hoped to participate in preserving and restoring the watershed, according to their statements in our interviews. At the same time, the interviewed recreation industry representatives held the Watershed Group's efforts in high esteem and expressed a willingness to engage with their outreach efforts. The establishment of community around the coupled human-water system was viewed as one of the major accomplishments of the group:

> "I think one of its biggest accomplishments and ongoing work is really getting ahold of these folks saying we're not talking to each other, and getting to know each other as people and building trust between those organizations where there obviously—certainly if we go through climate change, there's going to be more disagreements between some of these entities." (Interview 9a, 17:22).

The Watershed Group's role, then, appears to be adaptive and integrated governance, establishing broader connections to the municipal stakeholders in order to improve the experience of a sense of place connected to a shared vision of collective transformation by anticipating problems and coordinating evolutionary, multi-sector approaches (Pahl-Wostl et al., 2010).

To consider how the stakeholders can combat climate change more broadly, some contemplate linking together different watershed councils in a kind of federated approach to water management on a bioregional scale to overcome the perceived failure of federal environmental policy and the limitations of watershed-based localism (Interview 24, 09:28). 'Currently, I mean, we have environmental groups that are tackling really important issues, but nobody is working on the [bigger] issues like what is the future of that private industrial forest land and how are we going to hold it?' one Watershed Group member explained. 'It's a pretty small base, relatively speaking. It's really diverse and really cool. There's a lot of smart people here, like there's a potential to make this a model of resilience for the Gorge and probably for the country. But solving that part of the problem is a huge piece of this that I don't feel like anybody is really solving' (Interview 24, 39:33). A broader, interconnected approach to a self-managed and decentralized climate policy would manifest many key traits of complex adaptive systems, rescaling power from top-down hierarchies to collaborative management practices involving multiple stakeholders with different interests (Gray, 2007; McGinnis et al., 1999).

Yet most see the current situation as an urbanizing transformation that lacks real controls. Norms are changing such that the trusted and traditional ways of land use regulation can impugn development, while newer systems of tourism can infringe on the older, agrarian interests. Yet some insist that the two can complement one another, as with the agricultural 'fruit loop' tourism circuit (Interview 10 20:41). Still, some view 'newcomers' as dismissive of agricultural investment in the community and understand the Watershed Group a part of the rural side in the perceived rural-urban division (Interview 15, 3:16). 'There has to be winners and losers,' one interview subject told me. 'I mean, you know, it is really hard. I mean, we've got to come up with a thing that sort of moves this along in a moderate way that everyone can kind of live with' (Interview 8, 25:04).

While it is clear that most stakeholders view the receding glaciers as the leading hazard, the four contending ways of handling the interrelated challenges of climate change and development remain contentious. Those who view mitigation as partially effective at best do not have a diminished view of the hazards. To the contrary, they view the hazards as overwhelming,

requiring an approach that connects to other groups outside of the Watershed Group's purview – hence, their frustration. At the same time, those who seek to 'bounce back' to a more bucolic way of life in which the newcomers abide by a pace of development set by stringent land rules and a deliberate conservationist agenda remain somewhat more optimistic about the Watershed Group's ability to leverage the political balance of power. Lastly, those who hope to 'bounce forward' are more connected to the metro area and do not necessarily view the Watershed Group as capable of extending itself to a holistic solution on a watershed scale that bridges city and valley, seeking perhaps to shift the balance of power.

Yet, the dream of 'bouncing back' to a time before large-scale urbanization appears as difficult as the goal of 'bouncing forward' toward a renewed ecological development of exurban places. Meanwhile, resisting the notion that the Watershed Group can provide sufficient change begins from the same starting point as the goal of 'bouncing forward' – that the problems require a far stronger commitment to holistic changes not currently endeavored. Regardless of one's outlook, actual engagement with the Watershed Group appears to rest on confidence in participants' peers to work toward such large-scale change, as opposed to a more pessimistic outlook.

While much of the literature on exurban areas focuses on divisions and conflict (Hiner, 2016; McKinnon, 2016), this study shows that collaboration, led by community organizations with strong social capital, can knit stakeholder interests into practical advances. At the same time, the distance from traditional water management renders collaborative organizations susceptible to critique. Projects typically succeed when they fall into line with the organizational protocols and goals of large donors, which often include federal and state agencies. Hence, groups that form a channel through which funding can be administered to projects determined necessary by the whole group may simply manifest an effective shift from larger state authority to the local scale. While this is successful on the one hand, it does not necessarily challenge more overarching systems of authority and power (Swyngedouw, 2004, 2000).

Other watershed-scale studies reflect the same impacts of collaborative initiatives on both social and ecological communities. While examining the impact of collaboratives across 357 watersheds, T. Scott (2015) found that the collaboratives increased both water quality and in-stream habitat. The focus on 'small wins' held by the Watershed Group also jibes with other experiences of collaborative groups, per an analysis of 137 such groups by Ansell & Gash, 2008). Two sources of success that the Hood River Watershed Group share with other collaborative groups are goal specificity (Biddle & Koontz, 2014) and reasonable, equitable role distribution in keeping with the egalitarian framework (Biddl 2017). Yet, like Canadian coastal watersheds, among other places, in order to contend with adaptative responses to climate change, the Watershed group must also remain open to adaptation internally, incorporating accountability, responsibility, and resource sharing into their process (Vodden, 2015).

7. Conclusion: collaboration in watershed governance

Our qualitative study of actors working within the collaborative watershed governance structure of the Hood River Watershed Group found that actors engaging with the collaborative could be grouped in four different categories ranging from those who sought to resist the impacts of climate change and those who sought to use adaptations to climate impacts in order to enact an equitable socio-economic transformation. The categorization of these actors was made possible by assessing their prioritization of climate issues and their pessimism or optimism relative to the community's capacity to adapt to climate change. We found that the more optimistic subjects often leaned toward urbanizing tendencies of development, while those who opposed development but supported ecological reforms showed a resistance to more equitable measures like low-income housing.

Despite their differences, through our study, we found that the Watershed Group presents a collaborative infrastructure that may help to mediate these differences between stakeholders, creating room to experiment with and develop methods of resource management that work to reconcile different interests. This study helps identify the complex values, power relationships, and conflicts that arise around socio-environmental change through both urbanizing and ruralizing tendencies, showing that collaborative governance in an exurban waterscape involves ongoing negotiation across spatio-social scales and between different interests, visions, and goals. At the same time, notable differences between stakeholder perceptions of problems that fall at the edges of the Watershed Group's

mandate – like urbanization and housing developments – tend to be avoided as a result of the process of double-consensus, which ensures a fairly strict focus.

Because water governance here involves the difficult convergence of markedly different groups with sometimes-opposing goals, addressing the alignment of different stakeholders in relation to exurban communities through consensus helps the Hood River Watershed Group effectively address issues related to development and climate change. Understanding the integration of different actor types and their associated priorities reveals the Watershed Group and similar groups as an important mediator, bringing together communities based on consensus to address the hazards presented by anthropogenic climate change and uneven development. Consensus on immediate and long-term collaborative goals helps produce a watershed scale that integrates exurban with rural perspectives and goals, thus allaying some of the contradictions tacit within exurban development.

The exurban case of Hood River indicates the extent to which water management is entangled with many other sectors, including housing development, land use, and equity. Exurban collaborative water management can continue to pursue its current course of improving irrigation infrastructure, but adapting to climate change in a deeper way requires broader participation of not just irrigation district representatives but farmers, urban residents, policy makers, and others in the community. Doing so requires strong hydrosocial infrastructure, including community organizations willing and able to reach many different stakeholder groups.

The authors believe that this case study of the Hood River Watershed Group and its success in joining together diverse stakeholders with different perceptions on climate hazards and urbanization in an exurban area can be usefully generalized to other developing exurban places. Watershed Group members differed significantly on their opinions of the group's adaptive capacity, but joint participation in the group ensured collective understanding in an egalitarian framework, providing those who might otherwise feud an opportunity to find common acceptance and belonging in a watershed scale. By exhibiting adaptivity and flexibility within the context of group dynamics, Hood River Watershed Group models the connection between watershed governance and integral water ethics (Abrunhosa et al., 2020; Groenfeldt, 2021; Kelbessa, 2022; Manzione & Silva, 2022). In this regard, political issues beyond the scope of collective self-management of the watershed did not impose themselves, and it is likely that such productive collaboration may have had a moderating impact amid the potentially polarizing conditions of climate-induced hazards.

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Appendix A

1. How long has your business been operational?

2. Do you see new businesses in Portland as competitors?

3. How important is water use to your business's growth?

4. What is the most important natural resource you rely on?

5. What is your approach to the local community of Hood River (eg, community events, buy from local producers, etc.)?

6. Does your business promote conservation? Why and how, if so?

7. Is the domestic growth of Hood River Metro good for business?

8. How do you see the relationship between Hood River and Portland? Is Portland an important market? Is Portland the source of any troubles?

9. What are your thoughts on the future of Hood River? What would you like to see happen? What are some changes you are leerier of?

10. Are your customers usually from Hood River? If not, where are they from?

11. How would you characterize your relationship with local and regional environmental groups?

12. What are some potential political, economic, and/or environmental hazards that might concern you?

a. Thoughts on diversity in Hood River
___ excellent ___ satisfactory ___ neutral ___not good ___problem

b. Importance of weather to your business
___ vital ___ important___ neutral ___not very useful ___irrelevant