P25 / Centering Community in Climate Change Resilience, Water Governance and Policy Innovation

Topic : ENVIRONMENT, SDGs, ENERGY

Chair : Carolyn Johns (Toronto Metropolitan University)

Second Chair : Debora VanNijnatten (Wilfrid Laurier University)

GENERAL OBJECTIVES, RESEARCH QUESTIONS AND SCIENTIFIC RELEVANCE

Public policy scholars and practitioners have long espoused the benefits of involving communities directly in decision-making and policy development – not only for the communities themselves but also with the goal of making better decisions, designing implementation and improving outcomes. Effective policy-making and policy outputs require a deeper understanding and direct involvement of the targets of policy – most often communities – and diverse scholarship has interrogated and challenged how to think about the appropriate scales for real policy change, with considerable hope focused on the community level (Luluquisen & Pettis 2016). Indeed, there is a well-established body of public policy and public administration scholarship which advocates for inclusive policy processes that can bring ‘street-level’ knowledge and experience into decision-making and redress power imbalances for the purpose of attaining better outcomes (e.g., Freudenberg & Tsui 2014; Rijal 2023).

More recently, public policy scholars and practitioners are focusing their analytical lenses on how communities are responding to the myriad impacts of climate change, which are rapidly becoming evident at the local level, particularly as water governance challenges (Ross et.al.2016; OECD 2024). Here, the focus is on how communities can adapt and how resilient they need to be as conditions transform around them, but also how we might harness community knowledge and practices on the ground to improve our policy and governance responses to accelerating climate change (Burton & Mustelin 2013). Of particular concern are significant changes to water resource quality and availability, which pose existential threats to livelihoods, safety and security, as well as cultural and social cohesion. Indeed, local communities are seen as key to achieving sustainable water management since they are closest to, and most able to, influence individual values, activities and behaviours (Warburton & Yoshimura 2005).

The primary objective of this panel is to explore the role of communities in policy and governance responses to climate impacts, particularly (but not exclusively) in respect to water resources. We invite papers that explore several research questions:

First, what is the state of our understanding of community resilience and adaptation in the face of climate change? Given the in many communities climate change is manifesting as water challenges, what role do communities play in policy innovation in response?

Second, given their critical importance to the success of managing resources under conditions of accelerating climate change, how might we move local communities to a more central position in our conceptual, theoretical and methodological approaches to understanding and enhancing policy-making and governance frameworks – in spite of scholarship and empirical work that portray local communities as "vulnerable", “marginalized”, “underrepresented”, and “disempowered” (Espindola & Villar 2023).

Third, how much do we know about the mechanisms that exist to channel and support community engagement in climate change and water policy-making, including across scales and across borders? Given that 40% of the world's population lives in river and lake basins that comprise two or more countries and are generally governed by institutionalized policies and policy actors, how can we ensure that scholarship focuses on the key roles that local communities play in climate change and water governance? In addition, what is the role of communities vis-à-vis the whole range of public and private users involved in inter-state management arrangements?

We are particularly interested in what innovative research approaches might be used to exploring community roles and resilience vis-a-vis climate policy and governance responses. Further, what is the potential yet also the challenges associated with community-based and community-engaged research in this area?

CALL FOR PAPERS

We are interested in papers which embrace ‘the community’ in climate-water governance and policy

processes, research approaches and methodologies. Papers that examine the role of communities in existing climate change and water policies, agreements, and institutions; that focus on rethinking policy approaches in such a way that community needs, experiences and insights are central in policy research and processes; that experiment with new methodologies and empirical tools to investigate community impact and influence at various scales and levels; and that examine how community adaptation and resilience might be supported through global and transboundary water policies and governance are very welcome.

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Session 1

Thursday, July 3rd 16:00 to 18:00 (E2)

Bringing the Local to the Centre in Transboundary Water Governance: An Assessment Framework and Application in the U.S.-Mexico Rio Grande/Bravo Basin

Debora VanNijnatten (Wilfrid Laurier University)

As the global community faces an accelerating climate crisis, concerns about water resource availability and quality have also increased (Munia et al., 2020; Pearce 2022; Qui et al., 2023). At the same time, it will amplify demands for water due to increasing temperatures and the need to feed and power the activities of an increasing human population and growing global economy (Degefu et al., 2016; US EPA 2024). Particularly difficult in terms of responding to this challenge, however, is the shared nature of these water resources. According to UN Water (n.d.), 40% of the world's population live in river and lake basins that comprise two or more countries, and the water availability for the downstream countries is often highly dependent on precipitation patterns, run-off and water use in upstream countries (Munia et al. 2016).

This transboundary water reality means inter-state management arrangements are necessary but, as Chen (2008, 83) notes, “water issues are often simultaneously transboundary and local in nature.” Munia et al. (2020) find, in their modelling of transboundary water resource scenarios, that the key driver for the intensification of water stress is increased local consumption; addressing local water management, then, is the way to address water stress and respond to scarcity. At the same time, local and Indigenous communities are key to achieving sustainable water management since they are closest to/most able to influence individual values, activities and behaviours (Warburton & Yoshimura 2005). Yet governance of water issues in basins that straddle borders is almost always top-heavy, leaving relatively little room for local communities to play key roles in managing water sustainably. In fact, the literature often discusses local communities as “marginalized”, “underrepresented”, and “disempowered” vis-à-vis architectures for water management (Espindola & Villar 2023). However, given their critical importance to the success of water governance across borders in an era of accelerating climate change, there is growing scholarly and practitioner consideration of how we might strengthen local community engagement in water management and move them to a more central position in governance frameworks (Varady et al., 2020; Chen 2008; Chen et al., 2013; Saha et al., 2021; Gupta et al., 2021; Wong, 2016; Lavell et al., 2012; Espindola and Villar, 2023).

This paper explores the role of local communities in transboundary water governance (TWG) and undertakes two tasks: First, it reflects on how we might characterize the local community relationship to water resources in order to better understand their context for and positionality in TWG. We construct a Community-Water Relationship template focused on 12 variables (with indicators) which provides insights into three categories with scaled characterizations: the community’s proximity to and uses of water resources; the degree of dependence on these resources (especially on water resources shared with other jurisdictions); and the exposures/risks it faces due to climate impacts.

Second, the paper then delves into how local communities might be connected to interstate governance architectures in ways that can bring local needs, knowledge and management approaches directly into the active centre of basin management. We construct an evaluative framework for assessing connections at the interface of transboundary and local governance, focusing on the degree to which current transboundary architectures enable and empower local communities; foster local engagement that is both broad and deep; build longer-term connective tissue; and manage conflict. We then apply the evaluative framework in a comparative case examination of two communities in hot, arid climates, namely Eagle Pass, Texas in the US-Mexico Rio Grande-Bravo River Basin and Badajoz, Spain in the Guadiana River Basin shared by Spain and Portugal.

Adapting Transboundary Water Treaties for Resilience: A Sister-City Approach to the 1944 Water Treaty in the Rio Grande/Bravo Basin

Vianey Rueda (University of Michigan)

Transboundary water treaties have long been essential for defining resource allocation and conflict resolution between riparian countries, promoting stable and cooperative relationships. Their longevity underscores their significance, but climate change and increasing freshwater demands expose the limitations of rigid, fixed frameworks. The 1944 U.S.-Mexico Water Treaty, which governs water allocation in the Rio Grande/Bravo Basin, is a key example of a treaty that struggles to adapt to contemporary hydrological and socio-political realities. This paper examines the Treaty's limitations and proposes collaborative policy innovations that integrate hydrosolidarity and community values to strengthen resilience in transboundary water governance.

The 1944 Water Treaty was negotiated to prevent unilateral action and institutionalize cooperation between the U.S. and Mexico with respect to the Tijuana, Colorado and Rio Grande rivers. For the Rio Grande, the Treaty mandates fixed water deliveries from Mexico to the U.S. However, the predictability of these deliveries has been disrupted as droughts, irregular rainfall, and growing water demands complicate adherence to fixed allocations. The result is rising tensions along the border: Texas water users face water shortages, while Mexico struggles to meet its obligations, sometimes leading to conflict between local communities and enforcement authorities. The Treaty's rigid structure fails to accommodate the dynamic conditions shaping water availability, highlighting the urgent need for more adaptive governance mechanisms.

To address this gap, this paper advocates for an adaptive governance approach grounded in hydrosolidarity—a framework that emphasizes ethical, cooperative, and equity-driven water management. By focusing on three sister-city pairs along the U.S.-Mexico border, we analyze commonalities and differences in residents' water-use priorities and management preferences. Using Multiple Correspondence Analysis (MCA) to assess survey data, we identify shared values and areas of divergence, offering actionable insights for policy reforms that could make the Treaty more flexible and community-responsive.

Our findings reveal that despite the competitive institutional environment created by the Treaty, borderland communities in both nations share strikingly similar perspectives on sustainable water governance. These shared priorities present significant opportunities for binational cooperation and policy innovation. By integrating community-driven solutions into the existing legal framework of the 1944 Treaty, this paper envisions a more resilient and equitable governance model—one that is better equipped to navigate the challenges of climate change, evolving local needs, and the complexities of transboundary water sharing.

(Virtual) Problem brokers and policy entrepreneurs: NGOs and CBOs in the Salton Sea, California

Isabel Jorgensen (University of Waterloo)

Graham Epstein (University of Waterloo)

The Salton Sea is a large desert lake in southern California experiencing rapid decline because of a rural-to-urban water transfer to San Diego. The people that live around the Sea in the Coachella and Imperial Valleys are among the most impoverished in one of the wealthiest states in the country. They face mounting challenges as the lake dries, causing dust and pollutants to become airborne and reducing their quality of life. Yet, little action has been taken despite litigation and policy-making efforts from NGOs. Community members have consequently criticized the issues that NGOs have been advocating for in agenda-setting processes, noting that public health and wellbeing has been insufficiently represented compared to ecosystem degradation and bird conservation. At the same time, CBOs have become increasingly involved in a variety of natural resource management issues in the region, elevating these community concerns. Theory suggests that while more and more diverse NGOs and CBOs will lead to more comprehensive issue coverage and inclusive participation in decision-making processes, it is also costly to coordinate and reach consensus on which issues should be raised to policymakers and through which mechanisms. We thus ask, how have NGOs and CBOs contributed to agenda-setting processes in the Salton Sea region and how do their interactions influence their agenda-setting strategies? Using the Multiple Streams Framework, we triangulate diverse data sources ranging from semi-structured interviews to court cases and news articles to map the diverse venues and discourses that NGOs and CBOs use to frame problems and take advantage of agenda windows when they arise. We find that issue coupling between disparate indicators, such as asthma and bird conservation, is a key tactic for NGOs and CBOs looking to align their efforts. Furthermore, CBOs have an advantage in the problem broker role, where they frame

problems interactively with communities and local policy actors. NGOs on the other hand described connections to state- and federal-level policy communities, suggesting that they are more equipped as policy entrepreneurs. Together, NGOs and CBOs are able to unify around a common goal of restoring the Salton Sea and use multiple strategies, but the diversity of their prerogatives does require additional brokering. Our findings make two overall contributions. First, we offer insights into the policy processes in the Salton Sea region, a linchpin for broader climate and water policy in the western United States. Finally, we contribute greater knowledge of the types of actions that different actors undertake during agenda-setting in the policy process, with a focus on problem brokers as an area of growing interest among public policy scholars.

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Session 2

Friday, July 4th 08:00 to 10:00 (SME-F5)

Community-Based Participatory Research in Water Governance and Policy Transformations: Working Towards Resilience

Amanda Shankland (Toronto Metropolitan University)

Carolyn Johns (Toronto Metropolitan University)

This paper examines the transformative potential of community-based participatory research (CBPR) in water governance, particularly at the intersection of climate change and water policy. Both climate change and water policy research theoretically and empirically highlight the critical need to democratize policy processes and engage diverse actors to enhance implementation and outcomes. Climate-induced water crises, such as flooding, drought, and declining water quality, disproportionately impact marginalized communities—including Indigenous, Black, and newcomer populations—who are often excluded from policy and decision-making processes. To effectively address challenges at the climate-water interface, governance frameworks and policy processes must prioritize new knowledge, equity and inclusivity as communities develop governance reforms and policy innovations to bolster resilience. CBPR provides a pathway for new research that bridges knowledge gaps, addresses policy inequities, and co-creates sustainable policy solutions by engaging directly with those most affected.

This paper addresses three central questions: First, how can CBPR successfully integrate diverse perspectives, particularly Indigenous knowledge, into applied research, governance and policy processes? Second, how can participatory methodologies enhance policy knowledge, water governance frameworks, and improve climate and water policies? Finally, what opportunities exist to scale CBPR-based approaches for broader climate resilience in other communities?

This study draws on findings from participatory community-focused research in Toronto, Canada focused on climate change, water challenges and governance and policy transformations. This research emphasizes centring Indigenous knowledge, fostering intergenerational dialogue, and promoting cross-sectoral perspectives related to increasing resilience and improving climate and water policies in the City of Toronto. It presents findings and insights from community-focused sessions including: Indigenous knowledge and waterkeepers' contributions to resilience visioning and knowledge, showcasing how Indigenous knowledge can inform inclusive and effective water policies; intersectional vulnerabilities, using CBPR to engage diverse groups—across age, race, and gender—in meaningful dialogue about climate change and water governance challenges; and links between water governance, urban agriculture and shoreline communities, demonstrating the benefits of cross-sector knowledge and collaboration in achieving equitable outcomes.

As climate change intensifies, cities like Toronto must innovate and adopt inclusive, justice-centred approaches to water governance and policy change. CBPR represents a critical, participatory research approach for co-creating knowledge, equitable solutions, and advancing climate resilience, sustainability and social justice goals. This paper argues for the integration of CBPR into theory and methodological approaches for transformative water governance and policy in an era of accelerating climate and environmental change. By centring community knowledge and experiences and amplifying marginalized perspectives, CBPR fosters a deeper understanding of climate change and water governance challenges.

This study draws on the literature surrounding participatory governance, democratizing public policy, and social-ecological systems research, which emphasize the interconnectedness of social, policy and environmental factors in addressing complex issues. It contributes to the growing body of work on inclusive, community-driven policy processes by identifying strategies for Indigenous and community-led governance and policy processes that promote transformational change. Additionally, it proposes a replicable CBPR-based model for cities facing similar climate and water crises, supporting more equitable and sustainable policy outcomes.

Using Participatory Action Research to Enhance Local Knowledge in Northern Laos

Yingshan Lau (National University of Singapore)

Participatory action research (PAR) emphasizes working with local stakeholders to identify and conduct research on an issue of concern. Based on my PhD fieldwork in the watershed area of the Kuang Si Waterfall in Lao PDR in 2019-2020, this paper focuses a PAR project on the soil-water nexus that I conducted at a remote agricultural upland village. This project sought to understand the relationship between soil moisture and soil management practices, and culminated in recommendations about the importance of taking care of the soil for climate resilience. I reflect on three sets of challenges and lessons learnt. The first relates to how structure of academic research is typically not supportive of PAR; yet, academic research needs to be community-centred and community-engaged in order to be meaningful. I was able to proceed with the PAR approach due to supportive supervisors and grants, but nonetheless found it difficult to publish academically. The second, more peculiar to my fieldwork setting but also more broadly an important consideration for successfully conducting PAR, pertains to entering the field, building trust and soliciting participation. In particular, I doubted whether my approach taken was truly participative. The third was related to the impact of the PAR project on the local community. While the local knowledge of the core project participants was enhanced, this was not evenly distributed throughout the village. The enhancement of their local knowledge, while important, is also insufficient for a local sustainability transformation – this needs to supported by appropriate policy and incentive frameworks. In my case, I found it important to pass on my recommendations to my local collaborator, who has a longer-term presence in the area. Five years on from emerging from my fieldwork with numerous self-doubts, I now conclude that PAR is suitable approach for uncovering and understanding local issues of concern as well as for building meaningful (i.e. less extractive) researcher-researched relationships. Continued engagement with decision-makers, however, is necessary to ensure that such local issues receive the needed attention at a broader and more sustained scale.

Human-Nature Relationships Based on Ethnic Knowledge in Thailand and Japan for Watershed Forest Management Affecting Climate-Induced Disaster Policy

Sudarat Rattanapong (Chiang Mai University School of Public Policy)

This study explores the relationship between humans and nature through the lens of Ethnic Knowledge in Thailand and Japan, focusing on watershed management and its implications for climate-induced disaster policies. The primary objective is to develop policy recommendations that integrate Indigenous knowledge into disaster preparedness and watershed management. This research highlights the vital role of Indigenous communities in maintaining watershed ecosystems and underscores the necessity of culturally sensitive adaptation policies.

Using qualitative research methods, the study examines the Pakakayor people in northern Thailand and the Matagi hunters in northern Japan—both of whom rely on traditional ecological knowledge to manage watersheds and adapt to environmental challenges. Data collection includes in-depth interviews, participant observations, and analysis of community-led forest and disaster management strategies. The study investigates the intersection between traditional knowledge and modern adaptation practices, emphasizing how these communities' deep connection to nature enables them to mitigate disaster risks.

Findings reveal that the Pakakayor, an agricultural community dependent on watersheds, are highly vulnerable to climate change impacts, such as floods in the rainy season and water shortages in the dry season. Through forest ordination ceremonies, they have preserved their watershed for over 150 years, ensuring continuous water flow and environmental restoration. Their way of life reflects profound respect for nature and contributes to the sustainability of upstream forests. Meanwhile, the Matagi, a traditional hunting community in Japan, face challenges from decreasing snowfall, deforestation, and natural disasters. They continue to protect and manage pristine forests, aligning their subsistence practices with natural cycles through sustainable forestry and replanting initiatives.

This study concludes that both communities have developed ecological management strategies that enhance disaster resilience while preserving their cultural heritage. Policy recommendations emphasize the importance of Indigenous participation in disaster planning and the integration of Indigenous ecological knowledge into sustainable watershed and water resource management to mitigate the increasing severity of climate-induced disasters.

Social technologies to guarantee access to water for the rural population living in poverty: the Brazilian experience

Vitor Santana (Ministry of Social Development of Brazil)

The supply of quality drinking water is essential for life, but even today, millions of people around the world still do not have access to this basic need. The reasons are many and varied, but in general the lack of sufficient resources to implement and maintain conventional and technically more complex systems of water supply is the main barrier to the care of certain populations, especially those located more dispersed in the territory. Not surprisingly, in recent years there has been a growing perception that alternative solutions are needed to account for the growing process of water restriction, compatible with socio-climatic and environmental diversity, and involving broad social participation in management.

In this context, in a movement started on a large scale in 2003, the Brazilian government has been betting on social technologies as a solution for the water supply of families living in poverty in rural areas, especially in a context of increasing water scarcity from surface and underground sources. Most of these technologies are used to capture and store rainwater, with wide potential for meeting the demand for water in regions with high water scarcity. There are already more than 1.3 million families directly benefited, being very probably one of the largest climate coexistence/adaptation programs in the world, which has made possible the supply of both water for human consumption and the development of small production systems, including animal feeds.

Throughout this period, the activity was concentrated mainly in the semi-arid region of the territory, an area of 1 million km², equivalent to almost twice the territory of Spain, with a population of 22.5 million people, 8.5 million residents in the rural area. Even more recently, the process of diffusion of these technologies to other regions, such as the Amazon, has been carried out, proving to be an efficient and effective alternative to solve the lack of access to water of diffuse populations even in regions that do not face water scarcity, but whose service is unfeasible through conventional supply systems.

This is a very decentralized action, and involving broad partnership between the state and civil society, with results and significant impact on the welfare of the Brazilian rural population. Several studies have demonstrated the efficacy and effectiveness of this action, be it a substantial reduction in the incidence of waterborne diseases, reduction in time spent fetching water, a task assigned usually women and children, and reducing social vulnerability and, consequently, of political clientelism.

In this context, the objective of the paper is to present the context from which this governmental action has been developed, discussing the strategies, the legal framework and the political and administrative processes that have made possible the effective implantation of these technologies in such a wide and complex territory.