Article

The Climate Just City

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Abstract: Cities are increasingly impacted by climate change, driving the need for adaptation and sustainable development. Local and global economic and socio-cultural influence are also driving city redevelopment. This, fundamentally political, development highlights issues of who pays and who gains, who decides and how, and who/what is to be valued. Climate change adaptation has primarily been informed by science, but the adaptation discourse has widened to include the social sciences, subjecting adaptation practices to political analysis and critique. In this article, we critically discuss the just city concept in a climate adaptation context. We develop the just city concept by describing and discussing key theoretical themes in a politically and justice-oriented analysis of climate change adaptation in cities. We illustrate our arguments by looking at recent case studies of climate change adaptation in three very different city contexts: Port Vila, Baltimore City, and Karlstad. We conclude that the social context with its power asymmetries must be given a central position in understanding the distribution of climate risks and vulnerabilities when studying climate change adaptation in cities from a climate justice perspective.

Keywords: just city; climate just city; 'the right to the city'; climate change adaptation; power; equity; urban planning

1. Introduction

Cities around the world are increasingly impacted by climate change and in total are forecast to experience massive social and economic losses under current trends [1–4]; by any reasonable understanding of the word, this constitutes a crisis [5]. This climate crisis threatens urban settlements [1] at the same time as the number of urban dwellers, in part due to ongoing urbanisation in higher-risk cities in low- and middle-income nations, exposed and vulnerable to climate-related events increases [6]. Future predictions state that climate change will increase the occurrence and severity of weather and climate-related hazards to urban settlements [1,2]. Climate change can also worsen existing socio-economic problems and the risks of other natural hazards.

Hence, issues connected to, or driven by, climate change are receiving increasing attention in cities around the world [7,8], and there is also unprecedented social mobilisation around these issues that is increasingly framed around the recognition that climate change is fundamentally a question of justice (cf., [9–11]). Justice, from this perspective, includes issues such as responsibilities for action, the varied vulnerabilities to the impacts of climate change, and how this is connected to structural injustices and power asymmetries that influences cities', organisations', and individual's abilities to mitigate risks and adapt to unavoidable impacts (cf., [6]).

Cities, therefore, are critical sites for the implementing measures to fulfill goals both for sustainability [12] and for economic growth [13]. At the same time, cities are dynamic "… with interacting and interdependent social-economic, ecological-biophysical, and technological infrastructure components … " ([14], p. 99). From the perspective of climate change, cities are perceived both as central problems and as important drivers of

sustainable development with regard to climate change and other issues [14–18]. There are many demands, expectations, opportunities, and structures in the quest for the sustainable city [19]. Efforts to reorient cities under the rubric of sustainability are, at least in part, often framed by economic rationalities [20,21]. In this sense, climate change adaptation in cities takes place in what Suzanne Mettler has labelled a 'policyscape' consisting of layers of earlier political ideas, policies, and regulations that has become institutionalised with tangible " . . . consequences for governing operations, the policy agenda, and political behavior" ([22], p. 369). A feature of this policyscape is path-dependency created by previous policy-making that facilitates some pathways and delimits other potential pathways of contemporary and future policy making [23,24]. Such path-dependency delimiting public governance and institutional activity is, of course, highly problematic, particularly when in a self-reinforcing condition, creating a 'lock-in' of extant governance. Such a lock-in in traditional governance models leads to " . . . plans, policies and solutions that prioritize short-term goals over long-term resilience goals" ([14], p. 106). In order to reach transformative and climate governance models and frameworks facilitating climate justice in our cities, this path-dependency needs to be up-ended [14,25].

These circumstances highlight the importance of the issues of equity and fairness, decision making, participation and representation, power and influence, and governance [25–27]. In this article, we employ a critically constructive approach to the just city concept as developed by Susan Fainstein [28] and others, as we increase the complexity of the approach by adding the socio-environmental dynamics of climate change adaptation and focus on the 'climate just city'. Two cross-cutting topics central to a discussion of the climate just city with the inclusion of climate change adaptation emerges strongly from the discussion above (cf., [29–32]): (1) issues of distributional (or allocative) justice, and (2) issues of participatory (procedural) justice involving the processes, institutions and implications of citizen and stakeholder engagement [10,33,34].

These two aspects involve what Henri Lefebvre, David Harvey and others have termed 'the right to the city' [35–38], giving rise to political inquiry, such as: for whom is the city built and developed? What rights to the city as a whole do its inhabitants have? Who is given 'voice' in central political processes and whose experiences and knowledge is counted in the future development of urban society? Central for Lefebvre was the eradication of poverty and of unjust inequality [37,38]. Our highlighting of Lefebvre and Harvey also indicates that our outlook on the climate just city is more expansive than that of Fainstein's view of the just city.

This paper critically discusses the just city concept in a climate adaptation context and develops the just city concept by describing and discussing key theoretical themes in a politically and justice-oriented analysis of climate change adaptation in cities. We illustrate our arguments by looking at recent case studies of climate change adaptation in three city contexts: Port Vila (Vanuatu) [39], Baltimore City (USA) [40] and Karlstad (Sweden) [41]. Our cases are situated in different national and local contexts and highlight different aspects of the climate change adaptation challenge from the perspective of justice. Port Vila draws attention to the importance of the inclusion of indigenous populations and their experience-based knowledge in adaptation policy and its implementation; Baltimore City highlights how historical social class and race divisions impact contemporary adaptation policy and implementation. Karlstad brings to light how economic pressures and policy priorities frame adaptation policy and implementation. Before we move on to these case studies, we discuss cities and climate change adaptation, growth-oriented development policies and expand our theoretical perspective on just cities and that of the climate just city.

2. Cities and Climate Change Adaptation

Adaptation to climate change is essential for preparing for its impacts (as proactive or precautionary measures) and for responding to impacts that have occurred or are occurring (as reactive measures) (see, e.g., [26]). Measures for adaptation vary greatly, covering behaviour change and education, engineering and infrastructure, and institutional responses

in law, policy and regulation, and, of course, planning (see, e.g., [1,7]). Furthermore, the goals for adaptation are wide-ranging, and include reducing exposure to hazards, hazard reduction, and vulnerability reduction. Key areas of urban adaptation related to the public sector include the energy, health, transport, water supply and sanitation portfolios [1,42]. As recorded by the UNFCCC, there has been greatly increased national activity globally reported in National Adaptation Programmes of Action and National Adaptation Plans; adaptation research dealing with cities has also similarly increased (see, [1]) together with associated scholarship [4,43–45].

Critically, the social and economic impacts of climate change are fundamentally unfair and unjust in their effects and consequences. A combination of societal and economic factors connects adaptation responses to issues of social (and environmental) justice. Climate change impacts produce social and environmental impacts of great scale, with an extensive proportion of the global population at risk of significant losses to essentially all components of social life; those at greatest risk are of lower socio-economic status, concentrated in lower- and middle-income nations and living in cities (around one-third of global population) [1,46]. Vulnerability to the risks of climate change is skewed against those with the fewest material resources and economic opportunities, greatest exposure to natural hazards (often tied to geographical location), and where economic/institutional circumstances inhibit adaptation capacities (see, e.g., [1,6,47]).

As a broad, dispersed, and ambiguous theme, estimating the scale of adaptation requirements/needs is difficult for any jurisdiction. A prominent problem is that although these costs are large and growing, they have typically been under-estimated. An associated problem is that investments in adaptation are clearly far below the level required to avoid great environmental, economic, and social losses. UNEP [48] estimates the costs of adaptation in developing nations alone by the year 2030 to be in the range of USD 140–300 billion/annum. UNEP's The Adaptation Gap Report [48] states that adaptation costs in developing nations to be probably two-to-three times than current global estimates by 2030. Óh Aiseadha, Quinn [49] found global adaptation policy expenditure for 2011–2018 to be USD 190 billion and the Climate Policy Initiative [50] estimated 2017/2018 expenditure at USD 30 billion. A report by the multilateral development banks of their collective climate finance in 2019 identified USD 15 billion adaptation expenditure [51].

As the major site of greenhouse gas emissions (GHG), cities are central to the goal of emissions mitigation. Emissions reduction globally, and the rate of reduction, will influence the scale and scope of climate change impacts and, in turn, that of the potential adaptation tasks facing cities. Accordingly, cities have a pivotal role to play in handling the climate change crisis, both in their efforts to limit negative and severe impacts in the future and also in combatting the already tangible impacts [25]. It has been stated that "...cities are the key human component in anthropocentric climate change" ([52], p. ix).

Adaptation is challenging in many dimensions; its definition is contested, it engages broad swathes of society and with such an extensive set of climate change impacts and associated values involved, adaptation responses canvass a potentially enormous field of activity with many economic, environmental, and social implications [26,53]. Significantly, adaptation is a highly heterogeneous phenomenon; for example, engaging individuals, households, and enterprises responding to local risks, major corporations adapting to changing production inputs, local governments planning for risks of coastal inundation and national governments formulating national policies, and a myriad of other issues, stakeholders, and responses. Within the diversity of adaptation awareness, approach, level of support, measures taken, stakeholder involvement and other variables is the lesson that adaptation is a locally situated phenomenon; it is a specific action taken in a defined location by stakeholders seeking to protect values in that site or related to that site (in the case of protecting ecosystem services). However, adaptation also poses 'cross-scale challenges' entailing multi-level governance [54–56]. As Moser expressed it: ([57], p. 31)

Those involved in organising, shaping, steering and implementing these efforts will have to navigate and manage a system made up of multiple actors with a variety of

interests, capacities, and challenges often spanning several sectors. Moreover, many (if not most) locally planned adaptation decisions and actions require assistance from, or at least coordination with, higher levels of government—thus bringing additional actors to the table.

Accordingly, urban adaptation engages responses by civil society, private enterprise and governments, but with governments being the most prominent [26]. Public institutions play the major role in the urban climate change adaptation response through many functions, including disaster preparations and post-disaster recovery, environmental protection, land use planning, public goods infrastructure and services investment and provision, public education of disaster risk and preparation, public hazard protection and emergency service provision, relevant law and regulation formulation and enforcement, research and information gathering, social welfare provision, and urban development and building regulation. Government policy, programs, and planning have been recognised as essential in the adaptation response (in part, because of governments' unique capacities to deal with market externalities, market failures, protection of common pool resources and related problems), (see, e.g., [26]). Not only is adaptation a policy and planning challenge entailing technological and environmental adjustments to cities (such as through communication, housing, infrastructure and technology investments), but it is also a highly social and political one (including aspects such as equity, inclusion and exclusion, participation/representation, poverty and race) [40,58,59].

Climate change adaptation is one of several major challenges facing cities and it intersects, integrates, and overlaps with the problems of disaster hazards, unsustainable resource and ecosystem service use, and of underdeveloped nations and locations. United Nations policy responses at the international level provide a ready guide to this constellation of issues facing cities: the New Urban Agenda [60], Paris Agreement on Climate Change [61], Sendai Framework for Disaster Risk Reduction [62], Sustainable Development Goals [63] and the World Humanitarian Summit: Agenda for Humanity [64]. At the local, regional, national, and international scales of public policy and NGO responses, there are efforts to formulate concepts and policies that integrate elements of these separate agendas, such as the low-carbon city, the resilient city, and the sustainable city. It should not be assumed, however, that at the international—or any other—level, these policy and planning initiatives on related issues are aligned; rather, there will be a range of compatibility from the matching to the enabling to the constraining to the counteracting [18].

It is a truism in sustainability policy and planning that the greater the social transformation sought, the higher the barriers to change [45,65]. Adaptation barriers include the cultural and social, educational, financial and resourcing, informational, institutional, technological and the political, (noting that different stakeholders vary in their perception and understanding of barriers). Underpinning many of these barriers and constituting a 'mega barrier' is the manifestation of global capitalism (see several of the contributions in, [25]). For some scholars, the state's relationship with capitalist economics is a major barrier to formulating and implementing transformative adaptation measures (see, e.g., [32,66]). Critical for analysing adaptation is appreciating its relationship to capitalism, including such aspects as the role of economic markets, the expressions of economic interests, the arrangement of economics and political institutions, the activities of economic stakeholders, the economic valuations of social and environmental values, transfers from the public to private realms, market failures, access to common pool resources and the distribution of the costs of externalities. Government is intertwined with capitalism in the modern state, and while this relationship assumes many forms, it is indisputable that national governments assume responsibility for national economies, so that all national economies are engaged with global markets to varying degrees. National, state, and local governments have accepted, therefore, specific (albeit, highly varied) responsibilities regarding the performance of the economy under their jurisdiction; for elected representative governments, buoyant economic conditions are often tied to electoral success, and vice versa.

Taken together, climate change adaptation in a city context offers both considerable challenges and perceived opportunities, which clearly highlights the need to include political, social, and justice aspects when cities respond to the hazards and other impacts related to a changing climate. Until recent times, however, climate change adaptation has been informed primarily by science and technology, and it is only more recently that the academic adaptation discourse has widened to include social and cultural perspectives, as well as political analyses and critiques [26,59,67].

This emerging development in adaptation research approaches entails an increasing interest in issues such as the allocation and distribution of the costs and benefits of economic activity within society, the processes of decision-making and who is included/represented in decision-making institutions and who is excluded, and of the processes and institutions involved in decision making and the principles and directives that guide this activity [25,26,59,68–70]. Or, in a more bluntly critical formulation, those carrying the most profound risks and bearing the brunt of the negative impacts to date have their 'skin in the game'; some scholars have concluded that the public sector officials, technical advisors and elected representatives formulating adaptation responses are not likely to share the risks and potential pain of the most vulnerable and negatively affected by climate change [10,71]. In line with this reasoning, it has been stated that previous and contemporary urban climate change adaptation measures tend to " . . . privilege existing engines of urban economic growth . . . " ([72], p. 17) and, as a result, seek to protect those areas, assets and services, groups and individuals that are 'valued' from an economic growth perspective (see, e.g., [32,44]). These ideas were further developed in Anguelovski and Pellow [72].

3. Attractive Cities and City Growth

At the same time as cities are affected by climate change, they are also the primary engines of economic growth [73]. Changes in urban form, function and population are responses to economic growth, the most obvious expression of which is urbanisation in developing nations and the transformation from agrarian to industrial-service economies. In a form of feedback, urban growth can also foster economic growth and productivity increases through agglomeration, economies of scale and positive spill-over effects. Society in general and cities in particular are re-developing in the wake of changing patterns of industrialisation, urban forms and functions as driven by local and global economic and socio-cultural influences [41,52,74]. Globalization continues to draw urban settlements into the global economy, simultaneously providing new avenues for resource exploitation and market expansions to foster economic growth and also expanding the reach of market forces into social and economic life and exposing them to market competition.

Although global market forces are identified as producing net economic growth, a portion of economic gain is made at the expense of economic losses, such is the character of these markets [75]. Cities have become the locus, therefore, for the costs of globalization and of economic growth that include environmental and natural resource losses, increased economic marginalization and socio-economic 'precariousness', widening socio-economic inequality, and social unrest and conflict. Economic development, with its focus on competitiveness, can produce both industrial development in some cities and de-industrialisation in others, but in both scenarios, the city functions as a 'growth machine' (cf., [76]). In the case of developed nation cities in economic decline (or parts thereof), globalisation has initiated processes of city redevelopment focusing on the transformation of derelict urban areas into growth-promoting assets [13]. Poverty reduction and improvements in quality of life are the expected outcomes of economic growth in developing nation cities, but the association between growth rates and these outcomes varies greatly between cases; most conventional models of economic development link, to varying extents, domestic economic growth to international trade and globalisation.

Connected to this, local action on climate change, framed by perspectives of competitiveness and growth, has become a part of city marketing and branding with the aim of attracting investments and new inhabitants. As a result, a climate impact solutions-

oriented approach that " . . . offers a strategic opportunity that presents new pathways for investment, promotion, and regulation" ([73], p. 994) has evolved. Urban governance must contend, therefore, with the responsibilities it has assumed regarding managing economic markets and those it has assumed for managing, monitoring, planning, and undertaking adaptations to climate change.

4. Just Cities

In many respects, the just city concept is a trope used to simplify and analogise a highly contestable and uncertain idea that can be either positive (as a measurable condition or attribute) or normative (as an aspiration or specific goal). While usually viewed as concerning social justice in an urban context, the just city problematises two realms of high debate into one reflecting these uncertainties, namely the identity of the city (albeit frequently neglected in the just city discourse), the identity of justice and the positive and normative expression of both in the 'just city'. As a rhetorical or literary device, the just city frees debate and policymaking from the miasma of open-ended definitional debate, but for the potential price of fundamental uncertainty or false presumptions of shared outlooks.

Urban settlements as a generalisable form are elusive, with differentiations between the urban and non-urban being contested (see, [77]). Accordingly, there are differing views over the identity of just cities based in differences in the understanding of cities. Soja [78] argued for 'spatial justice', with its concern with how urban spaces are locations of social production. Chatterton [79] made the more expansive point that the city is a component of justice, not just its setting. It may be, therefore, that the expressions of injustice and opportunities for justice are more particular within specific urban areas than they are in the generic differences between the range of urban and non-urban forms.

Although the just city is a relatively new term, it represents ancient aspirations, debates and ideals over the character and meaning of justice. Notions of the just city can be found in the roots of Western philosophy and are certainly prominent in other philosophical traditions (see, e.g., [80]), with the roots of contemporary just city debates arising with the urbanisation of the Industrial Revolution (see, e.g., [81]). Although the urban identity component of just cities is a minor aspect of contemporary just city discourse, much of what has occurred under the just city moniker arose from the urban studies movement of the 1960s and 1970s in urban geography, urban politics, and urban sociology.

Fainstein [82] argued that, in the 1990s, the cause of justice was taken up more explicitly by scholars through three main approaches: (1) communicative rationality, (2) recognition of diversity and (3) the just city/spatial justice. Just city concepts were coincident with the broader outlook in left-wing politics, where the pursuit of justice has come to feature issues of representation and democracy alongside the longstanding concerns of income and material equity. Urban justice, wrote Fainstein [28], has the hallmarks of material equality, diversity and democracy. Promotion of the 'right to the city' by Lefebvre [83] and Harvey [35] entailed a more radical and critical cause than what Fainstein suggests:

The right to the city is, therefore, far more than a right of individual access to the resources that the city embodies—it is a right to change the city more according to our heart's desire. It is, moreover, a collective rather than an individual right, since changing the city inevitably depends upon the exercise of a collective power over the processes of urbanization. ([35], p. 939)

Harvey [36] expressed concern that Fainstein's concept of the just city was unquestioning of capitalism and avoiding aspects of outright conflict and struggle. In addition, and central for this article, Fainstein's just city concept fails to take socio-environmental dynamics into account, and as a development of the just city concept, we will delve more deeply into the implications of thinking of the just city in terms of the climate just city below.

5. Climate Just Cities

Cities around the world are increasingly impacted by climate change and it is increasingly evident that top-down action from the international down to the local scale will not suffice [5,84]. Cities have to play an important role in mitigating future GHG emissions and in adapting to contemporary and future impacts of climate change [1,3,4,45,52,54,85–87]. Policy and planning responses to climate change occur within the specific socio-economic and geographical milieu of each city. Cities, therefore, mirror society with its asymmetries in resource and power allocation, unequal distribution of burdens and suffering and skewed patterns of political participation and influence [40,88,89].

In this multi-level governance setting, the policy environment has become both increasingly complex, more differentiated at the city level, and also more responsive to international influences. Climate change objectives in cities are increasingly connected to broad policy objectives and goals, such as the UN's Sustainable Development Goals (SDGs), especially SDG 13 on climate action, but also to SDG 11 on making cities inclusive, safe, resilient, and sustainable [90]. Hence, addressing climate change in cities entails a social mix that gives rise to vulnerabilities, as it is saturated with substantial equity issues [26]. This means that climate change adaptation in cities is a highly political endeavour. Central questions from a climate just city perspective include: whose interests are being served and whose interests are being neglected? What are the social costs of adaptation and who carries them? Who can influence adaptation policy and who is excluded from processes of influence?

Although climate change adaptation, in a sense, is a universal task (cf., [91]), it is " . . . interpreted, localised, and modified in different settings . . . locally translated through practice" ([89], p. 6). This means that climate change adaptation can be given different social and political meanings that, in turn, have different social and political impacts in different contexts [4,92]. In environmental policy in general, cities, through local government, have a central role [86]. Local government has the closest proximity to the citizens and is also the level where climate change impacts have their most concrete manifestations (and cities are also an important source of GHG emission mitigation measures) [14,84,93–95].

Studies show that climate change adaptation is often enacted in a defensive manner, focusing on what needs to be defended or preserved rather than " . . . what can be reformed or gained" ([43], p. 3). Consequently, climate change adaptive measures very seldom deliver on their transformative potential (cf., [45]). In line with this argument, it has been stated that, depending of the pathway adopted, climate change adaptation can " . . . maintain a status quo and uphold existing political circumstances, whilst transformation entails political change. Hence, adaptation is enmeshed in both contemporary politics and those of the future" ([26], p. 14).

Bulkeley and Edwards [96] proposed that climate justice in the city conventionally is presented as having two axes, one of distributions–procedures and the other of rights–responsibilities, to which they add recognition as an underlying aspect of justice brought forward by the requirements of environmental justice. Schlosberg [97] argued for global climate justice and offered a trivalent view of the need for recognition, distribution and participation. This trilogy of justice components covers the majority of interests expressed in the 'just city' but may not be complete. Two contemporary environmental discourses can be used to complement the just city conception. Firstly, environmental justice added to notions of urban justice by explicitly viewing the environment as a source of 'goods and bads' that is mediated by cultural, geographical, and historical factors and needs that are distributed through political processes. Secondly, ecological justice also expanded the realm of justice by recognising the interests of environment (i.e., recognising an intrinsic valuation of natural phenomena); given the ecological footprint of cities, ecological justice widens the realm of justice in several dimensions.

More commonly, climate justice is taken to deal with distributive justice and procedural justice, the former concerned with income and resources/assets and the latter with involvement in decision making. Distributive justice comes into play when income,

resources/assets, ecosystem services and the like interact with vulnerability to climate change impacts (cf., [89]). Adaptation measures can serve to secure the current distribution/allocations/ownership, resource and ecosystem service use and/or access under climate change or actively re-distribute these; such outcomes can be in anticipation of climate change or reactions to changes underway. Critically, adaptation concerns the distribution of the costs of adaptation (and avoided costs) and benefits of adaptation. Key themes in scholarship include the cultural, geographic, and socio-economic specificity of vulnerability and adaptation, equity, and fairness. Procedural justice concerns the role and powers of stakeholders (in civil society, corporations and government) in decision making in adaptation policy, planning, and practices.

Accordingly, the concept of climate justice overlaps with the just city, but there are some important differences. To some extent, these are rival discourses sharing considerable common thematic territory, and despite having a common root in the Western conceptual tradition of justice, any convergence in current interests is the result of having reached a similar destination through quite different scholastic routes. In one sense, climate justice can be an additional supplemental element to the just city; there does not appear to be any aspect of climate justice that might be considered to detract from, or otherwise weaken, the just city cause. Climate justice does have, however, a number of elements that distinguish it from the just city concept, goals, and discourse.

From a historical perspective, climate justice is the more recent conceptual arrival in scholarship. As is often the case, however, preceding this recent label is a considerable body of earlier work describing the relationship between society and climate, including climate change and its socio-economic and cultural impacts [10,11,96,98]. Temporal issues distinguish between climate justice for adaptation and the just city, with the former being particularly concerned with future change (of the climate and climate-related systems); just cities have concentrated on historical antecedents and contemporary conditions, whilst climate justice necessarily also entertains speculations and forecasts of future change. The scope of interest can also be a distinguishing feature, with the just cities discourse tending to concentrate on socio-economic activities within the confines of the urban unit, whereas just climate scholarship often envisages the city as functioning within a broader economic and cultural system well beyond its nominal or formal boundary (following the insights of the ecological footprint concept).

As a discourse, climate justice has moved fairly quickly to overlap and exchange influences with those of disaster risk studies and sustainable development. This is due, in large part, to much of the work on climate justice having an interest in environmental politics, notably the scholarship and activism in environmental justice. A component of this merger is exemplified in socio-economic assessments of natural disasters related to climate (and weather) in cities, despite the complication of uncertainty over the relationship of single events to climatic change; such as into the political components of the vulnerabilities, risks and outcomes of the effects of Hurricane Katrina on New Orleans [99].

Climate justice (and climate politics) arises from the particular institutional circumstances of the international response to climate change that centres on the activities and outputs of the UN as played out in the international and sub-international jurisdictional realms. This provides the contrast between the single-issue origins of climate justice and the more diffuse origins of the just city discourse and scholarship. Therefore, climate justice concerns a particular set of policy actors, institutions, interests, markets, policies, and relationships. A feature of climate politics is the extent to which these international features exert an influence on the climate policy response at all levels of governance, including that of cities. Two other defining aspects of climate justice in adaptation spring from this factor. Firstly, for many poorer nations, cities and communities, support from international bodies and other external sources will be critical for undertaking effective urban adaptation measures (see, e.g., [1,46,48,61]). Secondly, climate justice often seeks linkages between adaptation responses and measures to promote GHG emissions reductions, sometimes envisioned as transforming cities into low-carbon settlements; in other

words, climate justice can be positioned as a component of socio-ecological transformation (see, e.g., [25,27,43,72]).

As such, our view of the climate just city is one with both positive and normative elements; it is, therefore, not only an aspirational goal or utopian ideal concept, but also focusing existing conditions, achievements, and victories in overcoming oppression and injustice.

6. Three Case Studies of City Climate Change Adaptation and Vulnerability

Below we will present three case studies that illustrate different aspects of climate change adaptation and climate (in-)justice in three cities as a way to fuel our discussion on the climate just city.

6.1. Port Vila

This case study reviews the factors and circumstances shaping the adaptation response and associated justice implications in the urban and peri-urban areas of Port Vila, the capital of Vanuatu, a Melanesian small island developing state (SIDS) in the western Pacific Ocean (the text under this heading is primarily based on [39]). Urban vulnerability has been largely neglected in SIDS scholarship and international development initiatives; however, recent scholarship has highlighted the scale and scope of climate change risks to urban settlements. Although not always identified with urban settlements, in a large number of cases, the more populous SIDS are relatively highly urbanized, with a high proportion of housing in densely settled and extensive informal settlements, and with high urban growth rates. Coastal locations, high risk of natural hazards, a narrow economic foundation, weak urban infrastructure investment, and low average per capita incomes typify the factors contributing to the vulnerability of SIDS urban settlements to climate change impacts (especially those associated with extreme weather events), conditions also applying to Port Vila [100]. Climate change (and the consequences of natural hazards, notably tropical cyclones) appears to be further promoting urbanization and rural-to-urban migration to the city. In 2015, Port Vila was identified as one of the most natural disaster-exposed out of a global sample of 1300 cities [47], notably in the face of the scale of economic losses caused by Cyclone Pam in 2015 relative to its GDP.

Port Vila's vulnerable urban populations highlight a set of causal factors that are essential to an effective program of adaptation, namely those of governance, institutions, and participation/representation in adaptation planning, policy formulation, and financing [101]. One indication of the problem of governance in the city's capacity to adapt is that although the official 2009 city population was around 45,000, another 15,000 or so citizens occupied the city's informal settlement and peri-urban areas; similarly, the official population growth rates significantly underestimated the rates for the settlement as a whole [102]. Differences between official recognition and non-recognition are representative of the formal and informal divisions within the city; the former is a part of formal government and the latter has both governmental and extra-governmental functions and structures, including NGOs, 'quasi-customary' institutions, and churches. As described above, adaptation policy and practice are a response to climatic hazards, the exposure risk of entities, services and values to these hazards, and the deployment of the ability to respond (covering culture, governance, finance, technology and many other variables). There are implications for adaptation responses in Port Vila, therefore, as a consequence of this administrative, political, and social bifurcation.

Port Vila is vulnerable to climate change and natural hazards partly because of the condition and capabilities of its institutions for governing and managing urban planning, urban services management and delivery, and disaster risk reduction. Growth in the city is concentrated in the peri-urban areas, a factor that exacerbates the city's vulnerability/adaptation dichotomy, as these peri-urban areas lack formal urban governance and are disconnected from local government services and infrastructure. Informal settlements, therefore, pose particular challenges for adaptation governance for public agencies, in

which land tenure can be critical (and where, in practice, tenure assumes numerous and complex forms). Mitchell and McEvoy ([103], p. vii) found that adaptative capacity is limited by 'insecure tenure' as such communities are " . . . disconnected from formal governance processes, lacking the knowledge and information for informed decision-making, and having restricted access to finance for implementing resilience-enhancing actions." An immediate implication for justice is that occupants of informal settlements face the twin disadvantages of increased risk exposure and high vulnerability combined with lower adaptive capacity and less state support in the form of engagement in capacity-building, infrastructure provision, planning measures, and resources/investments compared with formal settlement areas.

In Port Vila's case, the problem of informal settlements and unchecked peri-urban settlement reflects the legacy of a post-colonial condition, as under colonial rule, the efforts to build, own, and control the city actively worked against customary law and other customs within the city. Historical exposure to climatic variations and extremes has built high levels of community-based coping capacity, based on traditional knowledge and technologies, amongst some the city's inhabitants. Trundle [39] argued the need for understanding the underlying non-climate related social system such as governance and agency issues and its history and how this connects to contemporary climate action. This historical context has a direct impact on current conditions for governance, infrastructure conditions and urban planning and the understanding of this context is " . . . critical if climate-related interventions are to be effective, relevant, equitable and sustainable" ([39], p. 37).

Due to the colonial heritage, however, these resources exist separated from the post-colonial urban institutions that form the urban governance system. This has also led to the peri-urban governance being " . . . disjointed from Port Vila's established urban core" ([39], p. 37). Therefore, to a great extent, the vulnerabilities of peri-urban Port Vila is due to an adaptation deficit.

6.2. Baltimore City

This case study examines urban government climate action, risk reduction, and preparedness in Baltimore City, in the United States (noting that Baltimore City is within the larger Baltimore metropolitan area) (the text under this heading is primarily based on [40]). This case study aims to increase the understanding of efforts to increase climate change resilience in a historically and contemporarily racially segregated city, a segregation that also over the years has had physical expressions with environmental privileges allocated to mostly white residents, such as planting of trees only in white neighbourhoods and limited access to green spaces in segregated areas [33]. The city's population is around 620,000, with 64 percent African American, 30 percent white, 4 percent Hispanic or Latino, and with 24 per cent of its population living below the federal poverty line [104]. Baltimore City is situated in the state of Maryland on the Chesapeake Bay, which is the largest and most diverse estuary in the United States [105]; it is the largest city in the state of Maryland.

Maryland has over 4000 miles of shoreline and the state is particularly susceptible to erosion, flooding, storms and, increasingly, sea level rise. Baltimore's location makes it vulnerable to a range of natural hazards, including coastal storms, extreme heat, flooding and high winds; studies have forecast increasing vulnerability to extreme events, notably flood hazard [106]. The city is also vulnerable to extreme heat, low air quality related to its urban heat island effect, and food insecurity [104,107,108]. Over the last decade, Baltimore has endured many severe weather events ranging from heavy precipitation, tidal floods, snow and ice storms, coastal storms, heat waves and even experienced a tornado in its Inner Harbour. Impacts from these events have impacted the city's residents, businesses infrastructure, and its natural systems.

Baltimore is a port city sitting on a waterfront at the intersection of four major watersheds. The city has experienced population decline since the 1950s and as a result, has invested heavily in revitalizing its downtown precinct [107]. A major feature of this investment program, and a high priority on the city's policy agenda over recent years, has been waterfront development and redevelopment. Although there are great commercial opportunities in the waterfront location, there are also significant challenges connected to the location. This redevelopment has resulted in a downtown concentration of workplaces but with a relatively modest increase in residential housing.

A socio-economic characteristic of the city is the significant pockets of extreme poverty and social vulnerability in close proximity to its downtown [107]. There is a racial signature to these impoverished districts—that of a concentration of minorities—that has persisted over time, as the city has history of deliberate segregation and is one of the most segregated cities in the United States. It also has an overall higher poverty rate than most US cities and its poorer areas are mainly African American. This is clearly observable in the environmental, economic, and social challenges the city faces today. As a result, the city's " ... unique combination of shocks and stresses cuts across social, economic and environmental factors" ([40], p. 128).

The participatory process in the city in climate change adaptation processes has been quite ambitious. However, there has been a strong focus on plans and planning, such as the Sustainability Plan, the Climate Action Plan, the Disaster Preparedness and Planning Project, a combined all hazards mitigation plan and climate change adaptation plan. There has been a lack, however, of movement beyond planning to action aiming at protecting the most vulnerable communities and properties from harm [107]. Facing such implementation failures by the public sector, there are opportunities for other actors to substitute for the state and even move beyond government action, thereby evoking the question of whether or not there is sufficient civic capacity to fulfill this role. Due to historically determined limits on the capacities for social self-organisation, the community considers climate change adaptation to be primarily a government responsibility. For this reason, citizens' interest in participation seems elusive.

This dilemma indicates the need to acknowledge the influence of racism on city government planning that has shaped contemporary disenfranchisement and inequities across Baltimore's communities, leading to a lack of trust in government actors and agencies by minority populations [104]. Therefore, the city has recognised the need to utilise an 'equity lens' for all climate change action. Despite this, the efforts had shortcomings, with difficulties keeping participants engaged throughout the entire process, especially volunteers. The city could have been more efficient in supporting the volunteers and formulated more realistic targets. More direct efforts were needed to ensure that not only race but also ability level, age, economic status, and other relevant socio-economic factors were considered. It was clear that integrating equity and climate change into everyday decision-making was extremely difficult.

6.3. Karlstad

This case study examines urban climate change adaptation planning in the city of Karlstad, Sweden (the text under this heading is primarily based on, [41]). Karlstad is a small but expanding city on northern Europe's largest lake and river delta, with about 94,000 inhabitants; the city has relatively high climate change ambitions [109]. Ongoing population growth has led to densification and to intense property development in the city [110]. The city has experienced a number of large floods over the years. Karlstad has also been identified by the State Commission on Climate and Vulnerability and the European Union as one of the Swedish cities most vulnerable to climate change-related flood impacts. The city is also a 'Resilient City' designated by the United Nations Office for Disaster Risk Reduction (UNDRR), and one of the most active Swedish cities in waterfront redevelopment. As the city is located on a river delta and by a lake, there is an established historical awareness of flood risks, and this awareness also includes potential contemporary

and future impacts. This can be illustrated by an old proverb that says that when the river and the lake meet at the central square in Karlstad, this will be the end of the city [111,112]. The city's key strategic goals are growth, attractiveness, and to become a 'good' green city [110].

In the Swedish context, the municipalities have responsibility for spatial planning within their own territory and this gives them an extensive mandate in city development and redevelopment [112]. Central to Karlstad´s approach to city redevelopment is the vision 'Karlstad 100,000'. Its aim is to make the city attractive to development investments by utilizing the city's lake and riverine location. The approach focuses on business actors, competitiveness and growth coalitions. The main component is the redevelopment of the inner harbor. The vision's strategy is to attract the professional classes and other well-educated individuals and households to take up residency and that this, in turn, will attract and enable investment from private businesses.

The city has experienced a number of floods over the years. In 2000/2001, heavy rain that gradually increased the lake water level resulted in flooding the city, an event that that lasted 6 months, covering large parts of the city and leading to extensive damage and disruption. The city has been active in its development of its climate adaptation and risk reduction capacities. The city employed a flood plains manager in 2007, launched a flood risk management program in 2010, works continuously with stake-holder collaboration and outreach, and has built several physical barriers to prevent future flooding in the city.

Hence, the issues of city growth and climate change adaptation have developed in parallel over the years, but the city's economic development agenda has gradually evolved to being the number one priority, and subsequently framing climate change risk analysis and adaptation measures. The case study shows a growing awareness among city officials of this double challenge for planning and city redevelopment. However, this inherent conflict is unresolved and can be observed " . . . in the light of historical experiences, contemporary flood risks and the use of waterfront lands as an important component in developing city competitiveness" ([112], p. 33). Despite the awareness of the double challenge, it is not explicitly problematized in the policy agenda and appropriate measures to mitigate flood risk have not been able to compete with the objectives to construct 'urban attractiveness' as a means to increase economic competitiveness on the city's policy agenda.

As a result, competitiveness is the dominant city policy goal that defines the 'policyscape', limiting the space for other issues not perceived as compatible with this overarching aim. Climate-related risks discussed in the city planning documents are designed to accommodate flood risks in ways that facilitate city competitiveness. Pre-emptive risk reduction measures, such as retreat from the waterfront as a defensive climate adaptation measure and investing in other city areas less prone to flood risk, are not on the policy agenda. At the same time, the waterfront redevelopment is increasing the exposure to flood risks, and this will most likely increase due to climate change. This framing of climate vulnerabilities by competitiveness is potentially dysfunctional, as it can limit city resilience and increase the vulnerability of the city in both the short term and in the longer run.

7. Discussion: Implications for the Climate Just City

The impacts of climate change on climate justice can be both direct and indirect (see similar discussions in, [26]). Direct impacts are concrete and tangible effects on the material and social realms, such as those on disenfranchised areas, groups and individuals; indirect (or secondary) impacts are spill-over effects from direct climate impacts connected to institutionalised patterns in society co-creating cascading social and economic outcomes. Adaptation measures can also have negative consequences (i.e., maladaptation). Direct and negative (actual and potential) impacts can increase the vulnerability of social and socio-ecological entities and processes. Indirect negative impacts can be more diffuse and produce effects temporally and spatially distant from the site of direct impact, affecting other locations, sectors, systems and other realms of society. Both types of impacts are observable across the three cases.

The case studies highlight the interaction between indigenous and experience-based knowledge and expert-driven urban and adaptation planning, how historical disadvantages reinforce vulnerabilities to a changing climate and excludes social groups from the benefits of climate change adaptation, and how policy path-dependency in terms of city growth and competition policies produces risk and vulnerabilities and drive the need for climate change adaptation measures in certain areas, while ignoring other needs in other areas.

The Port Vila case study highlights the value of including indigenous and local communities and their knowledge in formal urban planning processes and problematizes the impacts when the inclusion of this type of knowledge fails. Studies show that climate change adaptation is mainly based in scientific and technological knowledge and " . . . views traditional and indigenous knowledge as insufficient for resilience in the face of new types and levels of climate hazards" ([26], p. 33). The Port Vila study problematizes arbitrarily drawn urban boundaries in managing climate change adaptation, building climate resilience, and investigating vulnerabilities. It points toward the need to include indigenous/traditional knowledge and narratives/imaginaries, community adaptation capacities, non-institutional means of coping with natural hazards and alternative pathways in order to handled vulnerabilities in all segment of society [18]. This deficiency in 'top-down' urban planning can lead to climate change adaptation planning and measures unable to deal with future climate risks and vulnerability reduction (cf., [26]). It is important to include communities in ways that facilitate social learning and makes integration of non-expert knowledge possible as this " . . . reinforces the understanding of the historical and cultural origins of place and of the locally specific informal arrangements they maintain and sustain" ([113], p. 155).

The Baltimore case demonstrates the need to include vulnerabilities and its long historical roots when designing climate change adaptation measures aiming at building new, and reinforcing existing, capacities of the most vulnerable areas, groups and individuals in the city and also taking into account what happens when this fails. The city government must have a commitment to addressing profound historically developed social and economic challenges and connect them to climate-related risk in order to support the most vulnerable in the city.

The Baltimore case also highlights the need for climate just adaptation to focus on equity (giving people the resources they need in relation to what they have been denied historically), rather than equality (i.e., treating everyone equally). It also demonstrates how the city's history and social and economic context has created vulnerable areas and communities. These areas are socially vulnerable in general but are especially vulnerable to climate change. Effective and just climate adaptation must, therefore, address issues of accessibility, lack of resources, racial inequality and social exclusion. A truly equitable process facilitating development towards a climate just city is demanding and requires " . . . honesty, real talk and a true recognition of one's own privilege" ([40], p. 126). This is a challenge for city planners that have to connect present-day circumstances to historical injustices in ways that involves continuous learning and acknowledgement.

Focusing climate change adaptation efforts towards more vulnerable individuals, groups and city areas can increase general resilience and has the potential to empower stakeholders, build trust and promote community cohesiveness. In general, the cases show (and especially evident in the cases of Port Vila and Baltimore) that failure to integrate 'top-down' climate action with 'bottom-up' knowledge will not adequately address needs and vulnerabilities in ways that facilitate resilience-building or climate justice.

The cases of Port Vila and Baltimore City also clearly show that climate change adaptation with the potential to contribute to a climate just city needs to have a comprehensive understanding of how different forms of climate change adaptation should take place in a specific, historically developed, economic, environmental, and social context (cf., [113]). A just climate change adaptation must therefore include an understanding of how success and failures are shaped by place-based specificities that have emerged over time, creating

structures of power, impacting actors' capacities and individuals' and group's vulnerabilities. Thus, the historical city context has clear implications for actors' ability to be proactive or react to climate change and to withstand or adapt to its impacts. Attention must be given, therefore, to a wide range of socio-economic and cultural diversities in order to reach climate just outcomes. This requires an inclusive approach sensitive to cultural diversity, history and social inequality. Clearly, just climate change adaptation is not a separate challenge but has to address both the physical impacts of climate change and social injustices, i.e., to address climate justice.

The case of Karlstad highlights the climate justice problem of implementing climate change adaptation within the constraints of dominant policy priorities shaping city development goals and processes. For local climate action in general, high-level support is critical as it influences the positioning of climate issues on the political agenda and resource allocation [113]. This case highlights how climate change is given a place on the local policy agenda but is framed by other prioritized political objectives and how this, in turn, limits more effective policy responses to climate change.

Additionally, there is an inherent tension between 'business-as-usual' city growth policies and competition goals focused on waterfront housing developments on the one hand, and the need to manage climate-related risks related to future inundation and reduce vulnerabilities on the other. This tension is resolved, however, in the favour of (neoliberal) economic growth, a priority that frames local climate change policy and action and outweighs the potential impacts of climate change risks. Sometimes climate action in cities framed by neo-liberal growth policies is labelled 'climate urbanism' and there are distinctive social justice concerns resulting from this condition [73]. Consequently, city action to facilitate growth and competitiveness has clear social implications through heightened vulnerability and increases in risk exposure, that in turn increase the future burden of adaptation.

The Karlstad case is a clear example of gentrification, as the project involves restoring a contaminated site and developing a former industrial harbor to an upscaled housing and entertainment district [33,114,115]. This goal is facilitated and guided through top-down planning. Within the rhetoric of the project is a rationale to address social justice, namely that the harbor development will increase city attractiveness and generate growth that will 'trickle down' to the most vulnerable in the city [116]. This is, however, a contentious view that has been problematized in earlier scholarship as " ... "trickle down" policies ... are means whereby the nonpoor majority benefit at the expense of the poor" ([117], p. 291). That being so, gentrification is in itself problematic from a just city perspective, and the lack of bottom-up involvement in the planning process mainly channeled through elite political and administrative actors furthers this perception. Furthermore, the process in the Karlstad case can, from a climate change perspective, be perceived as 'green' gentrification, as it includes comprehensive climate change adaptation measures. However, this is also problematic, as studies of other locations have shown that " ... many green interventions create enclaves of environmental privilege when low-income and minority residents are excluded from the neighborhoods ... " and that, hence, " ... many greening projects remain blind to social vulnerabilities" ([33], p. 1065). This points to the fact that even so called 'win-win' climate change adaptation approaches and measures often obscure how uneven costs and benefits impacts different groups differently and leaving vulnerable groups more vulnerable [34,118]. This highlights the importance of asking the question: adaptation for whom?

8. Conclusions

In these cases of climate change adaptation, policy and action is mediated through the dominant policy priorities shaping the wider city development interests and goals [4,26]. The framing and subsequent policy formulation of the public sector adaptation response enables and constrains the problem-solving capacity of cities and is of central importance for understanding how local climate action is interpreted, framed, formulated and prioritised

and how this impacts the inhabitants of a city. How climate change adaptation is framed in a specific policy context shapes how it is addressed. For instance, if urban planning decision-making integrates broader social development outcomes, it can facilitate the inclusion of justice issues into climate change adaptation policy and action [119]. As addressing climate change will always be a contested public policy process in which adaptation responses must compete with other political priorities and policy goals, the resulting decisions by governments and public agencies will involve compromises and trade-offs, so that the 'who gets what, why, when, and how' questions involve political themes of power relations, interest conflicts and related factors becomes of great importance when studying climate justice.

In a way, our thoughts on how a climate just city can be approached overlaps with what Peter Marcuse called 'the subversive reading´ of Lefebvre's call for the right to the city [37]. For a climate just city to be more than a utopian aspiration, transformative change must be realized in ways that meet the needs of both social and climate justice for excluded groups and for society as a whole [27,45]. To do this, equity issues must be at the forefront of government climate change adaptation responses, involving increasing public provision to fight poverty, reducing urban planning's focus on economic short-term gains and on city growth in narrowly cast economic terms, and increasing the involvement and inclusion of vulnerable groups in the political processes of the city. Considering our contemporary society, this is a substantial challenge and, as the three cases indicate, there is a considerable distance to go before reaching a transformative approach that could facilitate a climate just city.

From the perspective of the climate just city, a broad stakeholder collaboration is central for enhancing transformative capacity. Tempering this goal are the real-world circumstances of governments' interest in economic management, acceptance of economic globalisation and neoliberal economic policies that feature close ties, collaborations, mutual interests, social networks and informal governance arrangements with private actors that are stakeholders in the corporate sector. These set-ups can reinforce existing power asymmetries and influence and change democratic and administrative practices as they open up for forms of network governance with limited transparency and opportunities for democratic accountability. For this reason, the utilisation of knowledge, who is included and excluded in the decision-making process, and the impact on political priorities have the potential to make or break achieving a climate just city.

As expounded in the introduction and in the case studies, climate justice entails inquiries into the construction of justice and often recognises non-material values, such as inclusion/exclusion, participation and recognition of minorities [26,29,30,68]. Climate change adaptation poses challenges that evoke moral issues, and it constitutes an ethical challenge (cf., [120]). Adaptation responses are an overlay on existing social differences, with the potential to alleviate, be neutral or exaggerate these differences [40]. Key aspects of social difference inimical to social justice and achievement of the just city include socio-economic inequalities, limitations to participation in decision making, variability in exposure to risks and priority-setting in adaptation policies [26]; all aspects observable in our cases. These aspects affect the distribution and intensity of vulnerabilities to climate change impacts and are expressions of injustice and unfairness. Class, gender, and race and other expressions of social differentiation are structural components in social injustices exacerbating vulnerabilities to the impacts of a changing climate. All these aspects are, of course, central to the analysis of climate just cities and climate change adaptation.

A central aspect of the focus on a climate just city is the critique of the apolitical perspectives in much adaptation scholarship [66,121]. This critique argues that apoliticism restricts political inquiry by taking adaptation as the 'natural' response to ecological problems without considering its social and political implications [122,123]. Ignoring the political in governmental climate change adaptation responses obscures the role of processes—such as capital accumulation, technology change and political contestation—essential in producing the lived environment. It has been argued that this orientation

suits " ... the institutional needs for controlling the procedures of social change, thereby circumventing issues of power hierarchies, vested interests and the like" ([26], p. 146). Thus, as our cases clearly illustrate, the social context, with its power asymmetries, must have a central position in understanding the distribution of climate risks and vulnerabilities [124] when studying climate change adaptation in cities from a climate justice perspective.

References

1. IPCC. *Climate Change 2014: Impacts, Adaptations and Vulnerability*; Cambridge University Press: Cambridge, UK, 2014.
2. IPCC. *Global Warming of 1.5 °C. Geneva: IPCC (Intergovernmental Panel of Climate Change)*; Cambridge University Press: Cambridge, UK, 2019.
3. Bulkeley, H.; Castán Broto, V.C. Government by experiment? Global cities and the governing of climate change. *Trans. Inst. Br. Geogr.* **2013**, *38*, 361–375. [CrossRef]
4. Moloney, S.; Fünfgeld, H.; Granberg, M. (Eds.) *Local Action on Climate Change: Opportunities and Constraints*; Routledge: London, UK, 2018.
5. Glover, L. *Postmodern Climate Change*; Routledge: New York, NY, USA, 2006.
6. IFRC. *World Disaster Report 2020: Come Heat of High Water*; International Federation of Red Cross and Red Crescent Societies: Geneva, Switzerland, 2020.
7. Olazabal, M.; Ruiz de Gopegui, M.; Tompkins, E.L.; Venner, K.; Smith, R. A cross-scale worldwide analysis of coastal adaptation planning. *Environ. Res. Lett.* **2019**, *14*, 124056. [CrossRef]
8. Castán Broto, V.; Bulkeley, H. A survey of urban climate change experiments in 100 cities. *Glob. Environ. Chang.* **2013**, *23*, 92–102. [CrossRef] [PubMed]
9. Newell, P.; Srivastava, S.; Naess, L.O.; Torres Contreras, G.A.; Price, R. *Towards Transformative Climate Justice: Key Challenges and Future Directions for Research Contract No.: DS Working Paper 540*; Institute of Development Studies: Brighton, UK, 2020.
10. Porter, L.; Rickards, L.; Verlie, B.; Bosomworth, K.; Moloney, S.; Lay, B.; Latham, B.; Anguelovski, I.; Pellow, D. Climate justice in a climate changed world. *Plan. Theory Pract.* **2020**, *21*, 293–321. [CrossRef]
11. Edwards, G.A.S. Climate justice. In *Environmental Justice: Key Issues*; Coolsaet, B., Ed.; Earthscan: London, UK, 2021; pp. 148–160.
12. Fenton, P.; Gustafsson, S. Moving from high-level words to local action—governance for urban sustainability in municipalities. *Curr. Opin. Environ. Sustain.* **2017**, *26–27*, 129–133. [CrossRef]
13. Galland, D.; Hansen, C.J. The roles of planning in waterfront redevelopment: From plan-led and market-driven styles to hybrid planning? *Plan. Pract. Res.* **2012**, *27*, 203–225. [CrossRef]
14. McPhearson, T. Transforming cities and science for climate change resiliencein the anthropocene. In *Transformative Climate Governance: A Capacities Perspective to Systematise, Evaluate and Guide Climate Action*; Hölscher, K., Frantzeskaki, N., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 99–111.
15. McCormick, K.; Anderberg, S.; Coenen, L.; Neij, L. Advancing sustainable urban transformation. *J. Clean. Prod.* **2013**, *50*, 1–11. [CrossRef]
16. Parnell, S. Defining a global urban development agenda. *World Dev.* **2016**, *78*, 529–540. [CrossRef]
17. Krellenberg, K.; Bergsträßer, H.; Bykova, D.; Kress, N.; Tyndall, K. Urban Sustainability Strategies Guided by the SDGs—A Tale of Four Cities. *Sustainability* **2019**, *1*, 1116. [CrossRef]
18. Westman, L.; Castán Broto, V. Urban climate imaginaries and climate urbanism. In *Climate Urbanism: Towards a Critical Research Agenda*; Castán Broto, V., Robin, E., While, A., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 83–95.
19. Cohen, S. *The Sustainable City*; Columbia University Press: New York, NY, USA, 2018.
20. Martin, C.J.; Evans, J.; Karvonen, A. Smart and sustainable? Five tensions in the visions and practices of the smart-sustainable city in Europe and North America. *Technol. Forecast. Soc. Chang.* **2018**, *133*, 269–278. [CrossRef]

21. Haughton, G. Environmental justice and the sustainable city. *J. Plan. Educ. Res.* **1999**, *18*, 233–243. [CrossRef]
22. Mettler, S. The policyscape and the challenges of contemporary politics to policy maintenance. *Perspect. Politics* **2016**, *14*, 369–390. [CrossRef]
23. Peters, B.G.; Pierre, J.; King, D.S. The politics of path dependency: Political conflict in historical institutionalism. *J. Politics* **2005**, *67*, 1275–1300. [CrossRef]
24. Patterson, J.J. Institutional dynamics of transformative climate urbanism: Remaking rules in messy contexts. In *Climate Urbanism: Towards a Critical Research Agenda*; Castán Broto, V., Robin, E., While, A., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 97–115.
25. Castán Broto, V.; Robin, E.; While, A. (Eds.) *Climate Urbanism: Towards a Critical Research Agenda*; Palgrave Macmillan: London, UK, 2020.
26. Glover, L.; Granberg, M. *The Politics of Adapting to Climate Change*; Palgrave Macmillan: London, UK, 2020.
27. Hölscher, K.; Frantzeskaki, N. (Eds.) *Transformative Climate Governance: A Capacities Perspective to Systematise, Evaluate and Guide Climate Action*; Palgrave Macmillan: London, UK, 2020.
28. Fainstein, S.S. *The Just City*; Cornell University Press: New York, NY, USA, 2011.
29. Schlosberg, D. Theorising environmental justice: The expanding sphere of a discourse. *Environ. Politics* **2013**, *22*, 37–55. [CrossRef]
30. Coolsaet, B. (Ed.) *Environmental Justice: Key Issues*; Earthscan: London, UK, 2021.
31. Walker, G. *Environmental Justice: Concepts, Evidence and Politics*; Routledge: London, UK, 2012.
32. Sovacool, B.K.; Linnér, B.-O. *The Political Economy of Climate Change Adaptation*; Palgrave Macmillan: London, UK, 2016.
33. Anguelovski, I.; Brand, A.L.; Connolly, J.J.; Corbera, E.; Kotsila, P.; Steil, J.; Garcia-Lamarca, M.; Triguero-Mas, M.; Cole, H.; Baró, F.; et al. Expanding the boundaries of justice in urban greening scholarship: Toward an emancipatory, antisubordination, intersectional, and relational approach. *Ann. Am. Assoc. Geogr.* **2020**, *110*, 1–27.
34. Anguelovski, I.; Shi, L.; Chu, E.; Gallagher, D.; Goh, K.; Lamb, Z.; Reeve, K.; Teicher, H. Equity impacts of urban land use planning for climate adaptation: Critical perspectives from the global north and south. *J. Plan. Educ. Res.* **2016**, *36*, 333–348. [CrossRef]
35. Harvey, D. The right to the city. *Int. J. Urban Reg. Res.* **2003**, *27*, 939–941. [CrossRef]
36. Harvey, D. *Social Justice and the City*; University of Georgia Press: Athens, Greece, 2009.
37. Marcuse, P. Reading the right to the city. *City* **2014**, *18*, 4–9. [CrossRef]
38. Lefebvre, H. The right to the city. In *Writings on Cities*; Kofman, E., Lebas, E., Eds.; Blackwell: London, UK, 1966; pp. 63–184.
39. Trundle, A. *Governance and agency beyond boundaries: Climate resilience in Port Vila's peri-urban settlements In Local Action on Climate Change: Opportunities and Constraints*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Routledge: London, UK, 2018; pp. 35–52.
40. Baja, K.; Granberg, M. From engagement to empowerment: Climate change and resilience planning in Baltimore City. In *Local Action of Climate Change*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Opportunities and Constraints; Routledge: London, UK, 2018; pp. 126–145.
41. Granberg, M.; Nyberg, L. Climate change adaptation, city competiveness and urban planning in the city of Karlstad, Sweden. In *Local Action of Climate Change: Opportunities and Constraints*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Routledge: London, UK, 2018; pp. 111–125.
42. Hunt, A.; Watkiss, P. Climate change impacts and adaptation in cities: A review of the literature. *Clim. Chang.* **2011**, *104*, 13–49. [CrossRef]
43. Pelling, M. *Adaptation to Climate Change: From Resilience to Transformation*; Routledge: London, UK, 2011.
44. Granberg, M.; Glover, L. Adaptation and maladaptation in Australian national climate change policy. *J. Environ. Policy Plan.* **2014**, *16*, 147–159. [CrossRef]
45. Granberg, M.; Bosomworth, K.; Moloney, S.; Kristiansen, A.-C.; Fünfgeld, H. Can regional-scale governance and planning support transformative adaptation? *A study of two places. Sustainability* **2019**, *11*, 6978.
46. UN-Habitat. *Addressing the Most Vulnerable First: Pro-Poor Climate Action in Informal Settlements*; UN-Habitat: Nairobi, Kenya, 2018.
47. Shi, L.; Chu, E.; Anguelovski, I.; Aylett, A.; Debats, J.; Goh, K.; Schenk, T.; Seto, K.C.; Dodman, D.; Roberts, D.; et al. Roadmap towards justice in urban climate adaptation research. *Nat. Clim. Chang.* **2016**, *6*, 131–137. [CrossRef]
48. UNEP. *The Adaptation Finance Gap Report 2016*; United Nations Environment Programme (UNEP): Nairobi, Greece, 2016.
49. ÓhAiseadha, C.; Quinn, G.; Connolly, R.; Connolly, M.; Soon, W. Energy and climate policy—An evaluation of global climate change expenditure 2011–2018. *Energies* **2020**, *13*, 4839. [CrossRef]
50. Climate Policy Initiative. *Updated View of the Global Landscape of Climate Finance 2019*; Climate Policy Initiative: London, UK, 2020.
51. MDB. *Joint Report on Multilateral Development Banks' Climate Finance 2019*; European Bank for Reconstruction and Development: London, UK, 2020.
52. Taylor, P.J.; O'Brien, G.; O'Keefe, P. *Cities Demanding the Earth: A New Understanding of the Climate Emergency*; Bristol University Press: Bristol, UK, 2020.
53. Olazabal, M. An adaptation agenda for the new climate urbanism: Global insights. In *Climate Urbanism: Towards a Critical Research Agenda*; Castán Broto, V., Robin, E., While, A., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 153–170.
54. Bulkeley, H.; Betsill, M.M. *Cities and Climate Change: Urban Sustainability and Global Environmental Governance*; Routledge: London, UK; New York, NY, USA, 2003.
55. Lidskog, R.; Elander, I. Addressing climate change democratically. Multi-level governance, transnational networks and governmental structures. *Sustain. Dev.* **2010**, *18*, 32–41. [CrossRef]

56.   Castán Broto, V.; Robin, E.; While, A. Introduction: Climate urbanism—Towards a research agenda. In *Climate Urbanism: Towards a Critical Research Agenda*; Castán Broto, V., Robin, E., While, A., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 1–11.

57.   Moser, S.C. *Governance and the Art of Overcoming Barriers to Adaptation*; IHDP: Bonn, Germany, 2009.

58.   Eriksen, S.H.; Nightingale, A.J.; Eakin, H. Reframing adaptation: The political nature of climate change adaptation. *Glob. Environ. Chang.* **2015**, *35*, 523–533. [CrossRef]

59.   Klepp, S.; Chavez-Rodriguez, L. (Eds.) *A Critical Approach to Climate Change Adaptation: Discourses, Policies, and Practices. Paperback ed.*; Routledge: London, UK, 2020.

60.   United Nations. *New Urban Agenda*; United Nations: New York, NY, USA, 2017.

61.   UN FCCC. *Paris Agreement*; United Nations: NewYork, NY, USA, 2016.

62.   UNISDR. *Sendai Framework for Disaster Risk Reduction 2015–2030*; UNISDR: Geneva, Switzerland, 2015.

63.   United Nations. *Transforming Our World: The 2030 Agenda for Sustainable Development*; United Nations: New York, NY, USA, 2015.

64.   UNOCHA. *Sustaining the Ambition: Delivering Change: Agenda for Humanity Annual Synthesis Report 2019*; United Nations: New York, NY, USA, 2019.

65.   Hölscher, K. Capacities for transformative climate governance: A conceptual framework. In *Transformative Climate Governance: A Capacities Perspective to Systematise, Evaluate and Guide Climate Action*; Hölscher, K., Frantzeskaki, N., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 49–96.

66.   Taylor, M. *The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change and the Conflicts of Development*; Earthscan: London, UK, 2015.

67.   Bulkeley, H.; Paterson, M.; Stripple, J. Introduction. In *Towards a Cultural Politics of Climate Change: Devices, Desires and Dissent*; Bulkeley, H., Paterson, M., Stripple, J., Eds.; Cambridge University Press: Cambridge, UK, 2016; pp. 1–23.

68.   Schlosberg, D. *Defining Environmental Justice: Theories, Movements, and Nature*; Oxford University Press: Oxford, UK, 2007.

69.   Schlosberg, D.; Collins, L.B. From environmental justice to climate justice: Climate change and the discourse of environmental justice. *Clim. Chang.* **2014**, *5*, 359–374.

70.   Morchain, D. Rethinking the framing of climate change adaptation: Knowledge, power, and politics. In *A Critical Approach to Climate Change Adaptation: Discourses, Policies, and Practices. Paperback ed.*; Klepp, S., Chavez-Rodriguez, L., Eds.; Routledge: London, UK, 2020; pp. 55–73.

71.   Taleb, N.N. *Skin in the Game: Hidden Asymmetries in Daily Life*; Random House: New York, NY, USA, 2018.

72.   Anguelovski, I.; Pellow, D.N. Towards an emancipatory urban climate justice through adaptation? *Plan. Theory Pract.* **2020**, *16*, 16–21.

73.   Long, J.; Rice, J.L. From sustainable urbanism to climate urbanism. *Urban Stud.* **2019**, *56*, 992–1008. [CrossRef]

74.   Ferm, J.; Jones, E. Mixed-use 'regeneration' of employment land in the post-industrial city: Challenges and realities in London. *Eur. Plan. Stud.* **2016**, *24*, 1913–1936. [CrossRef]

75.   Piketty, T. *Capital in the Twenty-First Century*; The Belknap Press of Harvard University Press: Cambridge, UK, 2014.

76.   Molotch, H. The city as a growth machine: Toward a political economy of place. *Am. J. Sociol.* **1976**, *82*, 309–332. [CrossRef]

77.   Brenner, N.; Schmid, C. Towards a new epistemology of the urban? *City* **2015**, *19*, 151–182. [CrossRef]

78.   Soja, E.W. *Seeking Spatial Justice*; University of Minnesota Press: Minneapolis, Minnesota, 2010.

79.   Chatterton, P. Seeking the urban common: Furthering the debate on spatial justice. *City* **2010**, *14*, 625–628. [CrossRef]

80.   Glacken, C.J. *Traces of the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*; University of California Press: Berkeley, CA, USA, 1967.

81.   Engels, F. *Condition of the Working Class in England*; Oxford University Press: Oxford, UK, 1845/1993.

82.   Fainstein, S.S. The just city. *Int. J. Urban Sci.* **2014**, *18*, 1–18. [CrossRef]

83.   Lefebvre, H. The Right to the City. In *Writings on Cities*; Kofman, E., Lebas, E., Eds.; Blackwell: London, UK, 1967; pp. 63–194.

84.   Moloney, S.; Fünfgeld, H.; Granberg, M. Climate change responses from the global to the local scale: An overview. In *Local Action on Climate Change: Opportunities and Constraints*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Routledge: London, UK, 2018; pp. 1–16.

85.   Bulkeley, H.; Tuts, R. Understanding urban vulnerability, adaptation and resilience in the context of climate change. *Local Environ.* **2013**, *18*, 646–662. [CrossRef]

86.   Hoppe, T.; van der Vegt, A.; Stegmaier, P. Presenting a framework to analyze local climate policy and action in small and medium-sized cities. *Sustainability* **2016**, *8*, 847. [CrossRef]

87.   Sovacool, B.K.; Brown, M.A. Scaling the policy response to climate change. *Policy Soc.* **2009**, *27*, 317–328. [CrossRef]

88.   Bulkeley, H. *Accomplishing Climate Governance*; Cambridge University Press: New York, NY, USA, 2016.

89.   Klepp, S.; Chavez-Rodriguez, L. Governing climate change: The power of adaptation discourses, policies, and practices. In *A Critical Approach to Climate Change Adaptation: Discourses, Policies, and Practices, Paperback ed.*; Klepp, S., Chavez-Rodriguez, L., Eds.; Routledge: London, UK, 2020; pp. 3–34.

90.   Hölscher, K.; Frantzeskaki, N. A transformative perspective on climate change and climate governance. In *Transformative Climate Governance: A Capacities Perspective to Systematise, Evaluate and Guide Climate Action*; Hölscher, K., Frantzeskaki, N., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 3–48.

91.   Jasanoff, S. A new climate for society. *Theory Cult. Soc.* **2010**, *27*, 233–253. [CrossRef]

92.   Bulkeley, H.; Paterson, M.; Stripple, J. *Towards a Cultural Politics of Climate Change: Devices, Desires, and Dissent*; Cambridge University Press: Cambridge, UK, 2016.

93.   Granberg, M.; Elander, I. Local governance and climate change: Reflections on the Swedish experience. *Local Environ.* **2007**, *12*, 537–548. [CrossRef]

94.   Bulkeley, H.; Castán Broto, V.C.; Maassen, A. Governing urban low carbon transitions. In *Cities and Low Carbon Transitions*; Broto, V.C., Bulkeley, H., Hodson, M., Marvin, S., Eds.; Routledge: London, UK, 2013; pp. 29–41.

95.   Granberg, M. Strong local government moving to the market. In *Rethinking Urban Transitions: Politics in the Low Carbon City*; Luque-Ayala, A., Marvin, S., Bulkeley, H., Eds.; Routledge: London, UK, 2018; pp. 129–145.

96.   Bulkeley, H.; Edwards, G.A.S.; Fuller, S. Contesting climate justice in the city: Examining politics and practice in urban climate change experiments. *Glob. Environ. Chang.* **2014**, *25*, 31–40. [CrossRef]

97.   Schlosberg, D. Climate Justice and Capabilities: A Framework for Adaptation Policy. *Ethics Int. Aff.* **2012**, *26*, 445–461. [CrossRef]

98.   Gardiner SMClimate justice. *The Oxford Handbook on Climate Change and Society2011*; Dryzek, J.S., Norgaard, R.B., Schlosberg, D., Eds.; Oxford University Press: New York, NY, USA, 2011; pp. 309–322.

99.   Quigley, W.P. What Katrina revealed. *Harv. Law Policy Rev.* **2008**, *2*, 361–384.

100.   Trundle, A.; McEvoy, D. Climate Change Vulnerability Assessment: Greater Port Vila. In *Cities and Climate Change Initiative*; UN-Habitat: Fukuoka, Japan, 2015.

101.   Butcher-Gollach, C. Planning, the urban poor and climate change in Small Island Developing States (SIDS): Unmitigated disaster or inclusive adaptation? *Int. Dev. Plan. Rev.* **2015**, *37*, 225–248. [CrossRef]

102.   Trundle, A.; Barth, B.; Mcevoy, D. Leveraging endogenous climate resilience: Urban adaptation in Pacific Small Island Developing States. *Environ. Urban.* **2019**, *31*, 53–74. [CrossRef]

103.   Mitchell, D.; McEvoy, D. *Land Tenure and Climate Variability*; UN-Habitat: Nairobi, Kenya, 2019.

104.   Biehl, E.; Buzogany, S.; Baja, K.; Neff, R.A. Planning for a resilient urban food system: A case study from Baltimore City, Maryland. *J. Agric. Food Syst. Community Dev.* **2018**, *8*, 39–53. [CrossRef]

105.   Teodoro, J.D.; Nairn, B. Understanding the knowledge and data landscape of climate change impacts and adaptation in the Chesapeake Bay Region: A systematic review. *Climate* **2020**, *8*, 58. [CrossRef]

106.   Ntelekos, A.A.; Oppenheimer, M.; Smith, J.A.; Miller, A.J. Urbanization, climate change and flood policy in the United States. *Clim. Chang.* **2010**, *103*, 597–616. [CrossRef]

107.   Sarzynski, A. Multi-level governance, civic capacity, and overcoming the climate change "adaptation deficit" in Baltimore, Maryland. In *Climate Change in Cities: Innovations in Multi-Level Governance*; Hughes, S., Chu, E.K., Mason, S.G., Eds.; Springer: Cham, Switzerland, 2018; pp. 97–120.

108.   Huang, G.; Zhou, W.; Cadenasso, M.L. Is everyone hot in the city? Spatial pattern of land surface temperatures, land cover and neighborhood socioeconomic characteristics in Baltimore, MD. *J. Environ. Manag.* **2011**, *92*, 1753–1759. [CrossRef]

109.   Hrelja, R.; Hjerpe, M.; Storbjörk, S. Creating transformative force? The role of spatial planning in climate change transitions towards sustainable transportation. *J. Environ. Policy Plan.* **2015**, *17*, 617–635. [CrossRef]

110.   Storbjörk, S.; Hjerpe, M.; Isaksson, K. We cannot be at the forefront, changing society: Exploring how Swedish property developers respond to climate change in urban planning. *J. Environ. Policy Plan.* **2018**, *20*, 81–95. [CrossRef]

111.   Engström, G. När Vänerns och Klarälvens vatten möts på Karlstads torg kommer staden att gå under. In *Klarälven*; Ibsen, H., Svensson, E., Nyberg, L., Eds.; Karlstad University Press: Karlstad, Sweden, 2011; pp. 93–105.

112.   Granberg, M.; Nyberg, L.; Modh, L.-E. Understanding the local policy context of risk management: Competitiveness and adaptation to climate risks in the city of Karlstad, Sweden. *Risk Manag.* **2016**, *18*, 26–46. [CrossRef]

113.   Moloney, S.; Fünfgeld, H.; Granberg, M. Towards transformative action: Learning from local experiences and contexts. In *Local Action on Climate Change: Opportunities and Constraints*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Routledge: London, UK, 2018; pp. 146–156.

114.   Glass, R. *London, Aspects of Change*; MacGibbon & Kee: London, UK, 1964.

115.   Lees, L.; Phillips, M. (Eds.) *Handbook of Gentrification Studies*; Edward Elgar: Cheltenham, UK, 2018.

116.   Rawls, J. *A Theory of Justice*; The Belknap Press of Harvard University Press: Cambridge, UK; London, UK, 1971.

117.   Stone, C.N. City politics and economic development: Political economy perspectives. *J. Politics* **1984**, *46*, 286–299. [CrossRef]

118.   Long, J.; Levenda, A. Climate urbanism and the implications for climate apartheid. In *Climate Urbanism: Towards a Critical Research Agenda*; Castán Broto, V., Robin, E., While, A., Eds.; Palgrave Macmillan: London, UK, 2020; pp. 31–49.

119.   Davies, J.; Ziervogel, G. Learning by doing: Lessons from the co-production of three South African municipal climate adaptation plans. In *Local Action on Climate Change: Opportunities and Constraints*; Moloney, S., Fünfgeld, H., Granberg, M., Eds.; Routledge: London, UK, 2018; pp. 53–71.

120.   Ciplet, D.; Roberts, J.T. Climate change and the transition to neoliberal environmental governance. *Glob. Environ. Chang.* **2017**, *46*, 148–156. [CrossRef]

121.   Robbins, P. *Political Ecology: A Critical Introduction*; Wiley-Blackwell: Chichester, UK, 2012.

122.   Watts, M. Political ecology. In *A Companion to Economic Geography*; Sheppard, E., Barnes, T.J., Eds.; Blackwell Publishing: London, UK, 2000; pp. 257–274.

123. Paulsson, S.; Gezon, L.L.; Watts, M. Locating the political in political ecology: An introduction. *Hum. Organ.* **2003**, *62*, 205–217. [CrossRef]

124. O'Brien, K.; Eriksen, S.; Nygaard, L.P.; Schjolden, A. Why different interpretations of vulnerability matter in climate change discourses. *Clim. Policy* **2007**, *7*, 73–88. [CrossRef]