Evaluating Equity and Justice in Urban Coastal Adaptation Planning

by

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Abstract

Globally, cities have initiated coastal adaptation planning to address increasing risks from sea level rise while also recognizing its impact on existing social inequities. Planning scholars and practitioners are integrating equity into coastal adaptation, yet standards for evaluating equity and justice in coastal adaptation planning have not been well outlined or applied. More research is needed on assessing equitable coastal adaptation planning. This manuscript presents two papers in response. Chapter 1 is titled 'Evaluating Equity and Justice in Urban Coastal Adaptation Planning: Introducing the JustAdapt Framework,' an evaluative framework using five forms of justice. Chapter 2 presents 'Evaluating Equity and Justice in Vancouver's Sea2City Design Challenge,' a case study analysis applying the JustAdapt framework to the Sea2City Design Challenge. Through this manuscript, I offer the JustAdapt Framework as a tool to disrupt dominant norms and inspire scholars and practitioners to embrace reflexivity and accountability as they plan with shifting tidelines.

Keywords: sea level rise; social equity; coastal adaptation; evaluation; Vancouver

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This research started from an inkling of a dream on unceded Ramaytush Ohlone lands, took form and shape on the unceded territories of the the kʷikʷəƛ̓əm (Kwikwetlem), xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations, also known as Vancouver, British Columbia, was reviewed and revised on my grandmother's couch on the unceded territories of the W̱SÁNEĆ Nations, and finalized at my girlfriend's standing desk on the unceded territories of the lək̓ʷəŋən people, recognizing the Songhees and Esquimalt Nations.

Settler colonialism and white supremacy continue to create the conditions for injustice. I sit with the grief of continued land theft, displacement, health inequities, cultural loss, genocide, and intergenerational trauma experienced by Indigenous communities who are the original stewards of the lands and waters I call home and across Turtle Island. I dream of a future world where justice, healing, and care are realized.

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Glossary

The following glossary serves as a reference point for understanding this research. This list is by no means exhaustive and definitions offered here are specific to the context and framing of the study:

Acknowledged – refers to the ways that equity and justice are recognized in an adaptation planning process.

Actioned – refers to the ways that equity and justice are being implemented in an adaptation planning process.

Adaptation outcomes – plans, design concepts, implementation strategies, and pathways for adapting a shoreline to be more resilient to the effects of climate change. These outcomes can be monitored using metrics and indicators for success.

Adaptation process – the planning process associated with adaptation. This can occur at a variety of scales (i.e., municipal, provincial/state, etc.).

Climate burden – the inequalities between those who have privilege and resources to respond to and adapt to climate change and those who do not and are experiencing climate impacts first and worst.

Decolonization – dismantling oppressive systems, policies, and practices rooted in colonialism and colonial traditions, and centering multiple worldviews and knowledge systems.

Equity – fair distribution of climate impacts and capacity to adapt.

Equity-denied populations – Populations who have historically been denied equal access to resources, opportunities, and safety. This denial continues to today, causing present and potentially future impacts. Specifically, this term includes, but not limited to: Indigenous, Black, and other racialized populations; young people and elders; low-income communities; people with disabilities; unhoused people; immigrant and newcomer populations; people with substance use challenges.

Other words often used include equity-deserving, vulnerable communities, underserved, marginalized, frontline communities, etc. By using equity-denied populations, this study chooses to center the systemic ways certain populations have been denied equal rights, access to resources and opportunity, and physical and cultural safety, including in the present-day context.

Equity-related tradeoffs – balancing different sectoral interests (e.g., infrastructure, seismic upgrades, housing development burden, precipitation-based flooding) with

equity-centered priorities (e.g., affordable housing, community benefits, displacement, gentrification).

Form of justice – a type or aspect of justice; a way of examining specific dynamics, relationships, and issues within a given category of justice.

Historic, present, and future injustice – physical, emotional, spiritual, and cultural harm that impact a community's resilience and ability to thrive across generations. Historic injustice refers to specific events, policies, or practices that caused harm, often with intergenerational traumatic impacts. Present injustice is often symptomatic of historic injustices, felt by today's generation. Future injustice anticipates future harm stemming from systemic oppression being exacerbated by climate change.

Intergenerational trauma – the passing down of the impacts of traumatic events via embodied responses, memories, and emotions from the person who first experienced the events to their decedents, sometimes impacting many generations afterwards. See the APA Dictionary of Psychology for a full definition.

Justice – dismantling extractive systems to lessen climate impacts and burden to adapt.

Lived experience – the ways in which a person or community holds expertise through their histories, knowledges, experiences, and cultural memories.

Misrecognition – the de-prioritization, suppression, or ignoring of the needs, priorities, and desires of equity-denied populations

More-than-human beings – refers to the acknowledgement that beings (e.g., water, mountains, animals, plants, trees, birds) other than humans have significance, contribute meaningfully, and have the right to exist on our shared planet. This term decenters humans and asks us to consider ourselves within a web of interconnections, beings, and systems.

Multiple ways of knowing and being – refers to planning in ways that recognize and support multiple worldviews, knowledge systems, and cultural priorities.

Reconciliation – repairing relationships with Indigenous peoples and practicing sustained accountability towards mending historic and present harm and adapting to climate change in decolonial ways.

In Canada, the Truth and Reconciliation Commission defines reconciliation as "establishing and maintaining a mutually respectful relationship between Aboriginal and non-Aboriginal peoples in Canada."

Opening Remarks

The following 699 planning project is both the culmination of a labour of love and the beginning of ongoing dialogue at the intersection of equity, justice, decolonization, and climate adaptation. This research stemmed from the inkling of a question when I was working on sea level rise resilience planning projects in the San Francisco Bay Area, California. I was a public engagement and communications consultant working adjacent to planners and engineers. I witnessed the ways that planners and engineers were tasked with prioritizing equity in their adaptation plans yet didn't have the tools to dig deeper and reflect on how the process of adaptation might impact equitable outcomes. I also heard from community members about the ongoing impacts of environmental injustice and racialized planning practices. Questions swirled in my brain around how to support planners with unlearning dominant ways of planning cities and more authentically and transparently center equity in adaptation planning. Thanks to a wonderful partnership with Angela Danyluk and the City of Vancouver through the Living with Water: Coastal Adaptation project led by the Pacific Institute for Climate Solutions, the following research emerged.

Co-locating Myself

I identify as a mixed-race, white-presenting bisexual cis-woman who currently lives on unceded territories of the Musqueam, Squamish, and Tsleil-Waututh Nations. I grew up on Ramaytush Ohlone lands also known as San Francisco, California and my love of the coast started off at an early age with my smell of brackish bay water and the sound of sea lions barking at Pier 39. Water, wetlands, and wind sweeping along the coast have always felt like home. I am able-bodied, educated, and speak the language of the colonizers. I came to academia from the practitioner climate resilience world. I acknowledge my racialized and gendered biases are rooted in the American cultural context that I come from and acknowledge my gaps around Indigenous sovereignty and reconciliation. I live within the crossroads, still figuring out the intertidal zones that border my learning and the waves of inquiry towards justice. My positionality, combined with that of my co-researcher and faculty supervisor Dr. Andréanne Doyon, has directly informed this research design and analysis.

This research has also been informed by many resources, teachers and mentors. Key resources that helped shape my understandings of equity and justice include the 1991 Principles of Environmental Justice; Communities for a Better Environment's Toxic LA Tour; Paolo Freire's Pedagogy of the Oppressed, Augusto Boal's Theater of the Oppressed, and Gayatri Chakravorty Spivak's Can the Subaltern Speak?; the activism and work of Bay Area environmental justice organizers, including Margaret Gordon, Michelle Pierce, Phoenix Armenta, and Mari Rose Taruc; adrienne maree brown's Emergent Strategy and Holding Change books, anti-racism and anti-oppression trainings with Sookie Bardwell and James Harley, National Equity Project, Hideko Akashi, Movement Generation, and AORTA; culture work by Favianna Rodriguez and CultureStrike; Tema Okun's White Supremacy Culture article and website; Layla Saad's Me and White Supremacy book; Leah Lakshmi Piepzna-Samarasinha's Beyond Survival book; Dr. Maria Root's Bill of Rights for Mixed Race People and Emi Ito's version for mixed race people who hold white privilege; and the East Bay Meditation Center's Agreements for Multi-Cultural Interactions. While this work focuses on five forms of justice for adaptation practitioners, this research acknowledges and honors important movement work in the environmental, climate, healing, restorative, and transformative justice spaces.

My relationship to water is loving and complex. I love living near the coast and feel land locked when I can't easily take a bus or a short drive to the ocean. I am not a strong swimmer and fear the depth and vastness of deep water and currents. I do love the intertidal zone, where the land and sea meet and beings that like salt part time grow and thrive. The intertidal is liminal space, exactly where I like to be. Liminality, in-between ness, never exactly one thing or another, is like my mixed-race and bisexual identities. I also see how powerful water is, having carved valleys, canyons, coastlines and moved everything from grains of sand to big boulders and cliffs.

I have lived in and visited many coastal cities. I'm always struck by how people in urban environments interact with, navigate, and foster relationships with the ocean water around them. Vancouver's False Creek is no different. People live, cycle to work, run for recreation, and take their kids to play along this part of the waterfront. People also dragon boat across the water or take a water taxi to dinner or tourist attractions. People also live on boats and along the shores of the inlet. Their relationships to False Creek

are shaped by how they use these urban spaces, how they feel while in these spaces, and how the space includes them or makes them feel a sense of belonging.

To conduct this research, I felt the need to examine my own relationship with False Creek. I first experienced False Creek on a family vacation as a child when we cycled along the Seawall. I remember being in awe of the glass buildings right next to the water and enjoying seeing people kayaking while I rode my bicycle. When I moved to Vancouver in 2021, False Creek helped me orient to my new city, a place on the map I understood and could visualize. I learned how to navigate to False Creek on the Skytrain, and then via the Union St bikeway. As the Sea2City Design Challenge progressed, I spent time at each of the challenge sites and even had the opportunity to sail through the creek.

During a Summer 2022 class on decolonizing cityscapes, I got to know False Creek through new modalities, filming improvisational dance scores based on analyzing colonial elements and opportunities to decolonize. Dance has always helped me connect to myself and to place and I'm grateful to have spent time dancing and moving with the water, shoreline, and built environment. While this class project was not directly related to this research, I am grateful for the course instructor Kamala Todd for prompting me to engage deeper with place as part of this research.

Unlearning Language and Resourcing Learning

As you will see in both papers, I made specific choices around language. I used the terms equity and justice with purpose and made specific distinctions that these terms are different yet related to decolonization. I also chose to not use terms like stakeholder as an active practice of decolonizing my language and modeling more inclusive, less oppressor-oppressed centric language. See the Glossary for a list of key terms that may be useful to understanding the papers included in this research. A list of additional resources related to this research has also been provided below.

Equitable Adaptation Planning and Engagement

- Greenlining Institute (2019) - [Making Equity Real in Adaptation Planning](#)

- Urban Sustainability Directors Network (2017) – [Guide to Equitable, Community-Driven Climate Preparedness Planning](#)

- [Sustainable & Resilient Frontline Communities section](#) in the 2020 King County Strategic Climate Action Plan

- Facilitating Power and Movement Strategy Center (2019) - [Spectrum of Community Engagement to Ownership](#)

- Meerow et al. (2019) – [Social equity in urban resilience planning](#)

- Marx and Morales-Burnett (2022) – [Centering Equity to Address Extreme Heat](#)

City of Vancouver and Provincial Resources

- City of Vancouver (2021) - [Equity Framework](#)

- City of Vancouver (2020) – [Culture|Shift: Blanketing the City in Arts and Culture](#)

- City of Vancouver - [Vancouver's Changing Shoreline](#)

- City of Vancouver (2021) – [Reconciliation Update](#)

- BC Climate Action Secretariat (2022) – [Climate Preparedness and Adaptation Strategy](#)

- BC Climate Action Secretariat (2022) - [Lived Experience of Extreme Heat in B.C.](#)

Decolonizing Adaptation and MST Direction on Climate

- Truth and Reconciliation Commission's [94 Calls to Action](#)

- Howard Grant, Leona Sparrow, Larissa Grant, Jemma Scoble (2009) - Planning Since Time Immemorial

- Squamish Nation's [Wa Lhkwáyel Skwiyíńtsut Climate Strategy](#)

- Tsleil-Waututh Nation's [Climate Resilience Plan](#)

- [First Nation Leadership Council (2022) – BC First Nations Climate Strategy and Action Plan](#)

- [Musqueam Indian Band's Environmental Stewardship newsletter](#)

- Abbott and Chapman (2018) - [Addressing the New Normal: 21st Century Disaster Management in B.C](#)

- Tuck and Yang (2012) - [Decolonization is not a metaphor](#)

Manuscript Overview

This manuscript is written in multiple chapters. The bulk of the manuscript features two journal articles written as one complete 699 project. This section provides opening remarks, framing and resources for you the reader. Chapter 1 presents 'Evaluating Equity and Justice in Urban Coastal Adaptation Planning: Introducing the JustAdapt Framework,' a journal article introducing the JustAdapt framework. JustAdapt is an evaluative framework that I developed focusing on five forms of justice. Together, these five forms of justice can help coastal adaptation planners better understand how equity and justice are incorporated into their planning process. Chapter 2 presents 'Evaluating Equity and Justice in Vancouver's Sea2City Design Challenge,' a case study analysis applying the JustAdapt framework to the Sea2City Design Challenge in Vancouver's False Creek. Using the five forms of justice, I analyzed the degree to which equity and justice were incorporated in the process, outcomes, sense of shared understanding, intergenerational impacts, and knowledge inclusion impacts. The final section provides culminating reflections and gratitude to those involved. It also reflects back shared yet different understandings of relationships to water and to False Creek, in an effort to weave together the voices that shaped this research. Join me as we wade into the muddy waters of the foreshore, where the tide ebbs and flows and we try to make sense of more equitable coastal adaptation planning practices.

Chapter 1.

Evaluating Equity and Justice in Urban Coastal Adaptation Planning: Introducing the JustAdapt Framework

Abstract

Globally, cities and urban regions have initiated coastal adaptation planning to address increasing risk from sea level rise. However, there is growing awareness that sea level rise and other coastal flood risks will exacerbate existing social inequities if left unchecked. Planning scholars and practitioners have identified the importance of integrating an equity lens into their coastal adaptation planning, yet standards for defining and evaluating equity and justice in coastal adaptation planning have not been well outlined or applied. In response, more research is needed on tools for assessing processes and outcomes of equitable coastal adaptation planning. This paper asks the question: How are equity and justice being evaluated in urban coastal adaptation planning (UCAP)? The objectives are to: (1) expand usages of equity and justice in UCAP and (2) present the JustAdapt framework for evaluating equity and justice within UCAP. The aim of JustAdapt is to support UCAP scholars and practitioners in their pursuit of transformative urban adaptation, moving away from checking the box on equity and towards just solutions. JustAdapt asks scholars and practitioners to disrupt dominant norms within the field and instead embrace reflexivity, accountability, and fluidity as they plan in relationship with the shifting tideline.

Practice Relevance

Planning for sea level rise along urban shorelines presents an everchanging challenge for urban coastal adaptation planning (UCAP) practitioners. Addressing equity and justice in UCAP adds another layer of complexity, as impacts from sea level rise will exacerbate historic and present inequities in coastal cities. This paper offers two main contributions: (1) new understandings of equity and justice across five forms of justice – procedural, distributive, recognitional, intergenerational, and epistemic, and (2) the JustAdapt framework as a tool to evaluate the degree to which equity and justice are

integrated into a UCAP process. JustAdapt supports practitioners to take actionable steps towards integrating equity and justice into their UCAP work, asking them to participate in the transition towards just urban adaptation.

Key Words

sea level rise; social equity; cities; coastal adaptation; planning; evaluation

1.1. Introduction

Globally, cities and urban regions have initiated coastal adaptation planning. Urban coastal adaptation planning (UCAP) includes but is not limited to planning for sea level rise, coastal erosion, storm surge, combined flooding from sea level rise and extreme precipitation, groundwater intrusion, increased risk due to seismic activity, and other coastal hazards. Climate-driven sea level rise is causing disproportionate impacts on populations who have historically been and are presently being denied access to land, resources, or opportunities (Shonkoff et al. 2011). Questions of climate justice, coastal adaptation justice, and climate migration are being raised, as these populations pay the cost through loss of life, livelihood, and land, health and cultural impacts, knowledge systems, and rights to sovereignty and self-determination (Rozance et al. 2019, ICLEI Canada 2020). Planning scholars and practitioners are recognizing the need to integrate an equity lens into their coastal adaptation planning work, but standards for defining and evaluating equity and justice in UCAP have not been well outlined or applied (Shi et al. 2016).

Emerging frameworks from climate adaptation practitioners and environmental justice organizations offer some guidance on centering equity in evaluating coastal adaptation (Mohnot et al. 2019; Perrin-Martinez 2022). These frameworks have roots in scholarship on environmental justice (Agyeman et al. 2016), social vulnerability (Cutter et al. 2003), and social cohesion (Klinenberg 2002). Calls for just urban adaptation and intersectional climate justice in our cities have arisen from both scholars and practitioners (Amorim-Maia et al. 2022; USDN 2017). Yet, clarity is still needed on what tools can support a transition away from business-as-usual adaptation towards just

adaptation. Given that this field is in the nascent stages of developing standards and metrics for equitable UCAP as a practice, more research is needed on tools for assessing the processes and outcomes of equitable UCAP (Chu & Cannon 2021).

This paper aims to expand usages of equity and justice in UCAP and present an evaluative framework for assessing equity and justice within UCAP. The paper begins with a literature review on equitable UCAP followed by a section introducing the framework development and review of relevant evaluative frameworks and five forms of equity and justice: procedural, distributive, recognitional, intergenerational, and epistemic. Then the evaluative framework – JustAdapt – is presented. The paper ends with intended uses and applications for JustAdapt as well as opportunities for future research.

1.2. Framing on Positionality and Language

This research was conducted within a Western, settler colonial academic institution on the unceded traditional territories of the xʷməθkwəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səl̓ílwətaɬ (Tsleil-Waututh) Nations, also known as Vancouver, British Columbia (BC). The researchers acknowledge the limitations of conducting research on equity, justice, and decolonization within colonial institutions (Whyte, 2018). This research was conducted by two settler scholars with similar but varied privileges and positionalities. Inspired by the positionality statements shared in Doyon et al. (2021), each scholar shares a brief positionality statement:

> Okamoto is a mixed-race, white-presenting, bisexual, able-bodied, cis-woman of Japanese-American, Russian, and settler Canadian ancestry living in so-called Vancouver. Born and raised on the traditional territories of the Ramaytush Ohlone peoples, she previously worked as a climate resilience practitioner. Through her research, she is navigating differences in cultural contexts between settler colonial states in North America.

> Doyon is a white, able bodied, cis-woman of French-Canadian descent living on Coast Salish lands. A strong motivator for her research is the desire to improve planning – the discipline and the profession – and research.

By sharing positionality statements, the authors hope to inspire other scholars to reflect upon their research practice and identify how their worldviews shape their work.

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This paper uses language with intention and recognition of complexity. The terms listed below have many definitions that are highly contextual and sometimes contested. For the purposes of this paper, equity is defined as the redistribution of resources and opportunities to ensure people who have been and are presently marginalized by systems of oppression have comparable outcomes as those who are privileged by these systems (UBC Equity & Inclusion Office 2022), whereas justice is defined as the dismantling of barriers and systems of oppression and active action towards accountability, reparations, and healing (brown 2017; Coulthard 2014). These terms are often used interchangeably or conflated; this paper attempts to use these terms with separate specificity. Equity supports the fair distribution of adaptation actions and supports, whereas justice is future-oriented, looking to the dismantling of extractive systems to lessen climate impacts (Maynard & Simpson 2022; Zapata & Bates 2021).

Equity-denied populations describes the systematic denial of resources and opportunities for people who are not white, wealthy, male, able-bodied, or other privileged characteristics (Jang & Doyon, 2023). Equity-denied populations represent many intersecting identities and include, but are not limited to, Indigenous, Black, and People of Color (IBPOC), women, queer, trans, and gender non-conforming people, youth, seniors, people with visible and invisible disabilities, immigrants and newcomers, people experiencing homelessness, and people with substance and mental health challenges. Within the context of coastal adaptation, people from island nations and colonized coastlines and territories are also on the frontlines of adapting to sea level rise. The researchers recognize each population's histories, needs, rights, and liberation as valid, important, and specific. Integrating equity into UCAP does not mean that scholars and practitioners should equate each population's lived experiences, but rather they should embrace nuance, story, and authentic listening when engaging with specific and sometimes intersecting needs.

This research sees equity and justice as related to, but separate from, reconciliation and decolonization. Reconciliation refers to developing respectful relationships between Indigenous and non-Indigenous peoples while acknowledging past and ongoing harm. Decolonization is seen as the process of revealing and unlearning colonial dynamics and beliefs and working to dismantle and shift these norms (Erfan & Hemphill 2013). The researchers acknowledge the relationships and tensions between justice and decolonization and the politicized role of disavowing recognition by

the very colonial, white supremacy institutions that perpetuate oppression (Gilio-Whitaker 2019; Coulthard 2014; Lorde 1984; Kaba 2021).

1.3. Literature Review

Coastal cities face unique challenges, often grappling with multiple climate hazards at different frequencies and scales (e.g., sea level rise, flooding due to atmospheric rivers). With specific focus on coastal flood risk, the PARA framework – Protect, Accommodate, Retreat, Avoid – has guided mainstream UCAP (BC Ministry of the Environment 2013; Doberstein et al. 2018). While rooted in resilience scholarship, PARA perpetuates a militarized, colonial, capitalist, and heteropatriarchal method of defending humans from water and can perpetuate flood risk and maladaptation in the floodplain (Siders & Keenan 2020; Leonard 2021; Oulahen & Ventura 2022). Planning processes, such as the 'Adapting to Rising Tides' project in the San Francisco Bay Area, California, have offered regional collaborative approaches to assessing risk. These approaches include social vulnerability considerations but still remain within the bounds the PARA framework (BCDC 2020). Emerging UCAP practices, including Indigenous-led approaches to sea level rise adaptation (Tsleil-Waututh Nation 2021), such as the WAMPUM framework (Leonard 2021), and capacity-building efforts from community-based organizations (BayCAN 2020; WOEIP 2022), highlight new lenses towards transformative UCAP (Kuhl et al. 2021).

Equitable urban climate adaptation must first be understood through specific calls for transformative climate adaptation from scholars, practitioners, and social justice movement thought leaders (brown 2017; Newell et al. 2021; Shi et al. 2016; Shi & Moser 2021; Juhola et al. 2022). From calls for radical flood insurance practices to prioritizing just managed retreat solutions, scholars and practitioners acknowledge that business-as-usual climate adaptation cannot be implemented incrementally to foster justice in the future (brown 2017; Kuhl et al. 2021; Siders 2022). Incremental actions affirm extractive systems instead of supporting transformation towards regenerative, resilient systems (Movement Generation n.d.). Transformative climate adaptation and adaptation justice must be at the forefront of urban climate adaptation planning to cease the perpetuation of existing inequities (Kuhl et al. 2021).

Scholars and practitioners also acknowledge that equitable urban climate adaptation must be rooted in community and place to transform existing knowledge hierarchies and power dynamics between government, community, and the environment (Shi et al. 2016). Community-based organizations have developed tools and frameworks to share their vision for just climate adaptation and build grassroots power (NACRP 2017). Resilience hubs, such as in Northern California; Baltimore, Maryland; and Montreal, Quebec, offer another model for local capacity-building, providing refuge during climate events, and community organizing (City of Baltimore 2021; NorCal Resilience Network 2023; Ville de Montréal 2020). Community-based urban climate adaptation is happening across North America, and place-based strategies for community care exemplify that existing funding models and resources can be used to create new paradigms and shift power in urban climate adaptation.

While many cities have initiated UCAP, clear standards for defining, monitoring, and evaluating equity and justice in climate adaptation, let alone coastal adaptation, have not been well outlined or applied (Anguelovski et al. 2016; Chu & Cannon 2021; Woodruff & Stults 2016). 'Equity', 'people', or 'community' tend to be used as identifiers in adaptation plans, signaling aspirational goals, focus areas, and actions, with few climate plans including tangible equity-specific implementation, monitoring, and evaluation (Fitzgerald 2022). While some organizations have identified process and outcome indicators for equitable climate adaptation (NAACP 2015), the climate adaptation planning field does not have standardized metrics for these indicators, especially ones that track progress towards improving outcomes for those most impacted by climate change.

There is a lack of rigorous evaluative research on equitable climate adaptation planning, implementation, and outcomes. Chu and Cannon (2021) found that equity and inclusion are emphasized more than justice in climate plans and that implementation lacked actions towards equity, inclusion, and justice. Their work responds to calls to action by Shi et al. (2016) and Anguelovski et al. (2016) for scholars and practitioners to scale up adaptation justice, asking "What are the scales and metrics by which to evaluate justice and equity outcomes within dynamic multilevel and multi-scalar adaptation governance systems?" (Shi et al. 2016 p. 134).

There is also little research on evaluating equitable UCAP specifically. Siders and Keenan (2020) evaluated types of coastal adaptation actions (e.g., shoreline armoring, property acquisitions, beach nourishment) in North Carolina and the frequency of the actions being applied in equity-denied populations, finding that property acquisitions were more typically implemented in rural coastal communities of color as opposed to government investments in shoreline protection to keep communities in place (p. 6). Hardy et al. (2017) call for race-aware coastal adaptation planning, arguing that disinvestment in Black coastal communities in the United States combined with barriers to participate in planning perpetuate business-as-usual coastal adaptation (p. 71). Wade et al. (2022) use coastal flood risk vulnerability data in Canada to examine health impacts from sea level rise, including specific health impacts to coastal Indigenous communities (Wade et al. 2022). This research adds to discourse on evaluating equitable UCAP.

1.4. Framework

1.4.1. Framework Development

To respond to calls for greater evaluative practices in equitable UCAP, the researchers developed an evaluative framework using literature reviews, relevant frameworks, subject matter experts, and reflections on past professional experience. Literature related to environmental justice, climate justice, urban coastal adaptation planning, equitable coastal adaptation, evaluation in climate adaptation, equitable evaluation practices, and equity assessments was reviewed. However, the primary focus of the literature review was equitable coastal adaptation. Using Google Scholar and the University's databases, key terms, such as 'Indigenous coastal adaptation,' 'race coastal adaptation planning,' 'equity coastal adaptation,' 'justice coastal adaptation,' 'just adaptation cities,' and 'decolonization coastal adaptation' were included in the search. The tripartite justice framework was referenced across multiple bodies of literature, and so this became the basis for the development of the evaluative framework.

From there, literature specifically on 'procedural justice,' 'distributive justice,' and 'recognitional justice' was reviewed within climate adaptation and then used refined word searches on each form of justice and coastal adaptation (e.g., 'procedural justice coastal adaptation'). Gaps became evident in these forms of justice in terms of their (in)ability to

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fully convey meaning across time and knowledge systems related to coastal adaptation. In response, two new forms of justice were added to the literature, 'intergenerational justice' and 'epistemic justice.'

Relevant frameworks were reviewed to both understand best practices on evaluating equity and integrating equity into evaluation practices. Some emerging evaluative frameworks prioritize equity in the evaluation's design, process, and outcomes (Equitable Evaluation Initiative n.d.; Stern et al. 2019). They emphasize reflexive evaluative practices that examine both downstream impacts and upstream root causes that policies aim to fix (BYP Group 2020). Equity impact assessments provide important background on understanding baseline conditions, assessing equity over time, and operationalizing equity across municipal city departments (Race Forward 2009). Local government-led efforts in Vancouver, BC and Washington State offer examples of introducing reflexivity on decolonization, equity, diversity, and inclusion within government programming, asset management, and organizational culture (City of Vancouver 2022; JustLead Washington 2020). While not standard practice, some climate action and adaptation plans incorporate equitable implementation and evaluation (City of Oakland 2020; Stroble et al. 2020).

Following review of relevant frameworks, a draft framework was developed, including definitions and key questions for each form of justice. The draft framework was then reviewed and discussed in eleven interviews with subject matter experts who have experience working on UCAP projects and/or integrating decolonization and equity into municipal-level planning. One additional workshop with five participants with relevant academic expertise was held to refine the language used in the draft framework. The researchers also incorporated reflections from past work experience as UCAP practitioners and researchers into the refinement of the framework. The final framework is thus a reflection of an iterative process.

1.4.2. Forms of Equity and Justice

Best practices for enacting equitable urban climate adaptation are emergent, with many scholars and practitioners proposing conceptual frameworks and piloting tools and resources. Many have built upon environmental and climate justice scholarship and applied the tripartite justice framework – procedural, distributive, and recognitional – to

urban climate adaptation, urban resilience, and nature-based solutions (Meerow et al. 2019; Mohtat & Khirfan 2021; USDN 2017; Grabowski et al. 2022). Others have expanded upon these forms of justice to elevate reparative justice as important for urban climate adaptation (Climate Equity Working Group 2022; Marx & Morales-Burnett 2022), or emphasize the interconnections and cascading impacts between each form of justice (Wijsman & Berbés-Blázquez 2022).

There is a lack of clear direction in the literature on the difference between each form of justice and form of equity. For the purposes of this paper, the researchers made the distinction that each form of justice articulates future visioning where inequities are reduced and collective healing within human and more-than-human communities has occurred. Each form of justice corresponds with a form of equity that demonstrates a path to achieving the envisioned future (e.g., strategies articulated in procedural equity offer a pathway to achieving the definition of procedural justice).

The first three forms – procedural, distributional, and recognitional – make up the tripartite justice framework as previously described. This paper expands understandings of equity and justice critical to coastal adaptation by adding two additional forms – intergenerational and epistemic. Procedural, distributive, and recognitional justice focus on process, outcomes, and accountability, while intergenerational and epistemic justice offer much needed temporal and worldview-based lenses to climate adaptation.

Procedural Justice

Procedural equity and justice refer to process, rooted in engagement practices and decision-making structures (Bullard 2005; Schlosberg 2007). Scholars ask: "Who is involved in the process of decision making? Are such processes representative and transparent?" (Marx & Morales-Burnett 2022: 5). Planning for procedural justice is deeply connected to unraveling the impacts of settler colonialism, racial capitalism, and white supremacy (Kaba, 2021, Porter et al. 2021). Recently, scholars have emphasized 'fair' and 'inclusive' when discussing procedural justice (Mohtat & Khirfan 2021). To foster procedural equity through participation, practitioners might incorporate strong public engagement to inform plan development, develop co-governance structures, or target their outreach to equity-denied populations (Meerow et al. 2019). When applying procedural justice to climate adaptation, scholars recommend balancing climate burdens by centering equity-denied populations in climate adaptation planning processes (Mohtat

& Khirfan 2021). Procedural justice in adaptation can help redefine the adaptation process, shifting and making space for voices at the margins and co-developing adaptation planning.

To foster procedural justice in UCAP, scholars and practitioners can utilize tools like the 'Spectrum of Community Engagement to Ownership' developed by Rosa González of Facilitating Power with the Movement Strategy Center. The Spectrum clarifies the impact of different engagement methods on marginalized community voices (González et al. 2018) and identifies community power as a necessary strategy for actioning procedural justice. While new, this tool has been applied to develop the 'Sustainable and Resilient Frontline Communities' section of King County's 2020 'Strategic Climate Action Plan' in Washington (Stroble et al. 2020).

Distributive Justice

With roots in environmental justice scholarship (Schlosberg 2007), distributive equity and justice refer to the distribution of climate-exacerbated inequities and just outcomes. Distributive justice is typically defined as the fair distribution or reallocation of environmental goods, services, costs, benefits, and amenities, improving the lives of equity-denied populations spatially, temporally, and environmentally (Hughes & Hoffmann 2020, Meerow et al. 2019) . Scholars and practitioners might ask: "Who is benefitting? How disparate are the benefits and harms?" (Marx & Morales-Burnett 2022: 5). Within climate adaptation, distributive justice both locates adaptation burden and ensures outcomes prioritize spatial and temporal equity (Bulkeley et al. 2014; Chu & Michael 2019). Specific focus is on the equitable distribution of climate adaptation interventions regardless of "socio-economic conditions, adaptive capacity, and political voice" (Mohtat & Khirfan 2021: 2). Although the literature provides clear definitions of just distributive adaptation, the consequences of inaction and maladaptation remain an area for further research. Unlike procedural justice, multiple terms are used to refer to similar concepts, with distributional justice as the most common alternative to distributive justice.

To prioritize distributive justice in UCAP, scholars and practitioners can apply mapping tools, such as 'CalEnviroScreen' or 'ART Bay Area Shoreline Flood Explorer', to examine existing inequities and anticipate cascading impacts due to sea level rise and other climate hazards (OEHHA 2022; BCDC 2021). These tools spatialize datasets that

include demographic data (e.g., race, class, age, education, marital status), and environmental or contamination burdens indicators (e.g., air quality, distance from freeways, location of known contaminated sites, distance from refineries and industries). Other municipalities and regions have incorporated distributive justice into their climate action planning, calling for strategies to distribute the burden to adapt to, and mitigate, climate change equitably (Stroble et al. 2020).

Recognitional Justice

Recognitional equity and justice refer to acknowledgement. Scholars ask: "Are historical inequities being addressed and the views of marginalized populations being respected?" (Marx & Morales-Burnett 2022: 4). This form of justice was first defined as the recognition that status and societal structures create and perpetuate inequities (Fraser 2000) and that inequities can be codified into social norms and practices (Schlosberg 2007). Concepts of *misrecognition* and *non-recognition* identify recognitional injustices involving erasure, suppression, and gaslighting (Chu & Michael 2019), and *justice in recognition* focuses on recognizing and revealing the historical and present roots of inequities rather than solely addressing symptoms (Hughes & Hoffmann 2020). Within American and Canadian contexts, recognitional injustices levied against Indigenous and Black people are particularly nuanced with intergenerational impacts (Barry & Agyeman, 2020; Maynard & Simpson 2022).

Within climate adaptation, recognitional justice emphasizes systemic constraints or undervalued histories of a particular place or community and their needs (Meerow et al. 2019). Mohtat and Khirfan (2021) argue that recognitional justice in urban climate adaptation reveals "which patterns of inequality, operation, segregation, vulnerability, and privilege have been and continue to be produced within cities" (p. 2). Engaging with this form of justice requires sensitivity, as the denial of government abuse and neglect erases lived experiences and increases distrust of planning amongst equity-denied populations (Marx & Morales-Burnett 2022).

To support recognitional justice in UCAP, scholars and practitioners can incorporate a trauma-informed approach into their work. Listening sessions, sharing circles, and open houses create opportunities to witness and honor lived experiences with social inequities and climate change (Abbott & Chapman 2018; SHIFT Collaborative & Ursus Resilient Strategies 2022). Past harms can also be acknowledged within a plan

or policy (California Coastal Commission 2019; City of Vancouver 2022). Through centering care, recognitional justice in climate adaptation can assist with procedural and distributive justice, allowing for safer inclusion in decision-making processes and the distribution of equitable land use decisions.

Intergenerational Justice

Intergenerational equity and justice refer to planning guided by generational thinking. Existing outside of the tripartite framework, this concept considers how the decisions of past and present generations will impact future generations and what may be owed to them or mended based on these decisions (Meyer & Pölzler 2022). Environmentally, this form of justice focuses on a sense of moral repair and generational obligation (Almassi 2017). At the intersection of intergenerational justice and climate change, the literature articulates two focuses: legal rights of youth and future generations (Sanson & Burke, 2020) and Indigenous ways of knowing, being, and decision-making (Sogbanmu et al. 2023; Whyte 2017). Intergenerational justice makes attempts towards fairness, equity, and morality for future generations while acknowledging that past and present decision-making exists in a colonial, resource-extractive present.

To cultivate intergenerational justice in UCAP, scholars and practitioners can apply participatory research methods, such as photovoice and action research. Photography and video have been used with multi-generational participants to co-create knowledge and document stories for coastal First Nations in BC (Spiegel et al. 2020). Participatory action research, such as the 'Youth-Plan, Learn, Act Now!' (Y-PLAN) initiative developed by the UC Berkeley Center for Cities and Schools, can foster intergenerational communities of practice. Y-PLAN values the lived experiences and expertise of low-income youth of color and bridges divides between schools, cities, and universities to tackle real issues in local communities (McKoy et al. 2022). These examples highlight the importance of intergenerational knowledge-sharing and collective learning in planning, including UCAP.

Epistemic Justice

Epistemic equity and justice refers to justice in knowledge (Mabon et al. 2022) and engages with the marginalization of knowledges due to an oppressive dominant

knowledge system (Temper 2019). This term emerged from critiques of the tripartite justice framework, with scholars asserting that the traditional forms of justice do not adequately reflect on the epistemology of justice (Fricker 2007; Temper 2019) and that "knowledge itself is not neutral or objective but connected to power" (Temper 2019: 9). This form of justice both reveals historic and ongoing erasure of knowledges and lived experiences and offers pathways towards healing and redress (Byskov & Hyams 2022; Mabon et al. 2022; Temper 2019). Epistemic justice also reconfigures existing notions of environmental justice to reflect Indigenous worldviews and knowledge systems (Hernandez 2019; Grabowski et al. 2022). Within coastal adaptation, Indigenous peoples, small island nations, and other coastal frontline communities will, or already are, experiencing epistemic injustice with the impacts of sea level rise on culture, tangible and intangible heritage, and intergenerational knowledge-sharing (ICLEI Canada 2020). Epistemic justice in UCAP engages in critical dialogue on whose knowledge is given resources to persist and whose knowledge is swept out with the tide.

To foster epistemic justice in UCAP, scholars and practitioners can incorporate lived experiences and honor diverse worldviews while developing coastal adaptation plans. Case studies highlight emerging best practices on community capacity and honoring lived experiences in climate adaptation, whether through sea level rise in California (WOEIP 2022) or extreme heat in BC (SHIFT Collaborative & Ursus Resilient Strategies 2022). Case studies on more-than-human centric governance, such as the Yarra River-Birrarung co-management strategy (Bush & Doyon 2023), also offer 'counterstories' that center human and more-than human beings typically at the margins and cases balance which knowledge is prioritized (Dutta et al. 2021). Epistemic justice invites practitioners to reflect on how Indigenous and local knowledge is being excluded or exploited in adaptation and to co-develop new ways of valuing multiple worldviews and knowledges in UCAP (PICS 2023).

Interconnections between Forms of Justice

Emerging research in nature-based solutions and climate adaptation planning has examined the interconnections between the forms of justice in the tripartite framework (Juhola et al. 2022; Wijsman & Berbés-Blázquez 2022). Figure 1 builds upon this work by exploring interconnections between the five forms of justice presented in

this paper and asking questions to articulate key impacts and relationships between each form of justice within the context of UCAP (Wijsman & Berbés-Blázquez 2022).

Table 1. **Relational dynamics between the five forms of justice and UCAP**

| | | *Impact* | | | | |
		Distributive justice	Procedural justice	Recognitional justice	Intergenerational justice	Epistemic justice
How does	**Distributive justice**		How do existing inequities across an urban landscape create barriers to participate in adaptation decision-making?	How do existing inequities across an urban landscape reveal harm experienced by Indigenous, Black, and communities of color and other equity-denied communities?	How do existing inequities across an urban landscape contribute to generational adaptation burden and which communities are prioritized temporally?	How do existing inequities across an urban landscape contribute to the prioritization of the knowledges and lived experiences in UCAP?
	Procedural justice	Who is included in making decisions on the distribution of adaptation burdens and benefits?		Whose interests are considered, and which individuals and communities are considered significant?	Which present generations are considered and how is decision-making power distributed to elders / seniors and youth?	Which knowledges and lived experiences are included, valued, and respected in a UCAP process?
	Recognitional justice	Which individuals and distinct groups are valued and how are resources distributed as a result?	Which individuals and distinct groups are valued and contribute to the adaptation decision-making process?		Which distinct age groups are included, valued, and delegated power within a UCAP process?	Which knowledges, lived experiences, stories, and ideas are valued?

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Inter-generational justice	How are adaptation benefits and burdens being distributed across elders / seniors and youth?	What role do elders / seniors and youth have in decision-making for adaptation actions?	How are elders / seniors and youth valued and included in a UCAP process?		How are elders / seniors and youth able to share their knowledges and lived experiences to shape adaptation decision-making?
Epistemic justice	How are diverse knowledges and lived experiences included in adaptation decision-making?	How are diverse knowledges and lived experiences represented in community priorities identified through engagement?	Whose knowledges and lived experiences are acknowledged within a UCAP process?	How do diverse knowledges and lived experiences impact the type and scale of adaptation actions and future generations?	

(Adapted from Table 1 in Wijsman & Berbés-Blázquez 2022)

1.4.3. The JustAdapt Framework

JustAdapt is a planning tool for the pursuit of transformative UCAP. It weaves together scholarship on the forms of justice and their interconnections with the purpose of helping coastal adaptation scholars and practitioners evaluate equity and justice surrounding UCAP processes. JustAdapt aids coastal adaptation scholars and practitioners to engage in and lead robust, place-based, and project-specific dialogue on equitable UCAP. While similar phrasing of the name has been used in other climate adaptation spaces, the name of the framework 'JustAdapt' was developed by the researchers and the name references inspiring urgency towards just coastal adaptation practices.

The order of the forms of justice presented in Figure 1 does not indicate linearity; multiple forms of justice can be applied at once and understood in relation to each other as interconnections. For each form of justice, key words and a definition were developed specific to urban coastal adaptation. Key considerations for each form of justice articulate specific ways in which the form of justice is enacted or diminished. For example, key considerations for procedural justice are participation, power, and reflection, indicating that the degree to which equitable and/or just participation, power distribution, and reflexivity are present in a UCAP process correlates with the degree to which procedural equity or justice is present.

To support visioning, each form of justice has also been translated into an opportunity for justice. Each opportunity serves as a starting point for integrating equity and justice early on in designing the UCAP planning process. Finally, questions are listed under each form of justice to help coastal adaptation scholars and practitioners dig deeper into how each form of justice is, or is not, being applied during planning processes, in plans, and while accessing outcomes.

JustAdapt focuses on forms of justice, not equity. This is meant to highlight the restrictive nature of only aiming for equity and to offer aspirational visions for how each form of justice can contribute to just urban coastal adaptation. Equitable UCAP focuses on redistributing resources and opportunities to those who are bearing a disproportionate burden of adapting to sea level rise and other coastal hazards, whereas just UCAP acknowledges the impact of historic and present inequities and attempts to repair and take accountability through adaptation actions. See Section 4.1 for further clarity.

Table 2.   The JustAdapt framework for UCAP scholars and practitioners

Form of Justice	Key words	Definition	Considerations	Opportunity	Questions
Procedural	Equitable Process and Participation	An adaptation process that centers equity. Equity-denied populations are included, their needs for participation are respected, and they have decision-making power in the planning process. The process includes iteration based on integrated feedback.	Participation Power Reflection	Center the process	Who is involved in the adaptation process? Who has been left out, systematically excluded, or lacks capacity to participate? Who has power to make decisions and who does not? How have moments of reflection and iteration been built into the planning process? Who has led the reflection?
Distributive	Equitable Spatial Distribution of Adaptation Burdens & Outcomes	Adaptation decision-making that ensures the burden of adapting to climate change is distributed equitably across coastal communities and action is taken to address inequities. Outcomes for equity-denied populations are improved over time.	Space Time Access	Balance the burden	Where are the adaptation actions located? Who is impacted by these adaptation actions over time and how? Who benefits? Who is harmed? How do the adaptation actions address equitable outcomes?
Recognitional	Acknowledgement of Past, Present, and Future Harm	Acknowledgment of the past, present, and future harms that are exacerbated by climate change, especially harms impacting equity-denied populations. Justice could include attempts to mend or repair through changed actions and accountability.	Historic, Present, and Future Harm Misrecognition Accountability / Repair	Recognize harm	How have historic and present harm been recognized and addressed in the planning process and adaptation actions? How has the potential for future harm been addressed in the planning process and adaptation actions? What mechanisms of accountability have been included in the planning process to foster transparency and repair and reduce inequities? How have people or institutions who hold power acknowledged their positionality and the harm they've caused, contributed to, or represent?
Intergenerational	Planning Guided by Generational Thinking	Adaptation decision-making and actions that consider past, present, and future beings (human and more-than-human). Decisions are made intergenerationally so that future generations can thrive and build upon the knowledge and experiences of past generations.	Right to Future Temporal Care Intergenerational Trauma	Think across generations	How have elders / seniors and youth been involved in the planning process and the design and development of proposed adaptation actions? How do the adaptation actions and outcomes address impacts to future generations and their quality of life? How have existing power dynamics and stereotypes about elders / seniors and youth been remedied or accounted for in the planning process?
Epistemic	Knowledge Respected and Valued	Knowledges and lived experiences of Indigenous peoples and other equity-denied populations that are valued, respected, and centered within an adaptation process. Multiple ways of knowing and being are woven into planning and scholars and practitioners respect boundaries around knowledge-sharing.	Knowledge Language and Culture Spiritual and Cultural Harm	Honor different ways of knowing and being	How have multiple ways of knowing and being shaping the adaptation process? Whose knowledges have been prioritized and whose have been devalued? How have lived experiences, language, and culture been valued and incorporated into the adaptation process? Do adaptation actions focus on local relationships to land, waters, and more-than-human beings? Do they account for spiritual and cultural impacts and loss?

1.4.4. Intended Usages and Applications

While useful on its own, JustAdapt is best utilized when applied within a larger UCAP process. JustAdapt is intended to help scholars and practitioners reflect upon and shift equity and justice within their own place-based UCAP contexts. The application of JustAdapt can occur across a variety of scales and types of projects. While developed within municipal sea level rise planning, in mind it can also be adapted for different climate and environmental hazards and scales of urban governance. JustAdapt is meant to supplement and deepen equitable adaptation practices, not replace formal processes around reconciliation; Indigenous rights to land, title, and sovereignty (Gilio-Whitaker 2019); or Nation-to-Nation governance within the context of climate change adaptation.

Broadly, JustAdapt is meant to be used in tandem with other resources designed to center equity in UCAP rather than as a band-aid to integrate equity in the middle of a process. JustAdapt works most effectively after pre-work on equity, decolonization, and equitable UCAP; visioning; and design for an equitable UCAP process. The opportunities for justice offer some of the preliminary visioning and support needed to identify clear goals and guiding principles for implementing an equitable UCAP process. Table 3 details a six-step proposed process for implementing and supporting the full intended use of JustAdapt. The researchers acknowledge that due to project or place-based constraints, progressing linearly through each of the six steps may not be feasible or appropriate. Commitment to working each step, even if non-linearly, is important to advancing equity through a UCAP process and outcomes.

Table 3.   A six-step process of incorporating equitable evaluation practices into a UCAP process

Step	Key Actions
(1) Pre-work	Organize and attend trainings on equity, justice, decolonization, and other related concepts important for individual team members to understand.
(2) Visioning	Apply opportunities for justice (See Table 2 – Opportunity column) to develop a collective vision, guiding principles, and goals for the planning process for a team and project.
(3) Make a Plan	Commit to centering equity and working towards justice in the process. Identify evaluation practices to use throughout the process. This could include the JustAdapt framework (see Table 2). Design for flexibility in timeline, scope, and partnerships.

	Incorporate equity and justice into any contracts or application processes (e.g., request for proposals – RFP, terms of reference, community partnership agreements) to ensure that equity and justice principles and expectations are being practiced throughout all levels and groups engaged in the planning process.
	Identify moments for participants from different stakeholder groups to meet each other, collaborate, and learn together.
(4) Process in Motion	Implement the planning process with equity in mind.
	Utilize skills developed in Step 1 and 2 when engaging with project partners, First Nations, equity-denied communities, etc.
	Listen and stay flexible as a team and adapting to changing needs, questions, and calls for accountability.
(5) Monitoring and Iteration	Apply equitable evaluation practices, such as JustAdapt (see Table 2).
	Engage in rigorous, honest dialogue on challenges and opportunities for improving the process and desired outcomes.
	Make changes based on learnings from JustAdapt.
(6) Reflection and Evaluation	Apply JustAdapt (see Table 2) to evaluate how equity and justice were incorporated into the UCAP process.
	Invite participants from different stakeholder groups to share their reflections and lessons learned, with particular focus on equity and justice.
	Seek to understand the impact of the planning process, regardless of the intended outcomes.
	Embrace discomfort and ask the difficult questions to make sense of any harm caused.
	Reflect on the opportunities for justice and the project's visions, goals, and guiding principles and identify areas of success and improvement.
	Make a plan for accountability, repair, and healing and then follow through.

A planner from a local coastal municipality in British Columbia has been tasked with bringing together diverse partners to develop a sea level rise adaptation plan. They begin with initial conversations with city staff, community groups, and one local First Nation and start their planning process. However, backlash from other First Nations and a community organization representing a racialized community with historic and present ties to the shoreline encourages the planner to pause the process. After attending a training on climate equity and planning (Step 1), the planner learns of the JustAdapt framework and looks at the questions under 'Procedural Justice,' reflecting on who has been left out of the planning process so far. They meet

with the other First Nations and community organization to hear their feedback, offer an apology for excluding them, and commit to collaborating with them moving forward. The now expanded list of partners engaging in visioning (Step 2) and co-developing a planning process (Step 3) together.

With the process in motion (Step 4), the planner constantly solicits feedback, and hears from one community organization that they are not able to make the team meetings due to the time of day and lack of childcare available. In reflecting on the process (Step 5), the planner discusses these needs with the whole partner group and, after discussion, adjusts the meeting time and restructures budgets to provide childcare. These changes support a more equitable planning process to meet the needs of those involved. The planner returns to the JustAdapt framework and continues to use the questions to shape the planning process (Step 5). The resulting plan not only offers solutions to adapt to sea level rise, but is guided by values of equity, justice, and community. The planner also commits to applying the JustAdapt framework in six months after the release of the plan to evaluate and identify areas of improvement moving forward (Step 6).

Figure 1.   Applying the six-step process to illustrate JustAdapt in action

1.5. Discussion

This paper offers three key contributions to scholars and practitioners: (1) JustAdapt offers an evaluative framework in response to a gap in evaluative research on equitable UCAP; (2) JustAdapt expands upon the tripartite justice framework to include five forms of justice significant to UCAP; and (3) JustAdapt operationalizes equity and justice within UCAP through the opportunities for justice and six-step implementation process. JustAdapt was developed by scholars who hold similar positionalities as the intended audience of this paper: UCAP scholars and practitioners working in North America, particularly those who hold privilege. JustAdapt supports systems change from within current dominant UCAP practices, ensuring that scholars and practitioners alike are equipped with tools to better understand and shift equity and justice dynamics in adaptation planning (Porter et al. 2020). JustAdapt is not a tool to replace climate justice advocacy and resistance led by equity-denied populations; rather, it is a tool for scholars and practitioners to reflect on the impact of perpetuating dominant UCAP practices, consider the spectrum of experiences and needs of different equity-denied populations, and to shift their work in acts of solidarity towards just transformative adaptation (Porter et al. 2021; Rees & Doyon 2023).

Specifically, this research responds to calls to action for just urban climate adaptation from scholars, practitioners, and community organizers (Amorim-Maia et al. 2022; Anguelovski et al. 2016; Movement Generation n.d.; NACRP 2017; Shi et al. 2016). This research contributes an evaluative framework and approach for assessing equity and justice in UCAP and builds upon related applications of the tripartite justice framework, like in urban resilience planning (Meerow et al. 2019). Previous research analyzed equity, inclusion, and justice in climate plans by focusing on planning outputs (Chu and Cannon, 2021), whereas the JustAdapt framework offers applicability to both UCAP processes and their resulting plans or deliverables.

Practitioner guidance for equitable climate preparedness and adaptation planning has included variations of the tripartite justice framework (California Adaptation Forum 2023; USDN 2017), yet the tripartite justice framework has not been widely adopted across practitioner spaces. Some guidance on sea level rise adaptation planning has

articulated best practices to center equity in UCAP processes and plans (Perrin-Martinez 2022); however, the forms of justice are typically not included. JustAdapt responds to these gaps for scholars and practitioners, offering a tool to reflect and improve UCAP processes towards transformative UCAP.

As stated in the six-step implementation process, JustAdapt should not be implemented as a standalone tool. Instead, it offers a lens with which to view a particular place-based UCAP process. Informed by scholarship on structural racism, settler colonialism, and environmental justice, JustAdapt teases out cultural context and nuance, power and privilege, and capacity to learn while remaining applicable across a variety of projects, geographies, and scales. JustAdapt calls on scholars and practitioners to reflect on who and where they are (Porter et al. 2021; Rees & Doyon 2023), actively unlearn dominant ways of knowing and being present on the lands and waters where they are located, and shift power to foster just urban coastal adaptation.

1.6. Conclusion

This research recognizes an awareness of equitable UCAP and emerging best practices in North America, yet a lack of baseline understanding and precedence for equitable climate adaptation planning hinders progress towards justice (Shi et al. 2016). UCAP scholars and practitioners can bring greater specificity, transparency, and accountability to equitable UCAP to work towards just adaptation. Through literature reviews, this research identifies five forms of justice that are important to the practice of just UCAP: procedural, distributive, recognitional, intergenerational, and epistemic. The JustAdapt framework is presented as a starting place for more robust, place-based, and project-specific dialogue on equitable urban coastal adaptation.

Future directions to build upon JustAdapt include developing evaluative indicators to quantify impacts on process and outcomes, which builds off emerging work, such as the just adaptation index proposed by Juhola et al. (2022), and co-developing tools for evaluation with community members living and working within the plan's area of impact. JustAdapt was developed in a West Coast North American context and is intended to be modified for use across North America. Future research could include place-based applications of the framework, a reinterpretation of the framework at the neighborhood or community-level, or an application of JustAdapt across multiple UCAP projects in different geographies.

With climate change already disproportionately impacting equity-denied populations, scholars and activists are calling for climate justice to be prioritized in climate adaptation planning, arguing that business-as-usual climate adaptation will only exacerbate existing inequities (Shi et al. 2016; Shonkoff et al. 2011). UCAP planners have identified equity and justice as important guiding principles in their strategies and plans, yet best practices on implementation and evaluation are lacking (Woodruff & Stults 2016). JustAdapt disrupts status-quo UCAP processes by inspiring reflexive planning and transformation from within, calling for scholars and practitioners to actively participate in the transition to a climate just future.

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Chapter 2.

Evaluating Equity and Justice in Vancouver's Sea2City Design Challenge

Abstract

Like many coastal cities, the City of Vancouver has brought greater focus to coastal adaptation planning in the last decade. In 2021, the City of Vancouver launched the Sea2City Design Challenge, a one-year sea level rise design challenge in False Creek, a narrow inlet bordering downtown Vancouver on the unceded, traditional territories of the xʷməθkʷəy̓əm, Skwxwú7mesh, and səlilwətaɬ Nations. The challenge brought together city staff, international design teams, Indigenous cultural advisors, youth, community representatives, and technical advisors to develop design concepts for adapting to a rising False Creek. Now complete, Sea2City presents unique opportunities for shaping future coastal adaptation across Vancouver as well as evaluative research.

Using the Sea2City Design Challenge as a case study, this research applies the JustAdapt framework to the challenge to better understand how the challenge incorporated equity and justice into its process and outcomes. Developed by the researchers of this study, the JustAdapt framework is a new evaluative framework for practitioners and academics alike to bring greater specificity and accountability to their equitable adaptation work. Findings from the case study suggest that equity, not justice, was actioned through the Sea2City process and engagement strategy; the challenge recognized and made space for Host Nations and local ecology, especially in the design concepts; and less focus was placed on different knowledges and lived experiences.

With climate change already disproportionately impacting equity-denied populations, scholars and activists are calling for climate justice to be prioritized. Coastal adaptation planners have identified equity and justice as important guiding principles in their strategies and plans, yet evidence on implementation and evaluation is lacking. This research contributes a case study on evaluating equity and justice in Vancouver's Sea2City Design Challenge and hopes to inspire future projects and research on evaluating equitable and just adaptation.

2.1. Introduction

False Creek – a narrow inlet located within the unceded territories of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations also known as Vancouver, British Columbia – is a focal point for both coastal flood risk and social equity (City of Vancouver 2018, 2022; Gouett-Hanna et al. 2022). Once almost double in length, False Creek has been a place of significance for local First Nations since time immemorial, serving as a major bivalve food source and a place of gathering and community-building before colonizers arrived (Grant et al. 2019; Sḵwx̱wú7mesh Úxwumixw 2022). The forces of settler colonialism, including expropriating land for railroads, forced removal of Indigenous peoples, resource extraction, and industrial uses, have drastically altered False Creek (Sḵwx̱wú7mesh Úxwumixw 2022). More recently, redevelopment has occurred, with new neighbourhoods paving the way for new residents and uses along the shoreline. A popular multi-use seawall path snakes around the northern and southern shores, and the area is frequented by residents, visitors from other Vancouver neighbourhoods, and tourists alike (City of Vancouver 2021).

Vancouver, like most coastal cities around the world, is facing dual, intersecting problems of adapting to sea level rise, as well as other coastal flood risks, and addressing social equity, or the fact that some communities have been historically and continue to be prevented from access to land, resources, and opportunities resulting in impacts to their quality of life and wellbeing (Armitage et al. 2023). Recent calls to more deeply center equity in climate adaptation (Amorim-Maia et al. 2022; Shi et al. 2016) are radiating throughout adaptation planning academia. Yet, practitioners in North America remain at the intention setting stage of centering equity (Chu & Cannon 2021) and often lack adequate resources and tools to implement equity throughout their coastal adaptation planning process and in monitoring and evaluation (Arnott et al. 2016).
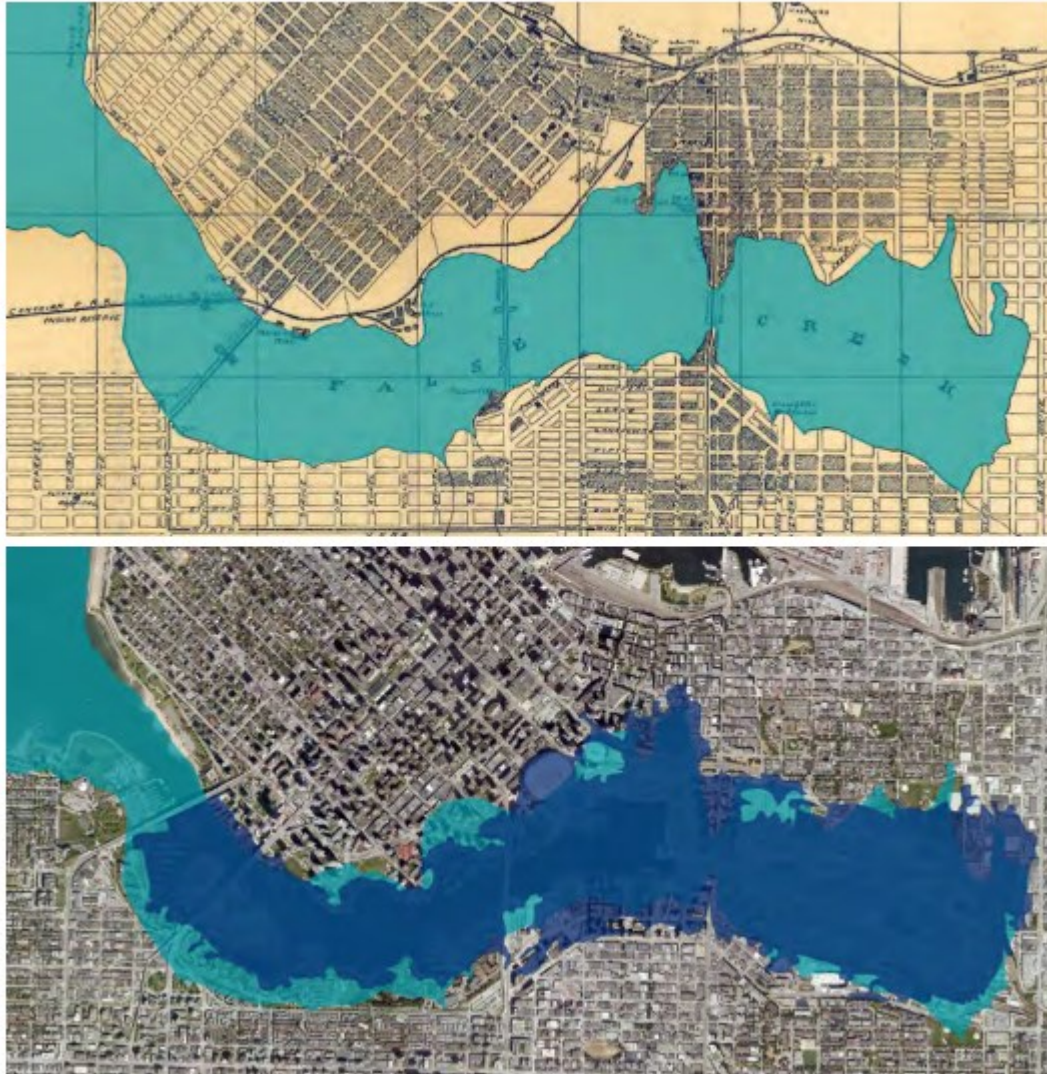
Figure 2. **Top map is a historic map of Vancouver's False Creek. Bottom map shows present and future flood risk in False Creek (City of Vancouver 2023).**

As part of the City of Vancouver's attempts to respond to these problems, the City kicked off the Sea2City Design Challenge (Sea2City), a sea level rise design challenge in False Creek, in 2021 (City of Vancouver 2021b). The challenge brought together city staff, international design teams, Indigenous cultural advisors, youth, community representatives, and technical advisors to develop design concepts for adapting to a rising False Creek. Organized around three "Collaboratoriums," or collaborative workshops, Sea2City engaged multiple participant groups in co-developing and providing feedback on the design concepts. In addition to two design teams, city staff facilitated an internal working group, a Technical Advisory Group (TAG), a

Community Advisory Group (CAG), and a Youth Adaptation Lab (YAL). Additionally, an Indigenous Cultural Advisor Panel was formed midway through the challenge to provide guidance on decolonizing coastal adaptation and Host Nation[1] values. Some public engagement occurred to provide updates. Outputs from Sea2City include a vision statement and approach and specific design concepts and implementation pathways for each site. Sea2City concluded in January 2023; however, lasting citywide or regional impacts may take years to be realized.

Using the City of Vancouver's Sea2City Design Challenge as a case study, this research aims to understand how equity and justice are being incorporated into coastal adaptation planning processes. A case study methodology was selected to test an evaluative framework for assessing equity in coastal adaptation within a real-world context (Yin 2009, p. 17-20). We engaged in participant observation, conducted semi-structured interviews, and surveys to collect data throughout the challenge and at its conclusion. We then applied the JustAdapt evaluative framework to understand how Sea2City incorporated equity and justice into its process and outputs. Developed by the researchers of this study, the JustAdapt framework is a new evaluative framework for practitioners and academics alike to bring greater specificity and accountability to their equitable adaptation work. Evaluation of equitable urban adaptation practices and planning processes is needed to better support transformative just adaptation (Shi et al. 2016).

This research took place on the unceded territories of the kʷikʷəƛ̓əm (Kwikwetlem), xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations. In addition to acknowledging whose lands we live and work on, we feel it is important to co-locate ourselves as researchers. Okamoto identifies as a multi-racial, white-presenting, bisexual, able-bodied cis woman who recently settled in Vancouver from California. Doyon is a white, able-bodied, cis woman living on Coast Salish lands. Our positionalities have directly informed research design and analysis.

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[1] Host Nations here refers to three First Nations - the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations – who hold ancestral and traditional ties to the lands and waters that Vancouver resides upon. The Nations are the original stewards of these lands, they have been here since time immemorial, and their territories have never been ceded (City of Vancouver 2023c).

Language is political and contains power (Napawan et al. 2023). In this article, equity and justice will be used with intention to distinguish between actions to redistribute and shift access to resources and opportunity (equity) and actions to transform systemic oppression and shift power to those who have been denied equity (justice) (Maynard & Simpson 2022; Zapata & Bates 2021). While equity and justice are related to reconciliation[2] and decolonization[3], we see these terms as separate and in need of further focused research on how these concepts work in relationship with urban coastal adaptation. This research also uses the term equity-denied populations to describe specific groups who have been continually denied access to opportunities and resources due to not holding dominant identity characteristics deemed superior (e.g., whiteness, wealth, masculinity, ability) (Jang & Doyon 2023). For more fulsome definitions and discussion, see pg. 8-10 in Chapter 1 of this manuscript.

2.2. Literature Review

This research focuses on two interconnected challenges that coastal cities around the world face – coastal flood risk and social inequities. These challenges are interconnected and existing practices for addressing each challenge often exacerbate the other challenge. For example, mainstream coastal adaptation planning practices use frameworks that perpetuate existing dominant systems of oppression, such as the Protect – Accommodate – Retreat – Avoid (PARA) framework for developing adaptation actions and the IAP2 Spectrum of Public Participation framework for developing engagement to accompany urban coastal adaptation planning processes (BC Ministry of the Environment 2013; Doberstein et al. 2018; ICLEI Canada 2022). Likewise, vulnerability to flooding includes social dimensions, where existing spatial social inequities amplify flood risk and the ability for communities to survive and thrive during and post flood event (Cutter 2003; Gouett-Hanna et al. 2022; Wade 2022). Planning practice has developed methods for engaging and incorporating public participation into

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[2] Reconciliation in the City of Vancouver context is defined as "a process of establishing and maintaining mutually respectful relationships between Indigenous and non-Indigenous peoples, which requires awareness of the past, acknowledgment of the harm that has been inflicted, atonement for the causes and action to change behaviour" (City of Vancouver 2022).

[3] Decolonization in the City of Vancouver context is defined as "the process of surfacing the colonial assumptions, narratives and beliefs that individuals hold and that are embedded in the City's ways of operating, and beginning to dismantle and reshape these structures" (City of Vancouver 2022).

climate planning, yet scholars are questioning whether these practices, such as the IAP2 Spectrum, actually lead to more just outcomes or just perpetuate performative and homogenized community engagement practices (Legacy et al. 2023).

While North American cities have taken steps to address urban climate adaptation, best practices for monitoring and evaluating equitable climate adaptation are still being developed and standardized (Anguelovski et al. 2016; Chu & Cannon 2021; Stephens et al. 2018; Woodruff & Stults 2016). Some recent academic scholarship suggests climate adaptation implementation lacks specific actions related to equity, inclusion, and justice (Chu & Cannon 2021), and little research exists on long-term equitable outcomes from equity-driven adaptation planning. With specific focus on coastal adaptation, some practitioner resources have presented guidance on how to center equity as planners monitor progress on coastal adaptation (Perrin-Martinez 2022). Clearer practices for evaluation are needed to monitor equitable UCAP as plans are developed and implemented.

The tripartite justice framework emerged from environmental justice scholarship and built upon early conceptions of justice (Rawls, 1971). The tripartite justice framework is comprised of three forms of justice that describe how justice is achieved: procedural (how the design and implementation of a process might inspire inclusive participation to shift outcomes), distributive (how outcomes support justice), and recognitional (how the acknowledgement of past or present injustices might support healing, reconciliation, and transformation) (Meerow et al. 2019; Schlosberg 2012). Scholars have applied the tripartite framework across a variety of related topics, including equitable climate adaptation, climate justice, and urban resilience (Anguelovski et al. 2016; Chu & Cannon 2021; Meerow et al. 2019; Mohtat & Khirfan 2021). The framework is beginning to be applied by practitioners in centering equity with specificity across each form of justice when planning for disaster preparedness, climate adaptation, and specific hazards, such as extreme heat (California Adaptation Forum 2023; Marx & Morales-Burnett 2022; Urban Sustainability Directors Network 2017). Practitioner tools, such as the Spectrum of Community Engagement to Ownership (Gonzalez et al. 2017), offer ways to shift existing methods, such as the IAP2 Spectrum, towards more procedural justice, an example of how the forms of justice can push the field of planning into greater accountability on just planning (Zapata & Bates 2021).

While the tripartite justice framework offers a good foundation for understanding equitable coastal adaptation, other forms of justice add to a holistic picture of just urban adaptation. Intergenerational justice in the context of climate change focuses on the consequences and impacts felt by future generations due to a warming planet (Almassi 2017). This form of justice often focuses on young people alive today, their lack of current decision-making power in mitigating climate impacts, and their quality of life as they age due to climate change (Sanson & Burke 2020; Simpson 2011; Spiegel et al. 2020). Indigenous and non-Indigenous scholars also emphasize the importance of intergenerational thinking, decision-making, and connection for Indigenous peoples and their respective worldviews (Simpson 2011, p. 42-44; Spiegel et al. 2020). Within urban coastal adaptation planning, intergenerational justice combines these foci – (1) centering the participation and lived experiences of youth and seniors, especially those who identify as Indigenous, Black, racialized, disabled, queer, trans, or other identities at the margins, and (2) planning for the quality of life of future generations – human and more-than-human worlds (Sanklecha 2017; Tschakert et al. 2021).

The second form of justice significant to adaptation planning is epistemic justice. Epistemic justice focuses on centering lived experience and knowledge that have been suppressed, eliminated, or devalued by dominant worldviews that emphasize colonial, white supremacist, capitalist, and patriarchal values (Byskov & Hyams 2022; Hernandez 2019). Epistemic justice within the context of environmental justice acknowledges that environmental harm can occur to tangible and intangible artifacts of culture and community wellbeing (Temper 2019). This also applies to coastal adaptation, as careful planning is needed to address how rising sea levels will physically submerge or impede access to sites of cultural significance (ICLEI Canada, 2020). For this research, scholarship was reviewed with a particular focus on Indigenous epistemic injustice and how coastal adaptation planning might support acknowledgement and mending of past harm (Spiegel et al. 2020).

2.2.1. JustAdapt Framework

Bringing the five forms of justice – procedural, distributive, recognitional, intergenerational, and epistemic -- the authors have developed the JustAdapt framework, an evaluative framework for assessing equity and justice in urban coastal adaptation planning processes. JustAdapt is a planning tool to use while designing and

implementing a coastal adaptation planning process (see Table 4). The tool helps scholars and practitioners assess how equity and justice are being incorporated at each stage of the urban coastal adaptation planning process, using five forms of justice – procedural, distributive, recognitional, intergenerational, and epistemic.

The JustAdapt framework sees the five forms of justice as critical for working towards transformative and just urban coastal adaptation. The focus on justice as opposed to equity highlights the significance of aspiration, that there is value in imagining a future where just urban adaptation is actively happening. Black feminist writer Alexis Pauline Gumbs shares that "dreaming is a collective practice" (brown & brown 2023, 52:30). By dreaming and envisioning just urban coastal adaptation planning, we can take steps to ensure greater equity now while we act towards that broader just future. JustAdapt is intended to inspire reflection from scholars and practitioners and then support them in shifting their UCAP practices towards more just adaptation (Rees & Doyon 2023). JustAdapt also sees each of the five forms of justice as interconnected and do not occur in a particular order; rather, each form can work with other forms of justice or catalyze change in another form of justice because of an action taken.

The process of developing JustAdapt was emergent, starting from literature reviews and then building upon professional expertise as well as soliciting comments from case study participants. The full framework outlines a specific definition for the form of justice as applied to urban coastal adaptation planning. A forthcoming paper by Okamoto and Doyon on the JustAdapt framework provides greater detail and recommendations on intended uses.

Table 4.   The JustAdapt framework

Form of Justice	Definition
Procedural	An adaptation process that centers equity. Equity-denied populations are included, their needs for participation respected, and they have decision-making power in the planning process. The process includes reflection and iteration based on feedback.
Distributive	Decision-making that ensures the burden of adapting to climate change is distributed spatially and equitably across coastal communities and inequities are addressed. Outcomes for equity-denied populations are improved over time.

Recognitional	Acknowledgment of past, present, and future harm exacerbated by climate change, especially towards equity-denied populations. Justice means mending or repairing through adaptation actions.
Intergenerational	Decision-making and adaptation actions that consider past, present, and future beings (human and more-than-human). Decisions are made intergenerationally, so that future generations can thrive.
Epistemic	Knowledges and lived experiences of Indigenous peoples and other equity-denied populations that are valued, respected, and centered within an adaptation process. Multiple ways of knowing are woven into planning, and adaptation strategies respect boundaries around knowledge sharing.

2.3. Methods

To respond to the research aim, to understand how equity and justice are being incorporated into coastal adaptation planning processes, we applied a mixed methods approach to collect representative perspectives from Sea2City participants over time. Data collection occurred from September 2021 through January 2023. Data analysis and application of the JustAdapt framework occurred from January 2023 through August 2023.

2.3.1. Data Collection

Four forms of data collection were used: participant observation, semi-structured interviews, surveys, and document and media analysis. First, using participant observation methods (Creswell & Creswell 2018), the researchers were "observer-as-participants" during many Sea2City internal and external events via a role on the Sea2City Technical Advisory Group. The researchers documented insights on Sea2City's design and implementation, moments of collaboration and tension between participant groups, and our own impacts as researchers.

Second, two rounds of virtual semi-structured interviews were conducted with representatives from each Sea2City participant group. Semi-structured interviews created flexibility to follow the perspectives of interviewees through open-ended questions (Bryman et al. 2012). Researchers worked with the Sea2City project manager to determine a representative set of participants using purposive sampling (Farthing

2016). In total, sixteen interviews were conducted with nine Sea2City representatives (see Table 5). Three additional semi-structured interviews were conducted with experts after the challenge to provide additional background context and reflections on the broader impact of the challenge. To increase accessibility and prioritize equity, honorariums for interview participation were provided by the City of Vancouver and the Pacific Institute for Climate Solutions via the Coastal Adaptation: Living with Water project. Some interviews were held outside the 9-5 workday to respect work or school commitments. Finally, feedback loops in the semi-structured interviews allowed for emergent dialogue. During the second interview round, participants provided feedback on the draft JustAdapt framework, which increased useability and directly informed the final framework.

Table 5. **Interviews conducted with Sea2City representatives ordered alphabetically by Actor code.**

Actors	Participant Group	Number of Interviews
Selected Sea2City representatives		
CAG	Community Advisory Group	2
CoV1	City of Vancouver Staff	2
DTN	Design Team – North False Creek	2
DTS	Design Team – South False Creek	2
ICAP	Indigenous Cultural Advisor Panel	2
PC	Project Consultant	2
TAG	Technical Advisory Group	1
YAL1	Youth Adaptation Lab	1
YAL2	Youth Adaptation Lab	2
Additional Interviews		
CoV2	City of Vancouver Staff – Project Management Leadership	1
CoV3	City of Vancouver Equity Office	1
CoV4	City of Vancouver City Councillor	1
	TOTAL	19

Third, a digital survey on SurveyMonkey was shared with the cohort of interviewees after the challenge. Eight out of nine interviewees responded. A second digital survey was sent to all Sea2City participants to capture their perspectives on equity and justice related to Sea2City, strengthening accessibility using less time intensive methods and increasing data collected (Bryman et al. 2012). The second survey received 21 responses. Volunteer sampling, an example of non-probability

sampling, was used, as those who responded did so voluntarily with no compensation (Bryman et al. 2012; Farthing 2016).

Finally, document analysis was used to analyze communications to various participant groups and themes from the final outputs. See Table 6 for the list of documents reviewed. Document analysis is a widely used method in urban planning research to provide background on a project, its key messages, and its significance (Creswell & Creswell 2018).

Table 6.   Documents and media included in analysis

Sea2City Phase	Documents
Pre-Sea2City	Request for Proposals for Design Teams Rise to the Challenge: Sea2City Design Challenge Roadmap Sea2City Values-based Planning Primer
Beginning of Sea2City	Collaboratorium 1 Agenda and Workshop Materials Decolonization workshops with Squamish Nation and Tsleil-Waututh Nation – Cultural Competency Pre-Work and Agenda
Collaboratorium 2	Collaboratorium 2 Agenda and Presentation Deck Initial Design Concepts from the North False Creek Design Team Initial Design Concepts from the South False Creek Design Team Community Conversation – April 2023 Presentation Deck
Collaboratorium 3	Collaboratorium 3 Agenda and Presentation Deck Revised Design Concepts from the North False Creek Design Team Revised Design Concepts from the South False Creek Design Team Community Conversation – July 2023 Presentation Deck
Final Deliverables	Sea2City Vision Sea2City Story Sea2City Final Video Final Design Concepts from the North False Creek Design Team Final Design Concepts from the South False Creek Design Team Youth Adaptation Lab Final Materials - Youth Manifesto and Final Report
Internal documents	As part of the Technical Advisory Group, researchers were also privy to internal Sea2City documents.

2.3.2. Application of the JustAdapt Framework

NVIVO, a qualitative data analysis software, was used to analyze interview and survey data through a multi-step process. First, individual interviews and survey responses were coded with the five forms of justice from the JustAdapt framework using typical thematic analysis practices (Creswell & Creswell 2018) (see Table 4). Second, data was coded for specific instances of connections between different forms of justice

(i.e., procedural equity occurring leading to outcomes related to epistemic and intergenerational equity). This approach to examine connections between forms of justice was inspired by Wijsman and Berbés-Blázquez (2022). Third, the coded data were then assigned sub-codes based on whether data were examples of equity or justice (i.e., procedural equity vs. procedural justice) and from there, the degree of impact, or action taken on a particular form of equity/justice (see Table 7). This approach to examine degrees of impact drew from the approach outlined in O'Donnell and Doyon (2023). Within each coded form of justice and degree of impact (i.e., procedural equity – actioned), key emerging themes across interviews were coded (Bryman et al. 2012; Spencer et al. 2003). Fourth, data was coded for instances of areas of improvement (coded 'Done Differently'), knowledge of forms of justice (coded 'Knowledge of'), and enabling conditions specific to Sea2City (i.e., 'S2C Leadership' to reference impact of City staff leadership on the challenge process, priorities, and outputs).

Table 7.   Coding Structure for Degree of Impact for Forms of Equity and Justice

Equity vs. Justice	Degree of Impact	Code Meaning
Form of equity	Acknowledged (negative)	When equity dynamics related to the form of equity were ignored or negatively exacerbated during Sea2City
	Acknowledged (positive)	When equity dynamics related to the form of equity were mentioned or created during Sea2City
	(In)action	When a lack of action was taken to facilitate greater equity during Sea2City
	Actioned	When actions were taken in alignment with the form of equity and its related terms
Form of justice	Acknowledged (negative)	When justice dynamics related to the form of justice ignored or negatively exacerbated during Sea2City
	Acknowledged (positive)	When justice dynamics related to the form of justice were mentioned or created during Sea2City
	(In)action	When a lack of action was taken to facilitate greater justice during Sea2City
	Actioned	When actions were taken in alignment with the form of justice and its related terms

Finally, coded data were synthesized into a narrative analysis for each form of justice and a summary of identified representative connections between forms of justice. Wherever possible, documents listed in Table 6 were used as secondary data to support findings from the interviews and surveys.

2.4. Results

2.4.1. Wading in: Elements for Success

A number of project-specific elements were highlighted through the data, including place-based context, funding, leadership, facilitated collaboration, and commitment to decolonization. While these elements contribute to analysis via the JustAdapt framework, the researchers feel it is important to call attention to these elements to frame the framework analysis.

While modeled after past Rockefeller Foundation-funded resilience design challenges in New York and the San Francisco Bay Area, Sea2City offered new approaches to collaborative coastal adaptation planning in a Canadian context. Unlike Rebuild by Design and Resilient by Design, Sea2City was publicly funded, with funders including the City of Vancouver and the Government of Canada. Funding was reallocated during the project as a stronger focus on decolonization emerged. The deliverables and timelines also shifted multiple times to accommodate this focus. Sea2City benefited from robust funding and flexibility within budget allocations and distribution.

Sea2City focused on five sites within Vancouver's False Creek and asked its two design teams – PWL Landscape Architecture and MITHUN + ONE - to design complimentary responses to a future with sea level rise along the north and south shores of the waterway. PWL as the North Creek Collective designed for Between Bridges and Cooper's Park and MITHUN + ONE designed for Olympic Village and Stamp's Landing. Both teams, as well as other Sea2City participants, participated in a collaborative design charette for the fifth site – East of Cambie.
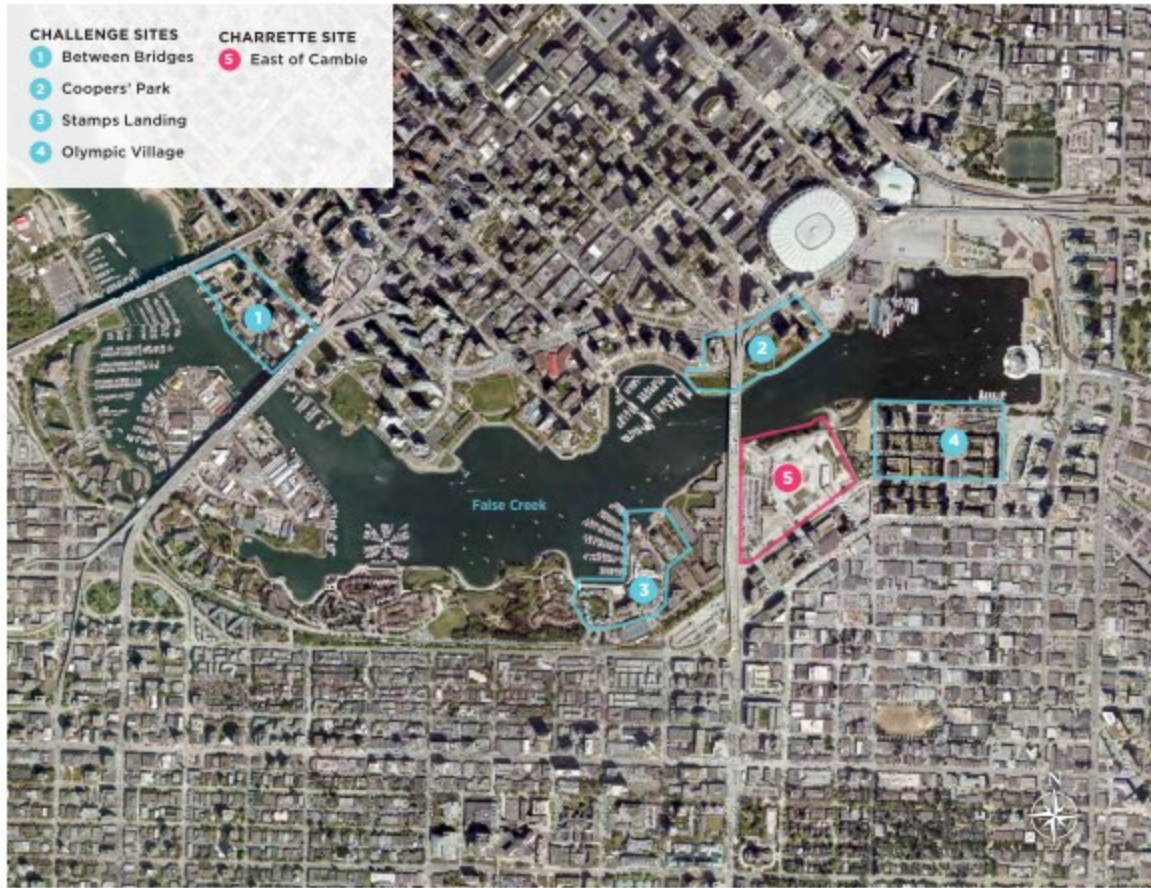
Figure 3.   Sea2City Challenge sites.

The challenge greatly benefited from the leadership of a City of Vancouver staffer. This staffer is a charismatic leader with previous experience working on coastal adaptation in the Lower Mainland and a deep commitment to decolonization. Their own prior learning on decolonization helped bring greater focus to decolonization and valuing Indigenous knowledge within coastal adaptation. Additionally, a local Indigenous designer on the North Creek Collective team played a key role in first advocating for a greater leadership role within their design team and then advocating to shift roles to support the formation of the Indigenous Cultural Advisor Panel. The labour put forth by the City of Vancouver staffer and local Indigenous designer helped shape the goals and implementation of Sea2City.

Sea2City was described as a "not a planning project" and instead "a container for risk" (PC). The challenge was designed around three Collaboratoriums where different participant groups were invited to attend and collaborate on the design concepts

together. Many interviewees spoke highly of the collaborative workshops as key moments of inspiration, clarity, and connection across participant groups, helping many Sea2City participants step out of their day job roles and co-design a future False Creek. Still, the Collaboratoriums were held during business hours, making it difficult for the Youth Adaptation Lab to attend. The Community Advisory Group were also separately asked about their feedback on the design concepts outside of the Collaboratoriums, causing some separation within the sense of shared problem definition, co-design, and critique.

As mentioned above, Sea2City had a strong commitment to decolonization and learning. Its initial request for proposals for design teams included a qualification around decolonization and a request to have Indigenous representation on each proposed design team. As Sea2City progressed, decolonization workshops with Squamish and Tsleil-Waututh Nations helped share knowledge, understandings of histories and harm, and how Sea2City participants might shift their own thinking. With the formation of the Indigenous Cultural Advisor Panel, decolonizing coastal adaptation became a driving theme. The design teams pushed to shift away from militaristic traditional adaptation terminology, proposing new language to define a shifting and dynamic relationship between land, water, and humans. The final design concepts reflect a more flexible future, with attempts to center Host Nation values and design elements (City of Vancouver 2023a). While significant from an Indigenous environmental justice perspective, Sea2City did not engage with and prioritize other equity-denied populations as much, and as a result, the final design concepts do not reflect a diversity of lived experiences. Still, the City of Vancouver won two awards from IAP2 in September 2023 for their collaborative design and engagement approach – 2023 International Project of the Year Core Values Award and 2023 Indigenous Engagement Award (IAP2 Canada 2023).

2.4.2. Application of JustAdapt Framework

In applying the JustAdapt framework, data collected was coded based on the five forms of justice. For each piece of data coded to a form of justice, a subcode was applied to determine whether it was an example of equity or justice as well as the degree

of impact that occurred based on Table 7. Table 8 shows the resulting number of data coded.

Table 8. **Overview of coded data across the five forms of justice and their degrees of impact.**

	Procedural	Distributive	Recognitional	Intergenerational	Epistemic
Total number codes	192	67	47	41	40
Equity					
Acknowledged (negative)	21	11	6	11	7
Acknowledged (positive)	16	9	6	6	1
(In)action	51	12	8	6	2
Actioned	96	28	21	13	25
Justice					
Acknowledged (negative)			5	1	1
Acknowledged (positive)					1
(In)action	2	3	1		
Actioned	5	3		4	

Procedural justice

Across the forms of justice, most references were linked to procedural justice. Many interviewees thought Sea2City exemplified procedural equity through an inclusive process and sustained collaboration across participant groups (CoV1, CoV2, PC, DTN, DTS). While the process was structured around the Collaboratoriums and each participant group had intended roles, the process remained flexible and open to iteration, which ultimately strengthened the final design concepts (PC, CoV2, ICAP). Some interviewees believe the Sea2City process has the potential for a lasting impact and legacy on coastal adaptation planning in Vancouver, due to its innovative and collaborative approach (PC, TAG, CoV1).

Interviewees pointed to the Sea2City process being shaped with a focus on decolonization from the beginning, as well as the emergence of the Indigenous Cultural Advisor Panel (DTS, ICAP, CoV2, survey-all). A City of Vancouver staffer reflected on

the pressure placed upon having one cultural advisor: "The biggest learning of all is it's not enough to have one cultural adviser [supporting design teams]. We did a pivot [mid-process]" (CoV2). Bringing on another cultural advisor shifted the process design and project timelines: "a huge learning [was] when you bring on more people to provide cultural expertise, then the people that they're teaching need more time to learn." Having flexibility in the process created spaciousness for the process to change the participants and vice versa.

Some interviewees and survey respondents disagreed on whether the process positively or negatively impacted equity. While some interviewees approved of the public engagement approach (PC, CoV2), others expressed confusion on the lack of robust outreach to community members and organizations (YAL2, CAG). Participant groups were intended to intermingle and collaborate, yet this occurred to varying degrees and levels of interaction and depth (DTS, YAL1, TAG, DTN, CAG). Some also saw positive value in international design teams participating in Sea2City (DTS), whereas others questioned their understandings of local and community values (CAG, YAL2).

Instances where the process did not consider equity (procedural inequity) were also highlighted, including differences in the decision-making power across participant groups to contribute to the design concepts (CAG, TAG), a lack of focus on engaging non-Indigenous racialized populations and other equity-denied populations (CoV1, CoV2), and barriers felt by YAL, CAG, and TAG members to participate and feel included in the Collaboratoriums (YAL1, YAL2, CAG, TAG). In answering what could have been done differently, a survey respondent shared: "More representation on the planning team [i.e., City, consultants]. The adaptation space is still pretty white. How can we center queer, BIPOC voices in that space? Or use it to ensure we are promoting needs of those with disabilities?" Instances of procedural equity featured prominently in Sea2City, yet clear shortcomings in the process design, equitable participation, and inclusion were highlighted.

Distributive justice

References to distributive justice focused on reconciliation and ecological elements in the design concepts (PC, DTS, CoV1, ICAP). When asked who benefits, a CAG member named "the non-humanistic elements of the design concepts" and how that supports people to "connect with nature" (CAG). Many interviewees spoke positively

of the efforts to shift the language traditionally used in coastal adaptation planning (Protect, Accommodate, Retreat, Avoid) in favor of decolonizing language (Host, Accommodate, Restore) (PC, DTN, DTS, CoV1, YAL2, CoV3). Collaborative discussions between the design team members and the cultural advisors led to broader ideas to reshape the Sea2City approach: "Let's decolonize the entire project. The language, the process, and let's look long-term… [towards] rewilding the foreshore" (ICAP).

The design process itself had mixed reviews. Many spoke positively about the iterative nature of the design process and how the design concepts allowed for a flexible foreshore rather than binary divisions between humans and water (ICAP, PC, DTS, CAG). Yet members of the YAL, CAG, and TAC felt they only had brief opportunities to provide feedback on the draft design concepts (YAL1, YAL2, CAG, TAG). This lack of deeper engagement with these participants resulted in these participant groups having less influence over decision-making power in determining the final design concepts (CAG, YAL1), therefore impacting the proposed distributive equity on the lands and waters that make up False Creek.

Shortcomings related to distributive justice included a lack of strategy to keep communities intact and housing affordable as buildings move out of the floodplain (CAG, PC). A CAG member identified tradeoffs of not replacing buildings at the end of their life, resulting in the community feeling like "you need to find somewhere else to live." They spoke about assumptions that everyone in False Creek can afford to move, when in fact there are affordable housing developments or senior communities. Some interviewees shared that knowledge and lived experience from people living around False Creek were missing from the designs (CAG, YAL1). Ultimately, the resulting design concepts are just concepts and not municipal plans at this stage (PC, CoV1, TAG). While the final design concepts offer a decolonized vision for False Creek, they did not focus on equity (TAG, CoV2, survey response), begging the question of whether distributive equity or even distributive justice is possible in False Creek as the sea rises.

Recognitional justice

References to recognitional justice included the Host Nations, Sea2City's focus on decolonization, and the role of the Indigenous Cultural Advisor Panel (DTN, DTS, ICAP, CoV1, CoV2). Interviewees named the histories of harm along False Creek: the forced removal of the Host Nations and ongoing trauma associated with settler

colonialism; zoning and land use decisions causing racialized and class segregation; and urban renewal projects on polluted land (CAG, PC). As a result, False Creek's ecosystem has drastically changed, erasing the inlet's ability to provide plentiful food. "When the tide was out, the table was set" once applied to this area, but no longer. (observation, March 23, 2022).

A CAG member reflected that some said they were "crazy to get a leasehold apartment in this industrial dirty place" (CAG). One of the Indigenous cultural advisors shared, "It's hard for present [Host Nation] members to educate the public [on] what harm has come from industrialization... What False Creek used to be to what it is now," while gesturing with their hands how the once long inlet has now been filled in. A YAL member also called for the city to change the inlet's name, as its present name was given by a surveyor who mistook the inlet for a creek mouth (YAL1).

While the decolonization workshops and Sea2City project managers helped emphasize the need to decolonize adaptation, interviewees pointed to the Indigenous Cultural Advisors' work in supporting a culture of learning and dialogue on decolonizing coastal adaptation (DTN, DTS, CoV1). The advisors were crucial in calling attention to recognitional injustices and ways to begin to heal relationships (DTN, DTS, CoV1); however, their extra labour and time spent educating Sea2City leadership and participant groups must be acknowledged (ICAP). In thinking about cultural sensitivity and safety, an Indigenous cultural advisor stated that "it's a shared responsibility [between] non-Indigenous professional industry… and the First Nations peoples… Finding a safe and comfortable space is challenging." The cultural advisors' efforts did support the shift in language guiding coastal adaptation and the final design concepts reflected these shifting values and priorities (CoV1, CoV4). The final Sea2City vision document explicitly names False Creek as a "healthy and safe place for people to connect to water" with the Host Nations as "active partners" in adaptation planning (City of Vancouver 2023b).

Shortcomings related to recognitional justice included having only one Indigenous designer serving as a cultural advisor (CoV2), missing representation from Musqueam Nation and the urban Indigenous, Black, and Chinese Canadian communities in Vancouver despite some outreach and engagement with these communities (CoV1, CoV2, CoV4, PC, TAG), and the vagueness of relocation and anti-

displacement strategies in the final design concepts as buildings shift out of the floodplain (CAG). While these shortcomings reflect the challenge constraints in timing, budget, and approach, they present an area to deepen into in future adaptation planning efforts in False Creek.

Intergenerational justice

References to intergenerational justice focused on the YAL (CoV1, YAL1, YAL2, CoV2, DTN). While participant groups with decision-making power (i.e., Design Teams, Sea2City project managers) thought the YAL positively contributed to the development of the design concepts (DTN, CoV1), YAL members voiced that their process was separate from the other participant groups, their participation was not prioritized in the larger Collaboratorium workshops due to time of day, and they had fewer opportunities to contribute to the design concept development with design teams (YAL1, YAL2). "We all thought we would be more a part of the design process," shared one YAL member (YAL1). "I was extremely interested in how we can do urban planning and design for the future in a decolonial way... I would have loved to have been part of those conversations with the two design teams, but that was not all what our role was." The YAL did not include Indigenous youth representation (YAL1).

As part of their final deliverables, YAL members developed a manifesto, which the City has shared publicly, outlining their vision for equitable, decolonial coastal adaptation planning (Sea2City Youth Adaptation Lab, 2023). Interviewees shared the importance of intersectionality and decolonization in the manifesto (YAL1, YAL2, CoV1), with the YAL members calling for the City to stay accountable to decolonization, a commitment to Indigenous sovereignty, and land back (Sea2City Youth Adaptation Lab 2023).

The CAG had seniors represented but did not have consistent youth representation due to capacity (CoV1). The ICAP was developed with an intergenerational approach; however, the panel did not include Indigenous youth due to capacity to participate (ICAP, CoV2). An Indigenous cultural advisor shared that they had enjoyed having "three generations present on a project" and had hoped to bring this model to Sea2City. Still, having two cultural advisors worked well, combining traditional knowledge, intergenerational wisdom, and Indigenous design principles (ICAP, CoV2). Intergenerational equity was actioned through the creation of the YAL and their final

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outputs as well as elders and seniors involved in the CAG and ICAP; however, the need for intergenerational decision-making was highlighted as a shortcoming (YAL1, YAL2). The challenges around capacity for youth to participate also highlight broader systemic issues around who is able to take time off work to prioritize other projects, how are these expertise valued monetarily, and how well engagement was designed to ensure youth were able to participate.

Epistemic justice

References to epistemic justice focused on the role of the Indigenous Cultural Advisors in supporting the Design Teams and Sea2City project managers, and their broader impact on the final design concepts (CoV2, ICAP, DTN, PC, YAL2). Many interviewees and survey respondents pointed to the decolonization workshops with Tsleil-Waututh Nation and Squamish Nation held early in the Sea2City process as the basis for creating shared learning on decolonization across participant groups (CoV1, DTN, DTS, ICAP). The workshops and cultural advisors inspired the design teams to "try to weave the traditional and Indigenous [knowledge] with modernity and... try to braid it together" (CoV1). One design team member shared they "thought that this project was going to... require more engineering, technical stuff... I think [it has] actually prioritized more of the Indigenous knowledge and wisdom and those ways of knowing into the adaptation approach" (DTN). Intentional moments of reflection and debrief after Collaboratoriums (CoV2, ICAP), supported continued learning by non-Indigenous participants and dialogue between Indigenous and non-Indigenous Sea2City participants.

The shift to decolonize coastal adaptation terminology is an example of both distributive and epistemic equity being actioned (DTN, TAG, CAG, CoV4). The design concepts prioritized Host Nation values and design principles and made space for water and the local ecology. Epistemic equity was also actioned through the YAL and CAG adding valuable lived experience and community knowledge to the Sea2City process (CoV1, YAL1, YAL2, CAG, CoV2). Both participant groups were formed using equity targets, reflecting a Sea2City value in identifying a representative cohort of youth and community members respectively to provide feedback on the design challenge (CoV1, CoV2).

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However, shortcomings related to epistemic justice included the absence of representation of the Musqueam Indian Band on the Indigenous Cultural Advisor Panel (YAL1, CoV1, CoV4) to share from their Nation's worldview, as well as the lived experiences of equity-denied populations (i.e., Black, Chinese Canadian, low-income, people with disabilities) located within, along, and near False Creek (YAL2, CoV1, CoV2). These gaps contributed to missing worldview and community perspectives in the final design concepts. Further effort is needed to establish stronger relationships, move at the speed of trust (brown 2017), and weave together these missing lived experiences and ways of knowing and being.

2.4.3. Wading Deeper: Successes, Key Learnings, and Recommendations

Considering the forms of justice analysis in the previous section, Sea2City seemed largely successful in weaving a decolonization perspective into the challenge; however, it did not explicitly center equity in its process or outputs. From a participation perspective, Sea2City did engage many different groups, experts, and community members in urban coastal adaptation planning in False Creek; however, nuanced analysis in the previous section reveals areas of improvement around decision-making power and inclusion. Building upon the application of the JustAdapt framework to evaluate how equity and justice were incorporated into Sea2City, the following section outlines key successes and learnings from Sea2City and recommendations for the City of Vancouver for future urban coastal adaptation planning in False Creek.

Successes

Successes from Sea2City largely stem from efforts to prioritize Indigenous knowledge and decolonize the coastal adaptation approach (DTN, ICAP, CoV1, CoV2). These efforts helped action epistemic and recognitional equity throughout the challenge. One design team member reflected that Sea2City "has done a really good job of balancing... multiple ways of knowing and the two-eyed seeing[4]." Another key success

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[4] Two-eyed seeing is a concept coined by Mi'kmaw Elder Albert Marshall to describe working with the purpose of honouring multiple worldviews at the same time: "To see from one eye with the

was that Sea2City fostered a culture and a container for learning. While some participant groups benefited from learning more than other groups, data collected reflected a general sense of (un)learning around dominant settler-colonial ways of designing and planning and engaging in a learning practice around envisioning decolonial coastal adaptation practices for False Creek (CoV2, DTN). A third key success was the flexibility built into the Sea2City process to allow for moments of reflection and iteration. Process changed over time to adapt to changing needs and ideas and the resulting design concepts reflected a vision for each challenge site, rather than a prescribed, set-in-stone approach, supporting procedural equity (CoV1, CoV2, ICAP). Multiple Sea2City project managers described instances of asking for feedback from participant groups on how the process was going and what participants were (un)learning about coastal adaptation (CoV2, CoV1). Together, these successes reflect a sense of optimism for Sea2City's impact and legacy, that coastal adaptation in False Creek might reflect new relationships between the Host Nations, the City, residents, more-than-human beings, and the lands and waters that make up False Creek.

Learnings

Sea2City offered many key learnings on how to engage with urban coastal adaptation planning in False Creek in a good way. For the purposes of brevity, four key learnings are shared below. First, having multiple cultural advisors to support design teams and challenge project managers was necessary to reduce the disproportionate burden of labour and time placed on one advisor (CoV2, ICAP). Second, the Sea2City project managers and core participants were flexible and open to change, and as a result of their collaboration, the core design approach and terminology shifted mid-challenge (DTN, CoV2, ICAP, Sea2City Project Summary). When asked about coastal adaptation in False Creek moving forward, one Sea2City project manager shared, "The big learning is that it's flexible and [values] change over time. That was one of my big aha moments in Collaboratorium #2… We're not just solving for x at a certain time… I think adaptation in False Creek is a series of projects and programming versus like discrete infrastructure projects" (CoV2).

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strengths of Indigenous ways of knowing, and to see from the other eye with the strengths of Western ways of knowing, and to use both of these eyes together" (Bartlett et al. 2012).

Third, youth want to be involved in UCAP in Vancouver and they want to be recognized and valued as decision makers (CoV1, YAL1, YAL2, Sea2City Youth Adaptation Lab 2023). Moving forward, YAL members are curious about accountability: "Youth have shared that they would have liked more clarity on what the commitment of the City was to carry on their projects upfront" (CityHive 2022). Finally, while Host Nation values and design principles were prioritized, engagement and consultation with other key equity-denied populations (e.g., racialized populations, people with disabilities, low-income residents, seniors) was not a focus in Sea2City (CoV1, CoV2, YAL2, CAG, observation). A Sea2City project manager shared "I think we could have improved where we gathered knowledge from and testing the concept [of] getting people's feedback from a different range of people" (CoV2). The challenge seemed to meet its intended goal of centering decolonization, yet engagement with people most impacted by rising sea levels was not a priority. Sea2City took a values-based approach, not an equity lens approach, and focused on design concepts, not design solutions. While the challenge did serve as inspiration and engaged community members through the Community Advisory Group and public engagement, more could have been done to acknowledge and incorporate the diverse experiences of those who live, work, and play along False Creek into the design concepts.

Recommendations

Based on data analysis, a number of recommendations emerged for strengthening future equitable urban coastal adaptation planning in False Creek. Some recommendations came directly from interviewees and survey respondents while others originated from participant observation or the analysis stage. Table 9 articulates high level recommendations for the City of Vancouver for deepening equity and justice in future UCAP in False Creek.

Table 9. **Recommendations for future urban coastal adaptation planning in Vancouver's False Creek**

Type	Recommendation	Source
Overarching	Make equity a priority in future urban coastal adaptation planning in False Creek in addition to decolonization	Researchers
Overarching	Conduct an equity audit for urban coastal adaptation planning in False Creek	Researchers

Overarching	Consider opportunities to increase decision-making power of youth and community representation, in addition to pursuing co-governance with the Host Nations	Researchers, YAL1, YAL2
Procedural justice	Build capacity and engagement structure to include participation from key equity-denied communities around False Creek, including but not limited to Musqueam Indian Band, the Black community based in historic Hogan's Alley, and the Chinese Canadian community living in Chinatown, seniors	CoV1, CoV2, Researchers
Procedural justice	Continue to support a culture of learning / unlearning as urban coastal adaptation planning continues	Researchers, DTN, CoV3
Distributive justice	Incorporate anti-displacement strategies into future urban coastal adaptation planning in False Creek	CAG, Researchers
Distributive justice	Ensure that the decolonized coastal adaptation language continues to impact the types of adaptation actions co-developed and pursued in the future	Researchers, PC
Recognitional justice	Conduct a deeper dive assessment into histories, inequities, and present injustice occurring around False Creek (i.e., contamination, health impacts, impacts to specific communities – urban Indigenous, low-income) in addition to existing work to learn about impacts to Host Nations	Researchers, CoV1, PC
Intergenerational justice	Ensure youth have decision-making power in urban coastal adaptation planning process in False Creek	YAL1, YAL2, CoV1, CoV2, researchers
Epistemic justice	Respect knowledge sharing agreements and boundaries between Nations and colonial government staff or communities and colonial government staff	Decolonization workshops

2.5. Discussion and Conclusion

2.5.1. Making sense of the intertidal zone

This research acknowledges clear calls from within climate adaptation scholarship to include equitable and inclusive evaluation practices (Amorim-Maia et al. 2022; Shi et al. 2016). In response, this research offers an application of the JustAdapt evaluative framework to the City of Vancouver's Sea2City Design Challenge. The findings from this application highlight different ways that equity and justice were enacted throughout the challenge and specific areas for improvement moving forward. While limited, current scholarship suggests that North American climate adaptation planning recognizes the importance of centering equity yet has not effectively integrated equity into implementation commitments and monitoring and evaluation (Chu & Cannon

2021). This research observed a design challenge from start to its culmination however, its scope did not allow for continued monitoring of the implementation and outcomes. Still, this research expands upon existing equitable evaluation methods (Arnott et al. 2016) and offers a new framework for equitable evaluation specifically within the context of urban coastal adaptation planning.

More broadly, this research affirms that equity and justice cannot be thought of or engaged with as buzzwords. Equity and justice must be recognized as deeply contextual. Equitable coastal adaptation is more than just a strategic goal guiding adaptation (Perrin-Martinez 2022). Contextualizing equity within coastal adaptation requires deep reflection on place, time, and worldview and lived experience. First, just adaptation asks us as scholars and practitioners to use a place-based approach to inform planning and acknowledge how place intersects with histories and governance. This research presents a case study within the geographic, political, and historical context of Vancouver's False Creek, which has informed the findings and recommendations of this case study analysis. Second, just adaptation asks us to reframe our collective sense of time and how social inequities may be perpetuated through adaptation interventions and decision-making. This research's case study highlighted how design might offer flexibility and responsiveness as coastal adaptation conditions change over the next century. By considering Indigenous and youth perspectives in the development of the design concepts, Sea2City brought attention to how time intersects with intergenerational equity, a core pillar of the JustAdapt framework. Third, just adaptation asks us to weave together worldviews and lived experiences that may be in deep opposition or entangled in oppression. The case study emphasized that the outputs of Sea2City were shaped and strengthened by weaving together Host Nation values and design principles with dominant Western design practices, exemplifying epistemic equity.

Climate change is already impacting coastal cities across North America, and planners must prepare for a variety of climate hazards, including sea level rise, coastal erosion, and storm surge. These climate impacts disproportionately impact people with existing vulnerabilities to sudden shocks or stressors (Resilient by Design 2017; Shonkoff et al. 2011). Planners must prepare for these twin crises together – addressing flood risk from a public safety perspective and addressing the social inequities flooding reveals and exacerbates. However, with color-blind coastal adaptation practices in the

United States that reaffirm racial inequities on the rise (Hardy et al. 2017; Ranganathan & Bratman, 2019) and colonial coastal adaptation practices in Canada that segregate land and water and restrict and control water (Leonard 2019), thoughtful integration of equity into coastal adaptation planning is needed as a radical intervention. Emerging research on evaluating equitable outcomes from coastal adaptation has applied the forms of justice to assessing buy-out insurance practices following flood events in the United States (Siders 2022), yet using these forms of justice for evaluation are not standard practice across adaptation scholarship.

2.5.2. Conclusion

This research offers three main contributions to the field of urban coastal adaptation planning. First, it contributes a case study on evaluating equity and justice within the British Columbian context, ground-truthing methods for applying a new framework in a place-based context. Second, this research offers an application of the JustAdapt framework as described in the forthcoming paper by Okamoto and Doyon. Frameworks for evaluating equity and justice in coastal adaptation are emergent, and JustAdapt offers a replicable tool as a starting point. Future research directions could include (1) co-developing evaluation tools with Indigenous Nations and equity-denied communities to redistribute power in the planning process and (2) combining JustAdapt with participation tools, like the Spectrum of Community Engagement to Ownership (González et al. 2018), to build capacity and clarify power dynamics in coastal adaptation.

Third, this work offers specific recommendations to the City of Vancouver for implementing more equitable coastal adaptation planning in the future. Key learnings and recommendations from this case study may be useful to apply in other municipalities across coastal North America and could form the basis of future research in other related geographies. Through this case study on Vancouver's Sea2City Design Challenge, we hope to inspire more place-based planning research and practice to assessing equity and justice in urban coastal adaptation planning.

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Closing Remarks

This afterward is meant to weave together learnings and key takeaways from Chapter 1 and Chapter 2, offer gratitude for those involved, and conclude with grounding back in place with reflections from interviewees on water, equity, and False Creek.

So what?

Chapter 1 and 2 are meant as stand alone yet complimentary papers. Chapter 1 asserts that evaluating equity and justice in urban coastal adaptation planning is critical for learning from current planning practice and for taking action toward transformative just adaptation. Chapter 1 offers the JustAdapt framework as a new tool for scholars and practitioners to assess equity and justice using the five forms of justice - list them out. Chapter 1 is significant because it contributes new evaluative methodologies and tools for equitable adaptation planning. In doing this research, the how (methods) of planning seemed deeply connected to the why (purpose, issue, emerging need) of planning. The methods in the pursuit of equity also need to be developed with an equity lens. JustAdapt offers one new method to support the evolution of equitable urban coastal adaptation planning.

Chapter 2 brings the JustAdapt framework to life within a place and project-based context. Chapter 2 zooms in on Vancouver's False Creek and reviews how equity and justice were integrated into the Sea2City Design Challenge. Chapter 2 is significant because it offers the first application of the JustAdapt framework in an urban Canadian context. It also offers insights into current challenges and opportunities that the City of Vancouver is navigating as they plan for sea level rise. These challenges and opportunities may be applicable to other coastal cities in North America, thus offering learnings for other municipalities to trial and apply. Chapter 2 also confirms that the five forms of justice included in the JustAdapt framework are in fact relevant to Sea2City, suggesting that these five forms of justice resonate with the complexities of equitably planning for future sea level rise. While the two papers present their own respective ideas and findings, these two papers together contribute new scholarly work on evaluating equity in coastal adaptation.

Grounding in people and place

As I bring this manuscript to a close, I wanted to again extend my gratitude to those who participated in this case study, offered feedback and helped shape the JustAdapt framework, and supported my research process. This research would not have been possible without the collaborative energy fostered by project partners and the relationships built with those I interviewed. This research would also not have been possible without place. I'm grateful to False Creek and acknowledge and see the continued stewardship of the Host Nations since time immemorial.

In the spirit of finding a close that echoes decolonial ways of relating to land and water and conducting research, I bring forth the voices of those I interviewed. Below are some of their responses to being asked to describe their relationship to water and False Creek as well as some of their dreams and fears for False Creek in 2100. For privacy, direct references to identity outside of profession have been removed.

> "Water is everything: it gives you life, it also can be challenging, and, but it's also where I play... Everything" (TAG)

> "I think the ocean is not [just] water, right?... It's the ocean, it's a living thing. It's an ecosystem, it's a lot of ecosystems that interact with each other… water is too simple, for me, as a concept to say that it's about water." (CAG)

> "I feel that my personality embodies like water. I sometimes feel very still, sometimes very turbulent. In that way, I relate to water." (YAL2)

> "I see water as life. Most of your body is made up of water and obviously without it, you die. It's really this fluid thing that connects us. I've always lived near like a coast… when I go further inland, it's kind of uncomfortable. I definitely feel connected to it." (CoV1)

> "I have so much respect for water. I don't even know where to start. [As] a landscape architect, my profession is land. I feel that water is one of the most powerful forces on the land and… I was brought up by the water by the estuary." (DTN)

> "Deep, long, ever changing. My work and living life has always been marked by places with water - be they rivers or oceans." (PC)

> "I have a very strong relationship with water. It often has a cleansing quality for me internally and externally. It's funny, but I always feel that I haven't connected with the land and the environment around me fully until I have gone into the water and swum in it. The whole immersion is the moment I've arrived and am in touch with it." (YAL1)

"It's a long-standing personal relationship to water… it gives me a lot of peace and good memories, but also is a source of curiosity and inspiration, as well as supporting life itself." (CoV2)

"I grew up with a strong affinity for [lakes] and I spent the first half of my career [next to] the largest estuary in the United States and then coming to [live next to] the second largest estuary. I have an affinity for water in all the places that I come from." (DTS)

On False Creek while sightseeing on a family trip: "It was so pretty and it was such an inviting space the way that it felt in the moment." (YAL1)

Later when they moved to Vancouver: "I remembered False Creek and looked at it through my photography lens as an inviting space and then witnessing and hearing from Musqueam, Tsleil-Waututh, and Squamish peoples and that whole perspective just changed. False Creek is very symbolic for me." (YAL1)

"I have a personal connection to False Creek. I see it as a very unique ecosystem, a body of water with a rich history that is complicated. And... that it has all these possibilities for change in a good way. I feel like it's part of my mandate in my role at the City to raise that awareness and support False Creek as its own... for its own health and safety, because that supports us." (CoV2)

On what justice looks like in Vancouver: "If I were to look at just within the industry that I work in, with that statement that I'm a stranger in my own territory walking downtown… if members from my community generations from now can come a high level of comfort and pride and walk through downtown and see culture presence in design, then I've done my job." (ICAP)

On envisioning a resilient and just False Creek in 2100: "What would happen if we would just move away from the shoreline of False Creek, and see what nature does? How will nature retake it because nature is the mastermind of resiliency?" (YAL1)

On envisioning a resilient and just False Creek in 2100: "More areas that will be restored, that allow the ecosystem to come back or to improve… I'd like more people to be able to live in False Creek and more people to visit False Creek." (CAG)

On envisioning a resilient and just False Creek in 2100: "A place where both humans and the more-than-human world can feel, can gather, and feel welcome, and like they belong. There's an abundance of nature and that we feel part of it. There isn't that disconnect. There's no more edge necessarily in 2100 between city and nature. In a resilient future, there's more of an overlapping between it all." (DTN)

Water is life, a mirror reflecting the work we need to do, and the carver of our future.