

Review

# Pathways for Sustainable and Inclusive Cities in Southern and Eastern Africa through Urban Green Infrastructure?

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**Abstract:** Cities in sub-Saharan Africa are currently confronted with a multitude, and hitherto unexperienced, magnitude of transformative phenomena such as rising inequality, exclusion, poverty and increased residency in informal settlements. These stressors are posing challenges to cities in terms of housing, infrastructure and provision of basic services as well as climate change adaptation. Despite the high dynamics and novel characteristics of city transformation, this urban transition seems to take place rather ‘quietly’ and has, so far, obviously hardly been understood or appreciated by researchers and governments. Subsequently, the multifaceted and extremely challenging problems associated with the process of urbanisation cannot be adequately addressed. Green infrastructure (GI) is currently emerging as a concept for cost-effective urban sustainability and livelihood security. Preservation and provision of accessible urban green spaces is increasingly recognised as an essential part of the liveability of cities. Extensive literature review revealed that the systematic integration of GI concepts in urban planning is seen by an increasing number of researchers as an essential approach to tackle major current and future challenges. Based on the literature review, we suggest that broadening the concept of urban GI by linking it to governance and rights-based conceptualisations will have the potential to unlock more resourceful paths for sustainable, green, and inclusive urban development of cities in Southern and Eastern Africa.

**Keywords:** urbanisation; sub-Saharan African cities; sustainable cities; inclusive cities; resilient cities; livelihood security; food security; urban green infrastructure; urban agriculture; right to the city

## 1. Introduction

Although the majority of the African population is still living in rural areas, there is an indication of a gradual but significant demographic shift toward an increasingly urban population on the continent [1]. Considering the forecast of an average annual growth rate of 5.35 % for the decade 2010–2020, sub-Saharan Africa is the fastest urbanising region in the world [2] (p. 147). High growth rates are expected in the current decade, particularly in the largest Eastern African cities. The highest demographic pressure can be expected in Dar es Salaam/Tanzania, presently Eastern Africa’s largest city, where a projected annual average of 226,000 new urban dwellers [2] (p. 149) will have to be accommodated and given access to infrastructure and other resources. However, when looking at the UN statistics, it is important to keep in mind that an official, universally valid, transnational definition for ‘the city’ or ‘the urban’ does not exist. A minimum population size defined for all cities as the only descriptive factor is not a suitable criterion that can be applied equally to all cities, mainly because of the different administrative conditions. There are different national definitions of urban

and rural areas, or thresholds for the number of inhabitants—either exclusively or in combination with other indicators—to classify a settlement as ‘urban’. Some African countries don’t even have such definitions [3–5]. The rapid growth of African cities is driven by rural–urban migration and a considerable natural population growth, which is one of the highest in the world (Dar es Salaam, for example, is growing at an annual rate of 5.48%, [5], with an annual growth rate of built-up areas of almost 8% [6]). Still, as Parnell and Walawege [3] note, there is little consensus on what exactly drives people into cities. However, as McGregor, et al. [7] note, African cities are also expanding through various forms of encroachment, mostly by integrating peri-urban or rural areas into the administrative area of the city. In view of the increasing urban population, sub-Saharan African cities are confronted with a multitude of challenges such as growing poverty, increased residence in informal settlements and unplanned expansion of the settlement area [8]. Other phenomena such as air and water pollution, water scarcity and chronic traffic chaos are intensifying rapidly [9–11]. Growing levels of urbanisation in sub-Saharan Africa, and in Southern and Eastern Africa in particular, seem unstoppable and must therefore be grasped by both scientists and urban planners [3,12].

Regardless of these figures and projections, and apparently influenced by an anti-urban bias, Africa has, for a long time, been perceived and depicted in academia and policy as an essentially rural continent [3,13]. This can also be observed for development cooperation, not only for the African continent, but also worldwide, which has been focussed on rural development for many decades [14,15]. As a consequence, this urban transition, however, obviously goes barely appreciated by city officials and governments [16,17]. Scientists and researchers from Southern Africa in particular stress that greater consideration must be paid to the highly dynamic African urbanisation process and its outcomes due to the rapidity and the extent of the transformation (see e.g., [12]).

But how to tackle these immense scientific challenges, given the rapid and highly dynamic developments in the fast growing cities of Southern and Eastern Africa that have been blurred or overlooked for a long time? Our review paper aims to explore the potential to open up ways for a sustainable and integrative urban development in sub-Saharan Africa by looking at the highly complex issues and gaps in knowledge through the ‘lenses’ of the concept of urban green infrastructure. We focus here on the concept of green infrastructure (GI) and green infrastructure strategies, because these are becoming increasingly evident both in research and administration (city planning and development) [18–21]. The concept of GI is based on the principle that nature and natural processes are deliberately integrated into spatial planning and urban development in order to maintain and enhance the delivery of ecosystem services and therefore of ecological, sociological, and psychological benefits to human society [22,23]. Over the last two decades, the potential role of GI has therefore gained acceptance as a contribution to cost-effective urban sustainability and livelihood security in particular [24]. However, concepts of urban green infrastructure and its multiple benefits are often framed from a predominantly ‘Western’ urban perspective, but are still insufficiently researched for urban spaces in sub-Saharan Africa.

This paper reviews what we have learned from the literature on urbanisation in sub-Saharan Africa, and particularly in Southern and Eastern Africa, and on sustainable and resilient cities and the concept of GI. The paper also discusses the conceptualisation of ‘African’ urbanisation and related social, economic and ecological processes and outcomes. It critically examines the concept of resilience, and rights-based approaches are also addressed. This review begins by addressing the urbanisation process in sub-Saharan/Southern and Eastern African cities and the challenges this poses to research, city planning and administration. Everyday problems related to growing poverty, social inequality and exclusion, but also key emerging challenges such as the impact of climate change on cities are considered. A central part of the paper deals with urban planning and the transformation of the concept of GI in two former British colonies. One focus is on the planning of the so-called ‘New Capitals’, in which concepts for GI have already been systematically implemented. The paper then examines the development as well as current trends and transitions of the GI concept as an approach to adaptation to climate change and sustainable urban development.

Our literature review supports the various potentials of GI that have been identified by a substantial number of sources, but also considers potential pitfalls and negative aspects of GI. We demonstrate that there is sufficient proof in the reviewed literature that the systematic integration of GI concepts can contribute to addressing the major current and future challenges in Southern and Eastern African cities. Based on an extensive literature review, we argue that, as a first step, the concept of urban GI can facilitate an access point for gaining a better understanding of contested realities of the people living in these cities. We conclude that broadening the concept of urban GI by linking it to governance and rights-based conceptualisation will have the potential to open up more resourceful pathways for sustainable, green and inclusive urban development.

## 2. Materials and Methods

This integrative review paper seeks to undertake an interdisciplinary discussion on urban green infrastructure and its potential to unlock pathways for sustainable and inclusive urban development in sub-Saharan Africa, due to high growth rates with a particular focus on Southern and Eastern Africa. As the subject area is a relatively new and emerging issue in the sub-Saharan African context, our focus was not only on reviewing evidence and case studies, but we also reviewed concepts and theories. We have pursued the goal of summarising recent research that addresses our exploratory research question by synthesizing existing knowledge about key concepts and types of evidence, identifying gaps in research related to the research question, and identifying starting points for further research. For the purpose of tracing trajectories, we have also included some older publications. Our review included the following stages:

1. Problem identification: Empirical and theoretical discussion over the past five to ten years—albeit mostly detached from each other—on urbanisation processes in sub-Saharan Africa, (urban) green infrastructure and the discourse on the right to the city showed the importance of interdisciplinary research in this field;
2. Identification of keywords and synonyms, compilation of search strings: Since the literature in this field of research is vast and complex, initially, we reviewed some relevant journals and book chapters to get a closer look at the subject and to identify keywords, synonyms and search strings. In this way, we were able to consider the diversity of relevant literature and studies using different methodologies (e.g., theoretical and qualitative research) and to explore related literature with a broader conceptual range. To familiarise ourselves with the subject and to refine the topic, we consulted search engines such as Google Scholar and library catalogues (e.g., Geodok), using the terms urbanisation, (urban) green infrastructure, urban agriculture, right to the city, and sub-Saharan Africa;
3. Search of literature in databases: In total, we derived over 100 articles and book chapters from this pre-research, providing valuable material and key terms for the study and helping to inform the second round of search. In order to identify the literature to be reviewed, we subsequently conducted an expanded database search in academic search engines (such as Scopus), and systematically searched subject-specific websites of major IGOs and NGOs for publications. The search items included: Urbanisation, sub-Saharan African cities, sustainable cities, inclusive cities, resilient cities, livelihood security, food security, (urban) green infrastructure, urban agriculture, right to the city;
4. Decision on the inclusion or exclusion of literature on the basis of the following defined criteria: Regarding the records we identified in the pre-research, we only retained refereed journal articles and book chapters directly related to the overarching topics. We limited the results to articles written in English language, except for some basic literature in German. In a second round of research, again, we only considered refereed journal articles and book chapters directly related to the keywords and synonyms. The main topics on which we initially focused our review were the conceptualisation of ‘African’ urbanisation as well as major current and future challenges in sub-Saharan Africa, and Eastern and Southern African cities in particular; here, we considered

literature covering the last ten years. Regarding urban planning and current trends and transitions of the GI concept (which also includes urban agriculture), we also took older literature into consideration that has had significance in shaping the direction of research. As urban GI is a new and emerging issue for sub-Saharan Africa, we also referred to examples from the so called 'Global North'. We added journal articles and book chapters published between 1988 and today referring to 'green infrastructure' to the search to trace the transformation of the concept of GI over the past decades. We supplemented this with more theoretical sources that address the concept of 'resilience' and rights-based approaches, which are generally not specifically concerned with issues in the 'Global South' and mainly originate in Western social sciences. We examined all identified sources, and articles and book chapters directly related to the research questions were thoroughly reviewed to identify important topics, concepts and, where relevant, research gaps;

5. Review of the included literature using content analysis methods: We analysed the theoretical and empirical literature on urbanisation, urban green infrastructure, urban agriculture, and the right to the city, discussing the topics: Sustainable cities, inclusive cities, livelihood security, discussion of concepts and theories, historical trajectories, knowledge gaps and development of possible future solutions;
6. Presentation of results: We finally prepared the review to be presented in the results section, organizing the review data under the following themes: 'African' urbanism; emerging challenges, vulnerability and resilience of city dwellers; urban planning and green infrastructure in the colonial and post-colonial era; postulated benefits and potential pitfalls of urban green infrastructure; urban agriculture and the right to the city as a guiding concept.

### 3. Results

#### 3.1. Grasping 'African' Urbanism

A first bundle of literature attempts to identify patterns of urbanisation and urbanism in sub-Saharan Africa. As the world becomes more urbanised, sustainable development increasingly depends on successfully managing urban growth, especially in sub-Saharan Africa, where the pace of urbanisation has been, and still is, higher than in many other less and more developed regions [1]. Globally, there are significant differences in urbanisation patterns between regions and even greater differences in the degree, rate and nature of growth of individual cities. According to Agyemang et al. [25], African cities are characterised by a high degree of development spontaneity, which is shaped by a scattered pattern of urbanisation and has led to new spatial configurations. The resulting urban development pattern is often characterised by the spontaneous emergence of new centres with their own social and economic dynamics [26]. In contrast to spatial transformation processes in other parts of the world, the declining monocentricity in sub-Saharan African cities is therefore rather characterised by amorphousness, i.e., the lack of a clear core-periphery structure [25]. Thus, it is unclear whether the developing spatial structures correspond to existing urban (geographical) models or can be explained by them. However, such 'blanket comparisons' should be treated with great caution, and as will be shown below in more detail, experience from other regions of the world can therefore only be transferred to sub-Saharan Africa to a limited extent.

According to Barac [27], most dynamic and unregulated growth is taking place in informal settlements. Although the proportion of the urban population living in informal settlements and slums is lower today than it was decades ago, the absolute numbers continue to rise [26]. Currently, 62% of African urban dwellers live in temporary shelters or informal settlements [26]. On the premise of these developments, Pieterse concludes that the "shanty city is by and large the true African city" [28] (p. 21). Pieterse points out that informal practices can be seen as supplementary to the urban management role of the state. As the city seems to emerge from individual behaviour (bottom up), based on micro strategies by underprivileged citizens in their daily lives, Pieterse [28] draws the conclusion

that African urbanism needs be theorised from the angle of the ordinary people who live in these informal settlements.

Urbanisation processes in Africa seem to be difficult to grasp for both science and policy, as the urban development pathways differ fundamentally from those in other cities around the world. First of all, the urbanisation process in most African countries—different from, for example, Europe—has been uncoupled and delayed from the industrialisation process. In contrast to cities in Europe, Latin America and Asia, African metropolises (with the exception of South Africa) are largely marginalised at the global level and characterised by insufficient infrastructure, lack of social and other services, inadequate housing and high unemployment [29]. Moreover, according to Pieterse and Parnell [12], the manifestation of urban structural poverty and systemic exclusion as well as the prevalence of a high degree of informality in terms of social and economic activities is an outstanding distinguishing feature of African cities. Potts [30], on the other hand, stresses the fact that most African cities are integrally connected to rural areas through the practice of circular migration as a livelihood strategy. African cities are traditionally characterized by overlapping and even competing systems of power: the responsibility of key urban governance issues is often fragmented amongst a diversity of actors and stakeholders, such as government and political parties, traditional leaders, private sector, informal business organisations, multilateral agencies, development banks, international donor agencies and civil society [31]. These are usually characterised by conflicting interests and an unequal distribution of power, which hampers a reasonable and timely approach to the complexity of urban issues [31]. In the lack of a strong local state, it remains uncertain for urban dwellers, policy makers and researchers how entitlements and access to livelihood assets and contested (public) spaces are negotiated, what is the nature of the institutional framework in which these issues are embedded, and which formal institutions and informal, in many cases traditional arrangements are in place [32].

Although sub-Sahara Africa remains one of the least urbanised regions of the world [1], many of the current social and economic challenges there have increasingly been linked to urbanisation—as a number of scientific publications on this topic shows. This has led to a more intensive academic analysis of the African city as an arena in which fundamental social and spatial transformation has unfolded. This arena of transformation, characterised by a multitude of competing actors each taking an interest in shaping the city the way they dim fit, is sometimes profoundly influenced by external triggers and events. This process has been termed ‘urban festivalisation’ [33]. It must be noted, however, that there is no such thing as ‘the’ African urbanisation process. Rather, the cities in sub-Saharan Africa should be regarded as individual instances (framed by, e.g., certain historical, post-colonial forces; see e.g., [34]), since processes and outcomes of urbanisation have so far been rarely investigated and are therefore yet to be comprehensively explained. Due to the complex and heterogenous circumstances, there is often a tendency to over-generalise Africa’s urban problems [35]. As Landau [36] emphasizes, very little is known about the contested realities of life and fields of practice of the people living in African cities. Subsequently, the multifaceted and extremely challenging problems associated with the process of urbanisation cannot be adequately addressed by researchers and practitioners.

In light of this contestation on African cities, Robinson [37] emphasizes that the specific characteristics of the dynamic urban development and societal vulnerability in sub-Saharan Africa have so far been of little importance in urban studies since most urban theory stems from cities moulded by the industrial revolution. For example, as García-Ayllón demonstrated in his comparative analysis of cities in Latin America, the most urbanised region in the world, the rapid growth of cities has different configurations and is often characterized by a convergence of processes or multiple phenomena that contradict classical theories about central places [38] (p. 129). It should be noted, however, that urban development paths in Latin America differ significantly from those in Africa for various reasons. The disperse forms of urban development in sub-Saharan Africa are partly related to a heterogeneous colonial past. Moreover, even before the colonial period, there were already some ‘independent’ urban development processes [39]. In contrast, in Latin America (especially South America) we hardly know



any autochthonous cities. On the other hand, a dominant Spanish influence is known from there with a clear urban structure repeated across almost the whole continent (see e.g., [40]).

Highlighting that urban studies have been dominated by Euro-centricity and Anglo-American hegemony for a long time, Robinson [37] makes a strong argument for a more global approach of understanding cities by pursuing ‘new’ methods and theoretical practices which allow conceptual innovation to emerge from the complexity of any urban context. This has already been supported by Murray and Myers [41] who insist that learning from the experiences of African cities is key both to meeting the challenges they are facing and to understanding urbanism in the 21st century. Not only the variety of innovative urbanisms worldwide, but also the variety of dynamics in the individual cities are of great importance. In this sense, Robinson [37] proposes that greater emphasis should be given to “particular cases of universal ... phenomena” (“singularities”, “distinctive forms of something found more widely”, [37] (p. 7)) in urban studies, and to the comparison of specific urban elements and processes that are shaping a certain urban outcome as new objects of analysis. This builds on earlier work by Parnell and Robinson [42] around conceptualizing cities in the Global South and critiques of urban neoliberalism ([43–45], see also [46]), which for many places in the Global South is not considered a suitable theoretical approach due to various processes other than neoliberalism shaping specific urban contexts. It can therefore first be stated that visions for a new (scientific) basis are needed in order to better understand and manage urban development in sub-Saharan Africa in the future. Championing new urban utopias, Parnell and Pieterse [47] for example advocate a rethinking of urban management systems and practices from a rights-based perspective.

However, it should be noted that this criticism of urban theories and conceptualisations is largely influenced by a historically established, specific South African point of view by researchers working at and with the African Centre for Cities in Cape Town. An alternative theory of postmodern urban development has recently been developed by representatives of the Los Angeles School of Urbanism (see e.g., [48]), who conceptualize the city as a daisy chain of competing city states. However, the criticism of these approaches manifested itself above all in the attribution of a paradigmatic character to the greater Los Angeles area, where, according to the authors, many urban phenomena are to be revealed in new facets more clearly than elsewhere. A fundamental conflict in the discussions on postmodern urban research relates to the assessment of urban development phenomena in terms of their novelty.

### *3.2. Day-to-Day Struggles and Emerging Challenges in Sub-Saharan African Cities*

A second group of authors focuses more strongly on emerging challenges in sub-Saharan African cities. In most sub-Saharan African countries, the state and city institutions have weak legal frameworks or lack political capacity, and sometimes maybe will, for effective and adequate implementation of planning strategies and bylaws [31]. As one of many possible causes, Smit [31] identifies the hasty and only partial decentralisation of public administration in Africa since the 1980s, which has led to local governments characterized by weakness, disorganisation, inadequate training and staffing, and overwhelming burdens from new, complex tasks. In addition, local governments have limited opportunities for mobilising the necessary resources to tackle rapid urban growth and the closely associated problematic processes. As argued by Pieterse [49] and United Cities and Local Governments [50], sub-Saharan urban economies, urban leaders and policy makers lack the capacity to provide infrastructure and services (e.g., water and sanitation) due to limited revenue bases, and apparently fail to manage the dynamics of urban change due to institutional failures. Such institutional failures sustain social exclusion and inequalities and thus contribute to an exacerbation of urban poverty [8]. Persistent or increasing disadvantage leads to a cascading effect of several other problems such as disease, hunger, crime and conflict [51]. For example, Blekking et al. [52], in their analysis of the urban food system in sub-Saharan Africa, conclude that urban households must obtain up to 90% of their calorie intake from purchased food. Especially for the urban poor, there is a danger that the costs of food can no longer be met. The achievement of food security is additionally hampered by accessibility

factors. Low-income groups, and more likely recent migrants, living in informal settlements or slums suffer disproportionately from the deficits outlined above. Since most of the migrants are youth, and male youth in particular, Sommers [53] (p. 318) identifies them as “agents of sub-Saharan Africa’s radical transformation from a mainly rural to a predominantly urban region”.

Lack of access to basic services and infrastructure triggers the production of everyday hazards in particular, which in turn reduces adaptation capacity of the people affected [54]. In addition, there are further problems such as air and water pollution, water scarcity, chronic traffic chaos and the occurrence of natural hazards [9–11,55]. Against this background, urban dwellers face a variety of interrelated challenges that hamper the proactive mobilisation of human resources. At the same time, and as already stated above, sub-Saharan African cities also face a wide range of interwoven institutional challenges—and thus an associated “multidimensional accumulation of risk” [55] (p. 76). Moreover, many authors believe that Africa’s rapidly expanding urban areas are likely to be a vulnerable spot for climate change and global environmental change in the coming decades. (e.g., [3,56]). Rising sea levels, rising temperatures and changes in precipitation patterns leading to floods or severe droughts will place a burden on these cities to maintain their essential services [56,57].

Apart from the rapid urbanisation process in sub-Saharan Africa and associated challenges, attention in academia and politics has of late increasingly been drawn to climate change impacts in urban areas [58–60]. There seems to be increasing evidence that the African continent will be most severely affected by climate change and the IPCC’s Fifth Assessment identifies a range of climate change impacts that are already being observed in many sub-Saharan areas, or soon will be felt [57]. These include an increase in extreme weather events such as heat waves and warm spell duration, intensified exposure to seasonal droughts as well as a likely increase in rainfall and higher variability in the range of heavy rainfall [57] (p. 1206 ff.), and strong winds [61]. However, climate change impacts on natural resources and, for example, the risk of food insecurity, are still conceptualized as a problem in rural areas and are only recently considered in urban contexts. Despite the fact that many countries in Southern and Eastern Africa are fast urbanising and increasingly facing extreme weather threats, there is more focus on improved agricultural production by rural smallholder farmers as means of alleviating poverty [62] as well as an emphasis on environmental and climate change induced migration and displacement of the African rural population [63]. In this respect, if the root causes of poverty and vulnerability to climate change impacts are not addressed properly, sub-Saharan cities may be overwhelmed by extreme weather events due to inability of urban dwellers to implement timely adaptation actions. The nexus of urbanisation, poverty and climate change is highly complex and characterised by often conflicting needs and priorities of different urban actors.

There is no doubt that rapid ecological, social and economic transformation of urban centres is cause for unprecedented strains, not only to cities and local administrations, but also private households [64]. However, since climate change induced hazards, vulnerabilities and impacts are substantially increasing in urban environments, these changes will affect the livelihoods of the urban population, in particular the majority of poor and marginalised groups living in informal settlements. As Douglas et al. [65] (p. 187) emphasize, low-income population tends to live in “the most hazardous and unhealthy environments”, most of them building their homes in flood-prone and fragile areas. Hence climate change is likely to amplify social inequalities because of the uneven distribution of its impacts and the limited coping capacity of poorer population groups [66,67]. This is in line with Satterthwaite [68] who argues that the impacts of climate change hit low-income groups hardest in the sense of further exacerbation of poverty. For example, Van Vuuren [69], in her case study on ‘communities’ in Mgeni catchment in KwaZulu-Natal and Berg catchment in the Western Cape (South Africa), showed that those with “low-economic status based on their income, education and housing type” [69] (p. 25) are most vulnerable to impacts of climate change. This is because their adaptability is impaired due to their inability to make informed decisions or because building materials lack the structural integrity to withstand the pressures of flood water. Climate change will also have a significant impact on urban landscapes, e.g., infrastructure systems, the built environment and

ecosystem services [70,71]. Urban landscape change is often a result of the altered surface cover and use in towns and cities, which is massively influenced by material requirements for production, energy consumption and urban lifestyles. For example, intensified surface sealing leads to increased surface runoff of rainwater, while a decrease in the vegetation landscape has a negative impact on urban energy exchange, which promotes the formation of heat islands [70]. These radically transformed local environments have a regional and global impact [71]. Although adaptation to urban climate change is a relatively new issue, significant progress has been made in recent years in policy, practice and research [72]. However, research is mainly concentrated on European cities (see [70,73]), while African cities or cities in sub-Saharan Africa have so far been scarcely in the spotlight (with the exception of some coastal cities, see e.g., [74]).

To a varying degree, the livelihoods of peri-urban population and urban dwellers depend on natural resources. For instance, informal sector activities such as urban agriculture are used both as source of basic food and generation of household income [75,76] to supplement sources from peri urban and rural areas. As Schlesinger, Drescher and Shackleton [77] have shown for Moshi (Tanzania) and Bamenda (Cameroon), the use of (wild) natural resources is generally high in many fast-growing, medium sized cities, and they remain the basis for nutrition and important sources of income. However, as a result of strong urbanisation trends and climate change impacts, new challenges for food security are emerging. It is clear therefore that climate change will interact with non-climate drivers and stressors to exacerbate the vulnerability of urban and peri-urban agricultural system [78]. As a result of increasing pressure from droughts and flooding, urban agriculture has tended to directly affect the urban poor in terms of asset erosion [79]. Using Zimbabwe as an example, Brown et al. [80] were able to demonstrate that the impacts of climate change are exacerbated by not only the high levels of sensitivity of the social and ecological systems, but also due to the limited capacity of the civil society, private sector and government actors to respond appropriately. In this respect, climate change threatens to worsen poverty, in particular in indigent societies with low adaptive capacity [81,82]. This in turn prevents many disadvantaged urban dwellers from developing adaptation and transformation strategies to become more resilient to climate change impacts.

In urban development and city planning, ‘urban resilience’ has advanced to a major research focus in various scientific disciplines and to an applied and normative concept which is increasingly being linked to environmental change and disasters. Urban resilience has been defined by the Rockefeller Foundation [83] as the “capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience”. While the definition of urban resilience largely stems from earlier conceptualisations of social vulnerability and sustainable rural livelihoods, there has been an increasing critique of the concept in recent years since some authors regard it as a static and purely descriptive concept (see e.g., [84]).

In this context, MacKinnon and Derickson [84] state that the concept of resilience is inherently conservative insofar as it privileges the restoration of existing systemic relations and social structures rather than their transformation [85]. Systemic relations might involve, for example, the uneven distribution of material resources, a lack of entitlements and inclusiveness or the reproduction of social relations that generate inequality. From this, MacKinnon and Derickson [84] conclude that the concept of resilience is inherently backward, privileging not the transformation of existing systemic relationships and social structures, but their restoration. Seen from this angle resilience may perpetuate status quo keeping the marginalised in a poverty trap. Systemic relationships can include, for example, the unequal distribution of material resources, the lack of entitlements and inclusiveness, or the reproduction of social relationships that create inequalities. At this point, the interdependence with rights-based approaches in the urban context becomes clear: The neglect of social divisions and inequalities may result in disadvantaged and excluded groups being unable to adapt and find creative solutions [85].

Consequently, MacKinnon and Derickson [84] suggest the alternative concept of resourcefulness which “attempts to engage with injustice in terms of both redistribution and recognition towards a vision of resourceful communities, cities and regions” [84] (p. 263). In this sense, their conception



of resourcefulness can be seen as a vision that takes the “normative desirability of democratic self-determination as its fundamental starting point” [84] (p. 264). It is here where some authors highlight the potential of the GI concept to increase the sustainability of livelihoods. As Larkin [86] has argued, appropriation and access to as well as use of GI has the potential to promote equity, ownership and a sense of belonging among urban dwellers. Citizens who are entitled to mobilizing assets have the ability to shape urban public space and as such their own living environment according to their needs and desires. Access to and use of GI enables urban inhabitants to become active and to produce and manage space for themselves [87]. We argue here that a broader concept of green urban infrastructure has the potential to improve the adaptability of urban dwellers to adapt to the effects of major environmental and social challenges faced by cities in South and East Africa [85].

### 3.3. *Looking Back—Urban Planning and Changing Concepts of Urban Green Infrastructure in the Colonial and Post-Colonial Era*

Another group of publications highlights the importance of historical development paths for urban planning and the changing role of urban GI. In many sub-Saharan African countries administered as colonies or protectorates, and in Tanzania and South Africa in particular, colonial influence was very strongly reflected in urban planning cultures and standards. For example, the ideal of a colonial version of the ‘Garden City’ [34,88] was transferred to cities in the British colonies in sub-Saharan Africa. In many countries, urban planning was characterized by intra-urban social and racial segregation of European and African residents, which Silva [35] sees as an instrument of Imperial dominance and legitimacy. Spatial segregation was mainly facilitated by a “sanitary corridor” (respectively a ‘cordon sanitaire’ in French colonies) [35] (p. 11), frequently an open green area or green belt between two sections of a colonial city, which was legitimized by hygienic and health considerations (e.g., against malaria transmission). According to Silva [35], these were the actual drivers behind the introduction of urban planning models and the concept of a master plan in the 1930s.

In the post-independence period, the practice of urban planning continued to be influenced by colonial heritage, e.g., the 1947 British planning law, since it was adopted by many of the new African states [88]. Many countries adhere to a static and complex top-down master planning paradigm although it is not considered suitable to provide guidance to the recent rapid and mostly informal urban development processes in sub-Saharan Africa [88]. Planning laws and plans have been modified, but with little attention to the post-colonial socio-economic realities [88]. Like many other developing countries, Tanzania, for example, has been switching from one urban planning approach to another. New planning approaches, e.g., strategic urban development planning 1992–2007, were adopted on the assumption that they would be more effective in urban development planning and would better meet the challenges of sustainable urban development [89,90]. Tanzania, however, returned to master planning in 2007 (the master plans of 1949, 1968 and 1979 were vague, quickly obsolete and unsuitable for coping with the rapid urbanisation—and were therefore ignored or completely abandoned), which Herslund et al. [89] (p. 2) see as a manifestation of “the wide disconnect between official urban planning and the informal lived realities on the ground.” Even though the regulation of urban space in post-colonial Africa is less researched, it can be said that colonial ethnical and racial segregation was increasingly replaced by new forms of social segregation based on the economic status of urban dwellers [39]. Spatial duality continued in many spheres of urban life, so that many cities are still far from being inclusive.

After decolonization, several new capital cities were planned or introduced to replace the existing ones, as for example Dodoma (Tanzania) and Lilongwe (Malawi), or to create a capital where none had existed in the first place (Gaborone (Botswana)). According to Pfaff [91], the main reason was that the former colonial capitals did not satisfy the function of a (African) national capital. The new capital cities were seen as an expression of a newly acquired post-colonial national unity and identity (stimulate patriotic nationalism, symbol of a country’s aspirations, goals and national pride). The establishment of new capitals was often linked to the hope that regional economic disparities

between the former capitals and rural areas could be balanced out [91]. Finally, due to a considerable increase of primacy of the colonial capitals in the post-independence era, uncontrolled urbanisation caused unsatisfactory infrastructure, poor hygiene and squatters' camps, turning cities like Dar es Salaam into "an embarrassment to their respective states" rather than a symbol of national pride [91] (p. 195).

As in the case of Tanzania, Dodoma—in the middle of a rural and hardly developed (because neglected) region—was elected the new capital in 1973. It was considered to be ideally situated at the crossroads of the existing transport network and to be climatically more suitable for the inhabitants as compared to the coastal capital Dar es Salaam. As Pfaff [91] (p. 52) emphasizes, the "shift from Dar es Salaam to Dodoma was part of the presidential aspiration for a philosophy of an African Socialism in Tanzania and thus marked a radical departure from European concepts of the characteristics and the function of a capital city." In the Dodoma plan, urban planning was informed by notions of an "African authenticity" [92] (p. 96), since planners sought to build a modern African city based on the social principles of the traditional African village. "Coastal urbanism", as it was termed by Callaci [92] (p. 97), was reframed by intellectuals as the "physical manifestation of foreign domination in Africa" [92] (p. 97), and Dar es Salaam was generally portrayed as an unruly and contested foreign city. In the post-colonial period, Dar es Salaam swelled with migrants from the countryside and grew at a rate that far outpaced urban planning and infrastructure. Rapid urbanisation and squatters led to urban interventions that replicated the much-hated colonial era policies: forced repatriation of unemployed urban dwellers to rural areas and demolition of squatter settlements [92]. An ideology was propagated in which being an urban squatter or being unemployed was not only considered a crime, but also "racially inauthentic", with the persons involved regarded as "national outsiders" [92] (p. 114). By contrasting communal African village life with morally degenerate urban life, political ideologues criminalized urban dwellers by casting them as culturally inauthentic. In the light of this urban context, the image of the rural African village was portrayed by the state as a romantic image (small, egalitarian, racially homogenous, self-contained, self-sufficient [92] (p. 103)). Self-sufficiency was promoted by Tanzanian leaders as one of the core values of the post-colonial nation. This took shape in the context of Ujamaa (African socialism, 1967–1985), which aimed at organizing the population into collective rural villages ('villagisation' in order to boost agricultural productivity and economic autonomy). As such, in the Dodoma plan, each residential area was to be organized around a collective garden, recreating a collectivist ethos of a 'traditional' African village ("chief village in a nation of villages" [92] (p. 98)).

However, the Dodoma plan went wrong. Although Dodoma is today the capital city of Tanzania, Dar es Salaam is growing continuously, increasing its primacy constantly further. While urban agriculture, and with it a broader concept of GI, as catalyst for self-sufficiency (and food security) was of central importance in the former Dodoma plan, urban GI is only slowly and very gradually finding its way into planning and governance in Tanzanian cities nowadays. The top-down master planning approach is having a comeback, and open space management is—if at all—aimed at beautification for recreation. Schäffler and Swilling [93] (2013) see one reason for this in the lack of appreciation of the public ecosystem services that green spaces and GI can offer. On the other hand, green spaces are generally not recognised due to the growth pressure and competing claims for vacant space to which cities are exposed.

In Malawi, for instance, the colonial capital of Zomba was the administrative centre of Nyasaland during the British colonial era. Since Zomba was considered to be too close to the commercial capital, Blantyre, and offered only limited opportunity for expansion and the extension of capital functions, president Hasting Banda decided in the early 1960s to relocate the capital to Lilongwe, in the middle of Malawi's agricultural heart [94]. This was associated with the hope of strengthening development in central and northern regions of Malawi; the new capital was intended to symbolise the emergence of a modern, dynamic and prosperous Malawian nation [91,95]. Beyond that, the capital relocation also "represented a symbol of national unity and an important political move in trying to overcome ethnic antagonisms and political future conflicts" [96] (p. 76). As in other cases, the new capital should

symbolize the emergence of a modern, dynamic and prosperous Malawian nation. Pursuing the goal of giving Lilongwe a “truly African character” [97] (p. 39), the planning of low-density residential areas was a quality feature for the new capital. A “key feature of the city is its parkland setting. From the beginning there was a concern to create a high-quality environment with spacious living standards, as befits a capital city” [98] (p. 2). In this planning period, green areas were given a purely aesthetic and structuring function, leading to a strongly cluster-shaped urban structure with smaller areas of use separated from each other by undevelopable open spaces. However, these green spaces could not fulfil their intended “important open space feature” [97] (p. 87) in further urban development of Lilongwe.

Nevertheless, the Lilongwe Master Plan of 1968 developed an urban concept at the level of the urban discussion of its time. The influences ranged from the Garden City concept and the English New Towns to the American Garden City movement. Particular attention was paid to the Radburn concept, which in turn was influenced by the Neighbourhood Unit concept [95]. Even though green spaces had already been systematically implemented in planning and governance of the new capital of Lilongwe, green spaces were rapidly diminished due to population pressure and competing demands for vacant spaces. By the end of the 1970s, the city had developed into an attraction for the poor rural population of the surrounding highlands. New arrivals were building traditional housing just outside the city limits in tribal land or on the land of freehold farms [95]. Since there was not enough land available within the city, migrants built shelters on all available free space in the city. Squatter areas were created, which were countered with an extremely restrictive policy. Illegal logging was common in the city’s public green areas, as the majority of households used firewood for cooking and heating. The inhabitants had also illicitly created vegetable gardens on these areas, which was considered problematic by the city administration [95].

### *3.4. The Green Infrastructure Approach, Its Benefits to Environmental and Social Challenges in Cities, and Potential Pitfalls*

A fourth group of authors explicitly focuses the concept of the GI as a promising approach to manage major environmental and social challenges in cities. Interestingly, GI has already been systematically implemented in planning and governance of cities of sub-Saharan Africa in the colonial and post-colonial era. Especially the colonial and new model cities described above, based on the Garden City and the British New Town concept (but modified), have specifically ‘built in’ green spaces. While according to some authors, such as Mensah [99], the green spaces in African cities today are disappearing alarmingly fast, the preservation and provision of accessible urban green spaces is increasingly recognised worldwide as an essential part of the sustainability and liveability of cities. Concepts for urban GI are currently experiencing a ‘comeback’ and are increasingly finding their way back into urban planning and management, also in sub-Saharan Africa (see for example [100,101]). Urban GI and its ecosystem services are often framed from a predominantly Western urban perspective and its related specific social, economic and environmental challenges [102] (p. 328). It must therefore be questioned to what extent these concepts can be simply transferred to the sub-Saharan context. However, most of the sources on urban GI we reviewed underscore the fact that the multiple benefits of (managed) urban ecosystems are of outstanding importance for cities of the so-called developing world.

The core features of the GI concept relate to urban green areas that are networked and multifunctional [18,19,103,104]. Pauleit et al. [23] (p. 5) identify a variety of green spaces “within the urban fabric” which is much more than public green space: it may range from green on buildings such as balconies, green roofs, and walls, to green near built structures, such as street greening, railway banks, house gardens, playgrounds, different types of parks, institutional green spaces, cemeteries, sports facilities, and allotments and community gardens, to more open kinds of green space like farmland and horticulture, woodlands and shrublands, abandoned lands, quarries, and dunes. Urban GI has been promoted as a promising approach to tackle major environmental and social challenges in cities. Over the last one to two decades, the potential role of GI has gained acceptance as a contribution to cost-efficient urban sustainability and livelihood security. In the context of mitigation and adaption

to climate change, increasing attention is being devoted to urban GI due to its beneficial bio-physical as well as social effects [93,105]. It is assumed that urban GIs have the potential to break new ground to resilient cities and thus to climate protection and adaptation. Recognizing that adaptation in sub-Saharan cities is often hampered by both a lack of conventional physical infrastructure and the loss of ecological infrastructure or lack of access to services and resources, there is a growing interest in the role of urban GI in building urban resilience. For instance, there is evidence that GI can contribute to reducing the ecological footprint of cities, conserving and enhancing biodiversity, supporting services for food security, income generation, water filtration and carbon capture, promoting social cohesion and a sense of place and community identity, improving human health and well-being, and increasing resilience to extreme climatic conditions [106–113].

Having been informed by examples drawn from across Europe and North America, various definitions of GI have been proposed since its emergence in the 1990s [23]. Taking GI as a more holistic approach to land conservation and considering environmental management and ecological conservation in combination with other land use developments, Benedict and McMahon [114] (p. 6) define GI as “an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human population”. Initial discussions of Benedict and McMahon [115] and Davies et al. [20] led to the mushrooming of literature focused on the impacts as well as the functionality of urban GI across the globe [85]. In May 2013, the EU Commission launched a Green Infrastructure Strategy, which considers GI to be a tool for providing ecological, economic and social benefits through natural solutions and that helps us to understand the value of the benefits that nature provides to human [116]. Accordingly, the EU’s Green Infrastructure Strategy defines GI as “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.” [116] (p. 3). Taking into consideration accelerated consumption of natural resources, increasing fragmentation of open space and the rapid displacement of green space by new land-use developments, urban GI is thus being linked to sustainable, greener, smarter and more efficient methods of urban development [18,21,117]. Benedict and McMahon [114] already argue that landscape fragmentation exacerbates social and economic divisions and the alienation of man from nature. It can thus be noted that GI concepts still largely originate from a more functionalistic approach that emphasizes environmental services [85].

Many GI strategies are becoming increasingly evident in both research and administration in North America and Europe. In European countries, GI is widely recognized as a valuable approach for spatial planning of ecosystems, to land management as well as to climate and disaster risk management [24,103,116,117]. As several studies of European urban areas by Buijs et al. [118], Buizer et al. [119] and Davies et al. [120] as part of the EU-project GREEN SURGE ([greensurge.eu](http://greensurge.eu), University of Copenhagen) impressively demonstrate, many cities have adopted some kind of strategic green space planning. For example, the Barcelona Green Infrastructure and Biodiversity Plan 2020 [121] (p. 9) is considered as a “strategic instrument which sets out the challenges, goals and commitments of the local government when it comes to preserving green infrastructure and biological diversity and defining how people can discover their natural heritage and benefit from it whilst taking great care of it.”. Some major cities across the USA, including for example New York and Chicago, started to explore the potentials of advancing GI as an operant approach to land management and climate resilience by combining engineering with the use of urban green (and natural) infrastructure (see e.g., [122]) for building a 21st century resilience strategy for New York State or “A Stronger, More Resilient New York” [123], as well as “Green Stormwater Infrastructure Strategy” for Chicago [124]. China, too, with its “Sponge City Program” is pursuing a ‘green’ urban water management program [125]. However, some authors have expressed their criticism about the concept of urban GI as a neoliberal approach based on economic concepts, outside expertise (external expert knowledge) and technical rationality.

Whilst the positive aspects of GI are highlighted in a substantial number of the sources we analysed, the concept also reveals negative implications and potential pitfalls that only a few authors have addressed so far. For example, their uneven distribution as well as varying rights of access and disposal raise issues of social and environmental justice in regard to GI [126]. Apart from that, peri-urban and urban dwellers often compete for space with other urban needs and development priorities, or get involved in conflicts with other land uses [126]. This challenge is superimposed by the high heterogeneity of public, institutional and private landowners, making the involvement of a large range of stakeholders in planning and implementation a necessity [31]. This is particularly true for a large number of cities in sub-Saharan Africa, for instance for Dar es Salaam, where the institutional setup of land management is “polycentric and opaque, with formal arenas often inaccessible to the average Dar denizen” [127] (p. 2) and where land management is characterised by socio-political tensions between customary land ownership and state urban planning [31,126,128].

As Wolch et al. [129] have shown in their literature review on green spaces in US and Chinese cities, for example, less affluent population groups are disproportionately disadvantaged in terms of distribution and access to green spaces, which has led to growing recognition of access to GI as an environmental justice issue. However, strategies to create new urban green spaces can have paradoxical effects, as rising housing costs and property values may result in “eco-gentrification” [129] (p. 241), exclusion and displacement of those residents who should benefit from the strategies. For the sub-Saharan context, this is supported by a study of Gwedla and Shackleton [130] on the distribution, composition and diversity of street trees and thus the benefit flows in the cities of the Eastern Cape. The authors discovered that density and composition were significantly lower in cities that were marginalised during the previous racist political regime, and that poor urban areas within towns had fewer street trees.

The basic principle of the GI approach is the promotion of social, economic and environmental benefits by an integrated approach to planning that enables different stakeholders to shape the ways that they develop and manage landscape [22] (p. 135). The lack of socially inclusive planning, therefore, may result in an urban GI that does not meet the requirements of the different stakeholders of urban society, thus intensifying social inequalities rather than promoting social cohesion (as will be illustrated in the following chapter using a few examples of urban agriculture as a productive form of GI). However, social benefits have hitherto been only weakly presented in the GI discourse. The preservation and maintenance as well as disruptions, contestations and inequalities in planning, management and use of urban GI, which also implies the right of appropriation and participation, are still insufficiently researched in science. This is particularly true for urban spaces in sub-Saharan Africa.

### *3.5. Pathways for Resourceful, Just and Inclusive Cities Through Urban Agriculture as a Productive Green Infrastructure?*

Ecosystem-based adaptation approaches are increasingly being integrated in climate change adaptation strategies, in general [82]. However, in urban areas it is suggested that the application these approaches must seek to move beyond a focus on street trees and parks to a more detailed understanding of how ecosystem services can reduce the vulnerability of ecosystems and people [131,132] by contributing to livelihoods, food security and wellbeing of urban dwellers [109]. This has been paralleled by an increasing acceptance of urban agriculture as a formal urban land use. Crush and Frayne [62] identify missing access or rather lack of opportunity to acquire food as an imminent threat to urban food security, generated by household poverty (unemployment and limited income-generating opportunities). Subsequently, urban dwellers are highly dependent on informal food economies and informal food transfers from their rural homes [62] (p. 126). Urban agriculture, on the other hand, holds the potential to facilitate access to readily available food for urban households and thus improve food security in general and for the urban poor in particular. Based on the literature we reviewed, urban agriculture has been proven as the dominant, and most beneficial, feature of GI. For other forms of urban GI, a concise analysis is still pending, and other beneficial potentials are assumed or



recognised, but have not yet been conclusively analysed, let alone proven. In our AfriCity project [83], we are trying to provide precisely this evidence for GI in sub-Saharan African cities.

As has been shown above and is supported by a considerable body of literature we reviewed, urban agriculture has been an issue of contention in most African cities and yet it provides valuable safety nets for the urban poor and the marginalised [133,134]. For example, in urban and peri-urban areas of Nairobi, agriculture is not a recognised land use and there is no category for it in Kenyan urban land use zoning plans [135]. Similarly, in Malawi urban agriculture has not yet been formalised into policy support either by the national government or by the city assemblies despite urban agriculture being mentioned in the Town and Country Planning Act [136]. Another challenge is that the poor may also be marginalised from deriving benefits from urban agriculture due to a number of barriers. For example, considering the major cities in Malawi (Blantyre and Lilongwe), access to land, land ownership, the use of inputs and the participation in other livelihood activities (such as e.g., urban agriculture) were seen to favour educated, middle and/or upper class families because they have better access to land and also tend to formally own the land they use [136]. Furthermore, more powerful urban residents have realised the value of under-utilised urban land and have converted it to agriculture [136]. Another interesting case study is reported by Bowyer-Bower [137], who describes cultivation of public open spaces in Harare/Zimbabwe as a coping strategy for the poor in response to the impacts of economic structural adjustment programmes despite the cultivation being illegal. Bowyer-Bower [137] further argues that while there is conflict between proponents of pro-environment and anti-cultivation groups on one hand and pro-poor cultivation groups on the other hand, much lip service has been paid to the need for policy change to resolve the conflict.

Some authors perceive urban agriculture “as a solution to counteract the effects of urbanization and as a means to establish a continuum between cities and the countryside” [138] (p. 852) since it offers traditionally rural services in the city as well as a window of opportunity for employment and community-building [139]. In this respect urban agriculture could enable social inclusion of marginalised groups by enhancing self-esteem and self-management. In Zomba, Malawi, for example, idle land for urban agriculture is allocated to staff of the University of Malawi. But other urban households were also granted access, which was a form of inclusion although it was not a formal arrangement. The challenge of this informal arrangement was the difficulty to reclaim the land when the university wanted to change land use from urban agriculture to afforestation because there was some resistance from urban households [140]. However, the university could have forcibly removed the farming households, but it entered into an amicable arrangement where the households were allowed to farm for up to three years because crop production and afforestation could co-exist while the seedlings were small, and at the same time giving the farmers time to find alternative livelihood options or another land [140]. In addition, the farming households were supported with farm inputs during the three years and training in climate smart agriculture for subsequent application elsewhere was provided [140]. As such, being excluded from food production and prevented from owning and managing land in cities can be one aspect of marginalisation and social injustice in cities, since it reveals inherent disparities and therefore “implies a need to contest racial, economic and other disparities” [141] (p. 279). The Zomba case study shows that arrangements can be made to reduce drastic action against marginalised households. Based on alleged or perceived/potential health and environmental risks, many national and city authorities in developing countries perceive urban agriculture as a problem that has to be prohibited and restricted rather than as a solution [142].

City authorities have often refused to accept agriculture as a formal urban land use; it is often tolerated as temporary use of land until the space would be developed for other uses [31,126]. Urban agriculture remains an illegal practice in most African cities due to health concerns, the view that it poses a threat to the environment (e.g., through inappropriate use of contaminated irrigation water or improper use of agrochemicals) [143,144]. In Tanzania, for example, the urban agricultural system is not recognised by the central and local government due to its informal state and unregulated nature, but is tolerated as a temporary use [126]. Inner-city agriculture is often found along roadsides

(see Figure 1), near railway tracks, under power lines (see Figure 2) and in marginal zones such as river valleys (see Figure 3). However, many open spaces are often considered unsuitable for urban agriculture due to urban development aspirations and concerns about soil and water pollution as well as hazards such as flooding. Due to the lack of support from decision-makers, many farmers, for whom urban agriculture is an essential source of income, are experiencing uncertain access to land and property [31,85,126,128].



**Figure 1.** Vegetable cultivation on open space allocated for a road reserve in Dar es Salaam, Tanzania (Photo: A. Titz, 2017).



**Figure 2.** Vegetable patches on open space underneath a power line in Morogoro, Tanzania (Photo: A. Titz, 2016).





**Figure 3.** Cultivation in the floodplain of a Mzimbaizi tributary, Dar es Salaam, Tanzania (Photo: A. Titz, 2018).

As a result of the negative perception, the contribution of urban agriculture to food security and livelihood is sometimes considered insignificant. According to D'Alessandro [145], there is also concern that the allocation of urban land in some countries will further exacerbate the ongoing problems of national land questions. As Mbiba [146] in a case study for Harare/Zimbabwe and Simatele et al. [76] in their field-based research undertaken in Lusaka/Zambia have shown, some city governments are actively rejecting the presence of urban agriculture because they believe it is inappropriate for the urban environment, leading to the development of restrictive policies in many cities. The perceived lack of political will to promote urban agriculture is reflected in weak or lacking political frameworks resulting from an enormous capacity deficit [145]. In this context, De Zeeuw et al. [142] (p. 157) state that it is especially in those cities where urban agriculture is neglected or simply tolerated that it can lead to negative effects on public health. They therefore argue for evidence-based policies and regulations that allow active management of the potential risks related urban agriculture. Similarly, D'Alessandro [145] (p. 49) urges that African cities “need the capacity to develop and implement strategies that promote environmentally sound agriculture, including appropriate land use reforms”. However, as De Zeeuw et al. [142] emphasise, the potential of urban agriculture is being recognised by a growing number of city authorities in many countries around the world which has led to the development of several programmes to promote “the development of safe and sustainable urban agriculture” [142] (p. 158). For example, in Bulawayo/Zimbabwe, the importance of urban farming for access to healthy food has been recognised by the city council. The existing restrictive regulations have been replaced by policy guidelines and by-laws on urban and peri-urban horticulture, livestock and aquaculture, including the allocation of land to disadvantaged urban households and the provision of treated wastewater for irrigation purposes [142] (p. 159).

As argued above, urban (and peri-urban) agriculture (and forestry)—as a ‘productive’ type of GI—is of vital importance in cities of developing regions. Whereas its potential in mitigation and adaptation to climate change is confirmed by only a few empirical studies, there is significant evidence of positive effects in related key issues such as food security, innovative policy for urban transformation and ecosystem services, to name but a few [147,148]. However, GI must be assessed not only in terms of its contribution to food supply and to food security, but also in terms of the benefits of making

cities more resilient to the effects of climate change. The resilience of sub-Saharan Africa's cities will depend on how institutions, individuals, and authorities act together to reduce the impact of climate change. According to Ziervogel et al. [149], the applicability of the resilience agenda for cities in Africa has not been sufficiently assessed. By focusing on rights of urban citizens as the object to be made resilient, rather than physical or ecological infrastructure, Ziervogel et al. [149] (p. 123) pursue the goal of grounding a rights and justice orientation for urban resilience.

However, Horst et al. [141] bring to mind that urban agriculture—despite all postulated positive effects—also has the potential to contribute to the “ongoing marginalization and even displacement of disadvantaged groups” [141] (p. 278) by benefitting already privileged stakeholders and thus perpetuating existing inequalities. The authors refer here to the example of coloured people in the USA who have repeatedly been excluded from food production and refused to own and farm their own land, even though they are often exploited as farm workers [141] (p. 279). As the above example from Malawi has also shown, the lack of land ownership or access to land in general, and thus exclusion from food production, can be seen as a factor for increasing marginalization and social inequality in sub-Saharan African cities.

Then again, the cultivation of food in urban areas can also lead to social improvements, as it makes it an opportunity to tackle the structural causes of injustice: Urban agriculture can be used as a mechanism for the appropriation of urban space and to demand the right to the city as it can bring people together, help them define shared goals and involve them in the process of negotiating physical space with their neighbours. Taking account on how Lefebvre [150] conceived of the right to the city, Purcell and Tyman [87] argue that urban agriculture “has even the potential to be a more radical intervention in urban life”, “since political struggle must necessarily also be spatial struggle as well” [87] (p. 4). City dwellers as inhabitants and users of the urban space use and rely on that space for their daily survival. However, the production of space is not managed by themselves, urban space is produced for them by others (local elites, city administration, consulting agencies, etc.) and is therefore alienated. Purcell and Tyman [87] conclude from this that inhabitants must re-appropriate the production of urban space and make it their own again. They are supporting the argument made by Lefebvre [151] that the act of spatial autogestion (self-management) holds the potential to contest segregation and separation of urban inhabitants. Lefebvre's approach, however, is explicitly in the tradition of European argumentation and much of the scientific debate continues to focus on cities in the ‘Global North’—as we pointed out at the beginning of this section for most urban theories—which are based on notions of ‘the city’ that hardly cover any forms of urban processes and outcomes elsewhere.

The city is a place in which contested claims of various interest groups on the appropriation of urban space, on community rights of disposal over public space and on the possibility of thinking and shaping the urban space according to their own ideas to enable a fulfilled and dignified life are articulated and negotiated [152] (p. 92ff.). Approaches to the ‘Right to the City’ are based on the observation that everyday life situations in the city are marked by social inequality and deprivation, which have massively intensified in the wake of rapid urbanisation (in particular in market economy and neoliberal contexts). To speak with Marcuse, the right to the city is—in the sense of Lefebvre [150,151]—“a cry out of necessity and a demand for something more” [153] (p. 190). Following Marcuse's point of view [153], the right to the city is a moral claim, founded on fundamental principles of justice, ethics, and of morality, that incorporates multiple and collective rights, and outlines the contours of the future urban society [85].

Only a few papers are dealing with ‘Right to City’ processes in the Global South [154,155], although sub-Saharan Africa (with the exception of South Africa) is usually completely ignored [37,156]. Arguing for particular ‘southern’ logics within the production of urban spaces between neoliberalisation, social polarisation and transnational governance, Samara, He and Chen [155] turn a specific focus on issues of the right to the city in the context of metropolises in the ‘Global South’. However, the production of distinctive and contextually dependent formations of the right to the city, i.e., the particularities (as specific instances of something considered universal) and singularities [37] of environmental and

social governance formations, has, however, hardly been considered, at least not for the sub-Saharan context [85].

#### 4. Discussion

Contributing to the achievement of the 2030 Agenda on Sustainable Development, the New Urban Agenda [157] has defined the ambitious aim to achieve cities “where all persons are able to enjoy equal rights and opportunities”, with “access for all to public goods and quality services”, and to achieve cities that are “participatory, promote civic engagement, engender a sense of belonging and ownership among all their inhabitants, prioritize safe, inclusive, accessible, green and quality public spaces” [26] (p. 5). In fact, rapidly increasing urban population and subsequently unplanned expansion of settlement areas are posing a wide range of interwoven challenges to cities in Eastern and Southern Africa such as rising inequality, exclusion, poverty and increased residency in informal settlements. As we have outlined at the beginning of our review paper, the specific characteristics of dynamic urban development and the extent of the transformation in sub-Saharan cities, particularly in Eastern and Southern Africa, have not yet been sufficiently considered and highlighted, notably in (geographical) urban studies, and many of the existing urban theories do not seem applicable, as they evolved from cities shaped by the industrial revolution. Subsequently, the multifaceted and extremely challenging problems associated with the process of urbanisation in sub-Saharan Africa cannot be adequately addressed by researchers and practitioners. The rapid ecological, social and economic change in urban centres is causing unprecedented pressures, and urban leaders and policy-makers seem unable to cope with the dynamics of urban change due to institutional failures. There is obviously a wide gap between official urban planning and the—often informal—lived realities [89] which manifests social segregation in many areas of urban life, so that many cities are still far from being inclusive. This hampers the ability of many marginalised urban dwellers to adapt appropriately to the impact of major environmental and social challenges. From the literature we have examined we here conclude that new scientific approaches are needed in order to better understand and manage future urban development in sub-Saharan Africa. Since many cities are characterised by urban structural poverty, systemic exclusion of certain population groups and the prevalence of a high level of informality, we propose that rights-based approaches could contribute to a better understanding of the specific circumstances, processes and outcomes in African cities.

Based on the evidence provided by our literature review above, we argue that, as a first step, the concept of urban GI can facilitate an access point for gaining a better understanding of contested realities of life and fields of practice of the people living in Eastern and Southern African cities. This is in line with Pieterse [28], who concludes that African urbanism must be theorised from the point of view of ordinary people living in informal settlements, since the city seems to emerge from the micro-strategies of underprivileged citizens in their everyday lives. However, it should be pointed out that beyond urban agriculture, the advantages and feasibility of urban GIs have not yet been sufficiently investigated, but in our opinion, it is worth doing so. Many authors have postulated the positive effects of GI as a tool for providing ecological, economic and social benefits through natural solutions. On the other hand, some authors have been criticising the concept of urban GIs as a neoliberal approach rooted in ‘Northern’ respectively ‘Western’ economic concepts, external expert knowledge and technical rationality. It must therefore be questioned to what extent these concepts can be simply transferred to the heterogeneous urban development processes in sub-Saharan Africa. Nevertheless, particularly in Europe and North America, GI concepts are increasingly finding their way back into urban planning and management, as GI is recognised as cost-efficient approach to spatial planning of ecosystems, to land management as well as to climate resilience and disaster risk management. GI is thus being linked to sustainable, greener, smarter and more efficient methods of urban development. The idea is not entirely new. Green spaces have already been systematically implemented in planning and governance of cities of sub-Saharan Africa in the colonial and post-colonial era. Even that time, GI had not only a purely aesthetic and structuring function, but also economic and social functions, as the



example of the new capital Dodoma has shown. Although the preservation and provision of accessible urban green spaces is increasingly recognised worldwide as an essential part of the sustainability and liveability of cities, however, green spaces in African cities today are disappearing alarmingly fast due to accelerated consumption of natural resources, increasing fragmentation of open space and the rapid displacement by new land-use developments.

Yet a more detailed understanding of how the multiple benefits of GI can reduce the vulnerability of ecosystems and people by contributing to livelihoods, food security and wellbeing of urban dwellers is still lacking. As Du Toit et al. [51] have pointed out in their review on urban GI and the related ecosystem services in sub-Saharan African cities, there is a substantial lack of detailed studies on all ecosystem services, especially supportive and cultural services. As one of seven barriers and challenges to the sustainable delivery of ecosystem services, the authors identified “governance, urban planning and social inequality” [51] (p. 256). In their study on Dar es Salaam’s urban poor, for example, Roy et al. [158] reveal several ways in which everyday challenges relate to urban green structures; consequently, they advocate a pro-poor, inclusive and creative form of urban planning in order to benefit from the inherent local knowledge and innovative power of the ‘communities’. According to Swiling [159], the importance of urban networked infrastructure, which connects the everyday life and work of many urban dwellers with natural and informal resources, has not yet been sufficiently recognised in research. This is particularly true of urban green infrastructure.

Because other planning and implementation attempts to reduce urban livelihood insecurity have so often failed, it is here where we see the opportunity for systematic integration of GI concepts in urban planning as an essential approach to tackle major current and future challenges of cities in general and in sub-Saharan Africa in particular. However, as we have outlined above, social benefits have so far only been weakly highlighted and analysed in the GI discourse. Many authors (see e.g., [71]) attribute the potential to GI to promote equity, ownership and a sense of belonging among urban dwellers and thus increase the sustainability of livelihoods. The assumption is that access to and use of GI enables urban dwellers to produce, shape and manage urban public space for themselves and as such their own living environment according to their needs and desires. For example, urban agriculture as a type of productive green infrastructure can be used as a mechanism for the appropriation of urban space and to demand the right to the city as it involves people in the process of negotiating physical space with actors who have different interests. By contrast, there’s also concern that the urban poor in particular could be excluded from deriving benefits from urban agriculture due to a number of constraints. As we have pointed out, some authors also give consideration to the fact that the heterogeneity of public, institutional and private landowners as well as disparity in access and disposal rights raise issues of social and environmental justice in relation to GI. In this context, the preservation and maintenance as well as disruptions, contestations and inequalities in planning, management and use of urban GI, which also implies the right of appropriation and participation, are still insufficiently researched in science. The lack of socially inclusive planning, therefore, may result in an urban GI that does not meet the requirements of the different stakeholders of urban society, thus intensifying social inequalities and inherent disparities rather than promoting social cohesion. Using the example of urban agriculture, Horst, McClintock and Hoey [141], for instance, point out that despite all the positive effects, there is also the potential to consolidate existing inequalities by favouring privileged interest groups and further marginalising disadvantaged groups. This is particularly true for urban spaces in Eastern and Southern Africa.

## 5. Conclusions

Considering what we have learned from the literature on urbanisation (including related processes and outcomes) in Eastern and Southern Africa, sustainable cities and the concept of GI, we believe new and creative solutions as well as new pathways towards social inclusion and sustainability to be necessary in order to tackle future challenges faced by sub-Saharan cities in particular. Cities can thus become places of creativity, innovation and efficiency in responding to environmental and social

challenges, if citizens and local authorities are able to freely develop their potential. With this in mind, we wish to argue for the promotion of new insights and implementation of results for more resourceful pathways for sustainable urban development in Eastern and Southern African cities.

We conclude that a better understanding of contested urban life-worlds of urban residents and actors in Eastern and Southern Africa, characterised by environmental change and insecurity, is essential to achieve sustainable and resilient cities. Further research is needed to enhance our knowledge of city dwellers and political and social actors in their roles as citizens who are entitled to appropriate urban space, and to mobilise their rights to access resources in order to actively promote a meaningful life. There is also a need to improve scientific understanding about citizens' abilities and opportunities to shape the urban environment and living environments in a participatory way according to their needs, values and aspirations, and to adapt proactively and creatively to environmental and social challenges. Based on our literature review, we suggest that an examination of this complex issue through the "lenses" of the concept of GI can first of all contribute to a better understanding of the contested urban life-worlds of city dwellers and actors in Eastern and Southern Africa. The creation and design of resilient and innovative, creative urban environments can only succeed if city dwellers are granted civic participation in urban resources and an active participation in the design of their living environment. This paper has shown that there is growing evidence in a large body of literature that a better understanding of the links between urban GI and the right to the city can contribute to the promotion of sustainable urban living and social adaptability. We therefore believe that broadening the concept of urban GI by linking it to governance and rights-based conceptualisation, will have the potential to move beyond the unilateral services notion. This should be accompanied by a reconsideration and theorisation of the specificities of African cities as elaborated by Pieterse and Simone [160]. We conclude that urban GI as a forward-looking concept holds the potential to contribute to the creation of a just, inclusive, innovative, imaginative and socially and ecologically sustainable city by expanding the concept into an element of urban development. Within the institutional framework, this also requires a shift towards a participatory and strategic planning system that takes into account informality, land rights and social exclusion and thus the previously unused grassroots capacities to complement the role of public administration.

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## References

1. United Nations; Department of Economic and Social Affairs (UN DESA); Population Division. *World Urbanization Prospects: The 2018 Revision*; United Nations: New York, NY, USA, 2018; Available online: <https://esa.un.org/unpd/wup/Publications> (accessed on 27 February 2019).
2. United Nations Human Settlement Programme (UN-Habitat). *The state of African Cities, 2014: Re-Imagining Sustainable Urban Transitions*; UN-Habitat: Nairobi, Kenya, 2014.
3. Parnell, S.; Walawege, R. Sub-Saharan African urbanization and global environmental change. In *Africa's Urban Revolution*; Parnell, S., Pieterse, E., Eds.; Zed Books: London, UK, 2014; pp. 35–59.
4. Potts, D.H. *Circular Migration in Zimbabwe & Contemporary Sub-Saharan Africa*; Boydell & Brewer: Suffolk, UK, 2010.
5. United Nations, Department of Economic and Social Affairs (UN DESA), Population Division. *World Urbanization Prospects. The 2014 Revision*; United Nations: New York, NY, USA, 2015.
6. Gombe, K.E.; Asanuma, I.; Park, J.-G. Quantification of Annual Urban Growth of Dar es Salaam Tanzania from Landsat Time Series Data. *Adv. Remote Sens.* **2017**, *6*, 175–191. [CrossRef]

7. McGregor, D.F.M.; Simon, D.; Thompson, D.A. *The Peri-Urban Interface: Approaches to Sustainable Natural and Human Resource Use*; Earthscan: London, UK, 2010.
8. Kessides, C. *The Urban Transition in Sub-Saharan Africa: Implications for Economic Growth and Poverty Reduction*; The Cities Alliance: Washington, DC, USA, 2006.
9. Dos Sanots, S.; Adams, E.A.; Neville, G.; Wada, Y.; de Sherbinin, A.; Mullin Bernhardt, E.; Adamo, S.B. Urban growth and water access in sub-Saharan Africa: Progress, challenges, and emerging research directions. *Sci. Total Environ.* **2017**, *607–608*, 497–508. [[CrossRef](#)] [[PubMed](#)]
10. Have, M.; Ngwerume, E.T.; Muchemwa, C. The Urban Crisis in sub-Saharan Africa: A Threat to Human Security and Sustainable Development. *Stability* **2013**, *2*, 1–14. [[CrossRef](#)]
11. Sietchiping, R.; Permezel, M.J.; Ngomsi, C. Transport and mobility in sub-Saharan African cities: An overview of practices, lessons and options for improvement. *Cities* **2012**, *29*, 183–189. [[CrossRef](#)]
12. Pieterse, E.; Parnell, S. *Africa's Urban Revolution in Context* In *Africa's Urban Revolution*; Parnell, S., Pieterse, E., Eds.; Zed Books: London, UK, 2014; pp. 1–17.
13. Pieterse, E. Filling the void: Towards and agenda for action on African urbanisation. In *Urbanization Imperatives for Africa: Transcending Policy Inertia*; Pieterse, E., Ed.; African Centre for Cities: Cape Town, South Africa, 2010; pp. 1–27.
14. Dams, T.; de Haen, H.; Kötter, H.; Thimm, H.U.; Zurek, E.L. *Integrierte Ländliche Entwicklung—Theorie, Konzepte, Erfahrungen, Programme*; Verlag Weltarchiv: Hamburg, Germany, 1985.
15. Rauch, T. Ländliche Regionalentwicklung. In *Entwicklung*; Schulz, M., Ed.; VS Verlag für Sozialwissenschaften: Wiesbaden, Germany, 1997; pp. 357–383.
16. Satterthwaite, D. The implications of population growth and urbanization for climate change. *Environ. Urban.* **2009**, *21*, 545–567. [[CrossRef](#)]
17. Simon, D. The challenges of global environmental change for urban Africa. *Urban Forum* **2010**, *21*, 235–248. [[CrossRef](#)]
18. Hansen, R.; Pauleit, S. From multifunctionality to multiple ecosystem services? A conceptual framework for multifunctionality in green infrastructure planning for urban areas. *Ambio* **2014**, *43*, 516–529. [[CrossRef](#)]
19. Albert, C.; van Haaren, C. Implications of Applying the Green Infrastructure Concept in Landscape Planning for Ecosystem Services in Peri-Urban Areas: An Expert Survey and Case Study. *Plan. Pract. Res.* **2017**, *32*, 227–242. [[CrossRef](#)]
20. Davies, C.; Macfarlane, R.; McGloin, C.; Roe, M. *Green Infrastructure Planning Guide*; North East Community Forest: Anfield Plain, UK, 2006.
21. Austin, G.D. *Green Infrastructure for Landscape Planning: Integrating Human and Natural Systems*; Routledge: Abingdon, UK, 2014.
22. Mell, I.C. Green infrastructure: Reflections on past, present and future praxis. *Landsc. Res.* **2017**, *42*, 135–145. [[CrossRef](#)]
23. Pauleit, S.; Hansen, R.; Rall, E.L.; Zölch, T.; Andersson, E.; Luz, A.C.; Szaraz, L.; Tosics, I.; Vierikko, K. Urban Landscapes and Green Infrastructure. In *Oxford Research Encyclopedia of Environmental Science*; Pauleit, S., Hansen, R., Rall, E.L., Zölch, T., Andersson, E., Luz, A.C., Szaraz, L., Tosics, I., Vierikko, K., Eds.; Oxford University Press: Oxford, UK, 2017.
24. Laforteza, R.; Davies, C.; Sanesi, G.; Konijnendijk, C.C. Green Infrastructure as a tool to support spatial planning in European urban regions. *iForest* **2013**, *6*, 102–108. [[CrossRef](#)]
25. Agyemang, F.S.K.; Silva, E.; Poku-Boansi, M. Understanding the urban spatial structure of Sub-Saharan African cities using the case of urban development patterns of a Ghanaian city-region. *Habitat Int.* **2019**, *85*, 21–33. [[CrossRef](#)]
26. United Nations Human Settlement Programme (UN Habitat). *Urbanization and Development. Emerging Future. World Cities Report 2016*; UN Habitat: Nairobi, Kenya, 2016.
27. Barac, M. Place resists: Grounding African Urban Order in an Age of Global Change. In *Rogue Urbanism. Emergent African Cities*; Pieterse, E., Simone, A.M., Eds.; Janaca: Auckland Park, South Africa, 2013; pp. 37–53.
28. Pieterse, E. Grasping the Unknowable: Coming to grips with African Urbanism. In *Rogue Urbanism. Emergent African Cities*; Pieterse, E., Simone, A.M., Eds.; Janaca: Auckland Park, South Africa, 2013; pp. 19–35.
29. Eckert, A. Städte und Urbanisierung in Afrika in historischer Perspektive: Eine Skizze. *Afr. Spectr.* **2002**, *37*, 81–87.

30. Potts, D. Viewpoint: What do we know about urbanisation in sub-Saharan Africa and does it matter? *Int. Dev. Plan. Rev.* **2012**, *34*, v–xxii. [\[CrossRef\]](#)
31. Smit, W. Urban Governance in Africa: An Overview. *Int. Dev. Policy* **2018**, *10*, 55–77.
32. Haferburg, C.; Kürger, F. Spatial and Social Dynamics of Urban Order: The Right to the City in South Africa. Unpublished Ms. 2014.
33. Fleischer, M.; Fuhrmann, M.; Haferburg, C.; Krüger, F. “Festivalisation” of Urban Governance in South African Cities: Framing the Urban Social Sustainability of Mega-Event Driven Development from Below. *Sustainability* **2013**, *5*, 5225–5248. [\[CrossRef\]](#)
34. Manshard, W. Die Städte des tropischen Afrika. In *Urbanisierung der Erde*; Tietze, W., Ed.; Gebrüder Borntraeger: Berlin/Stuttgart, Germany, 1977; Volume 1.
35. Silva, C.N. *Urban Planning in Sub-Saharan Africa: Colonial and Post-Colonial Planning Cultures*; Routledge Taylor & Francis Group: New York, NY, USA, 2015.
36. Landau, L.B. Inclusion in Shifting Sands: Rethinking Mobility and Belonging in African Cities. In *Urban Diversity: Space, Culture, and Inclusive Pluralism in Cities Worldwide*; Kihato, C., Ed.; Woodrow Wilson Center Press; Johns Hopkins University: Washington, DC, USA, 2010; pp. 169–186.
37. Robinson, J. Thinking cities through elsewhere: Comparative tactics for a more global urban studies. *Prog. Hum. Geogr.* **2016**, *40*, 3–29. [\[CrossRef\]](#)
38. García-Ayllón, S. Rapid development as a factor of imbalance in urban growth of cities in Latin America: A perspective based on territorial indicators. *Habitat Int.* **2016**, *58*, 127–142. [\[CrossRef\]](#)
39. Manshard, W. The Cities of Tropical Africa—Cross-Cultural Aspects, Descriptive Models and Recent Developments. In *Colloquium Geographicum 22: Modelling the City—Cross-Cultural Perspectives*; Ehlers, E., Ed.; Geographisches Institut Universität Bonn: Bonn, Germany, 1992; pp. 76–88.
40. Bähr, J.; Mertins, G. The Latin American City. In *Colloquium Geographicum 22: Modelling the City—Cross-Cultural Perspectives*; Ehlers, E., Ed.; Geographisches Institut Universität Bonn: Bonn, Germany, 1992; pp. 65–75.
41. Murray, M.J.; Myers, G.A. *Cities in Contemporary Africa*; Palgrave Macmillan: New York, NY, USA, 2006.
42. Parnell, S.; Robinson, J. (Re)theorizing Cities from the Global South: Looking Beyond Neoliberalism. *Urban Geogr.* **2012**, *33*, 593–617. [\[CrossRef\]](#)
43. Robinson, J. Cities in a World of Cities: The Comparative Gesture. *Int. J. Urban Reg. Res.* **2011**, *35*, 1–23. [\[CrossRef\]](#)
44. Robinson, J. Urban Geography Plenary Lecture—The Travels of Urban Neoliberalism: Taking Stock of the Internationalization of Urban Theory. *Urban Geogr.* **2011**, *32*, 1087–1109. [\[CrossRef\]](#)
45. Robinson, J.; Parnell, S. Travelling theory: Embracing post-neoliberalism through Southern cities. In *New Companion to Urban Studies*; Bridge, G., Watson, S., Eds.; Blackwell: Oxford, UK, 2011; pp. 521–531.
46. Bhan, G. Notes on a Southern urban practice. *Environ. Urban.* **2019**, 1–19. [\[CrossRef\]](#)
47. Parnell, S.; Pieterse, E. The ‘Right to the City’: Institutional Imperatives of a Developmental State. *Int. J. Urban Reg. Res.* **2010**, *34*, 146–162. [\[CrossRef\]](#)
48. Davis, M.; Morrow, R. *City of Quartz: Excavating the Future in Los Angeles*; Verso: London, UK, 2006.
49. Pieterse, E. The Creation of Sustainable African Cities for African Citizens. Keynote Speech. In Proceedings of the Sustainable African Cities: Debating Current Challenges and Exploring Future Pathways, Ghana Academy of Arts and Sciences, Accra, Ghana, 3–6 July 2018.
50. United Cities and Local Governments Basic Services for All in an Urbanizing World. *Third Global Report on Local Democracy and Decentralization (GOLD III 2014)*; Routledge: London, UK, 2014.
51. Du Toit, M.J.; Cilliers, S.S.; Dallimer, M.; Goddard, M.; Guenat, S.; Cornelius, S.F. Urban green infrastructure and ecosystem services in sub-Saharan Africa. *Landsc. Urban Plan.* **2018**, *180*, 249–261. [\[CrossRef\]](#)
52. Blekking, J.; Tuholske, C.; Evans, T. Adaptive Governance and Market Heterogeneity: An Institutional Analysis of an Urban Food System in Sub-Saharan Africa. *Sustainability* **2017**, *9*, 2191. [\[CrossRef\]](#)
53. Sommers, M. Urban youth in Africa. *Environ. Urban.* **2010**, *22*, 317–332. [\[CrossRef\]](#)
54. Dodman, D.; Leck, H.; Rusca, M.; Colenbrander, S. African Urbanisation and Urbanism: Implications for risk accumulation and reduction. *Int. J. Disaster Risk Reduc.* **2017**, *26*, 7–15. [\[CrossRef\]](#)
55. Dobson, S. Community-driven pathways for implementation of global urban resilience goals in Africa. *Int. J. Disaster Risk Reduc.* **2017**, *26*, 78–84. [\[CrossRef\]](#)
56. Revi, A.; Satterthwaite, D.E.; Aragón-Durand, F.; Corfee-Morlot, J.; Kiunsi, R.B.R.; Pelling, M.; Roberts, D.C.; Solecki, W. Urban areas. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and*



- Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Field*; Barros, V.R., Dokken, D.J., Mach, K.J., Mastrandrea, M.D., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., et al., Eds.; Cambridge University Press: Cambridge, UK, 2014; pp. 535–612.
57. Niang, I.; Ruppel, O.C.; Abdrabo, M.A.; Essel, A.; Lennard, C.; Padgham, J.; Urquhart, P. Africa. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*; Barros, V.R., Field, C.B., Dokken, D.J., Mastrandrea, M.D., Mach, K.J., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Eds.; Cambridge University Press: Cambridge, UK, 2014; pp. 1199–1265.
  58. Kithiia, J. Climate change risk responses in East African cities: Need, barriers and opportunities. *Curr. Opin. Environ. Stab.* **2011**, *3*, 176–180. [[CrossRef](#)]
  59. Serdeczny, O.; Adams, S.; Baarsch, F.; Coumou, D.; Robinson, A.; Hare, W.; Schaeffer, M.; Perrette, M.; Reinhardt, J. Climate change impacts in Sub-Saharan Africa: From physical changes to their social repercussions. *Reg. Environ. Chang.* **2017**, *17*, 1585–1600. [[CrossRef](#)]
  60. Kumssa, A.; Moshia, A.C.; Mbeche, I.M.; Njeru, E.H.N. Climate Change and Urban Development in Africa. In *Handbook of Climate Change Adaptation*; Filho, W.L., Ed.; Springer: Berlin/Heidelberg, Germany, 2015; pp. 215–226.
  61. Chiotha, S.; Kamdonyo, D. *Tornadoes Affecting Malawi? Proceedings of the First Stakeholders' Workshop on Enhancing Early Warning Systems in Malawi*; LEAD SEA Publications: Blantyre, Malawi, 2017; pp. 15–18.
  62. Crush, J.; Frayne, B. Feeding African cities: The growing challenge of urban food insecurity. In *Africa's Urban Revolution*; Parnell, S., Pieterse, E., Eds.; The University of Chicago Press: Chicago, IL, USA, 2014; pp. 110–132.
  63. Marchiori, L.; Maystadt, J.-F.; Schumacher, I. The impact of weather anomalies on migration in sub-Saharan Africa. *J. Environ. Econ. Manag.* **2012**, *63*, 355–374. [[CrossRef](#)]
  64. Herslund, L.B.; Jalayer, F.; Jean-Baptiste, N.; Jørgensen, G.; Kabisch, S.; Kombe, W.; Lindley, S.; Nyed, P.K.; Pauleit, S.; Printz, A.; Vedeld, T. A multi-dimensional assessment of urban vulnerability to climate change in Sub-Saharan Africa. *Nat. Hazards* **2016**, *82*, 149–172. [[CrossRef](#)]
  65. Douglas, I.; Alam, K.; Maghenda, M.; McDonnell, Y.; Mclean, L.; Campbell, J. Unjust waters: Climate change, flooding and the urban poor in Africa. *Environ. Urban.* **2008**, *20*, 187–205. [[CrossRef](#)]
  66. Osbahr, H. *Building Resilience: Adaptation Mechanisms and Mainstreaming for the Poor*; UNDP Human Development Report Occasional Paper: Oxford, UK, 2007.
  67. Paavola, J.; Adger, W.N. *Justice and Adaptation to Climate Change*; Tyndall Centre Working Paper No. 23; Tyndall Centre for Climate Change Research: Norwich, UK, 2002.
  68. Satterthwaite, D. The impact of urban development on risk in sub-Saharan Africa's cities with a focus on small and intermediate urban centres. *Int. J. Disaster Risk Reduc.* **2017**, *26*, 16–23. [[CrossRef](#)]
  69. Van Vuuren, L. New research aims to identify those at extreme risk of climate change impacts. *Water Wheel* **2013**, *12*, 24–27.
  70. Gill, S.; Handley, J.; Ennos, A.; Pauleit, S. Adapting Cities for Climate Change: The Role of the Green Infrastructure. *Built Environ.* **2007**, *33*, 115–133. [[CrossRef](#)]
  71. Grimm, N.B.; Faeth, S.H.; Golubiewski, N.E.; Redman, C.L.; Wu, J.; Bai, X.; Briggs, J.M. Global change and the ecology of cities. *Science* **2008**, *319*, 756–760. [[CrossRef](#)]
  72. Filho, W.L.; Balogun, A.-L.; Ayal, D.Y.; Bethurem, E.M.; Murambadoro, M.; Mambo, J.; Taddese, H.; Tefera, G.W.; Nagy, G.J.; Fudjumdjum, H.; et al. Strengthening climate change adaptation capacity in Africa—Case studies from six major African cities and policy implications. *Environ. Sci. Policy* **2018**, *86*, 29–37. [[CrossRef](#)]
  73. Carter, J.G.; Cavan, G.; Connelly, A.; Guy, S.; Handley, J.; Kazmierczak, A. Climate change and the city: Building capacity for urban adaptation. *Prog. Plan.* **2015**, *95*, 1–66. [[CrossRef](#)]
  74. Macchi, S. Adaptation to Incremental Climate Stress in Urban Regions: Tailoring an Approach to Large Cities in Sub-Saharan Africa. In *Climate Change Vulnerability in Southern African Cities*; Macchi, S., Tiepolo, M., Eds.; Springer Nature: Cham, Switzerland, 2014; pp. 3–18.
  75. Joos-Vandewalle, S.; Wynberg, R.; Alexander, K.A. Dependencies on natural resources in transitioning urban centers of northern Botswana. *Ecosyst. Serv.* **2018**, *30*, 342–349. [[CrossRef](#)]



76. Simatele, D.; Binns, T.; Simatele, M. Sustaining livelihoods under a changing climate: The case of urban agriculture in Lusaka, Zambia. *J. Environ. Plan. Manag.* **2012**, *55*, 1175–1191. [CrossRef]
77. Schlesinger, J.; Drescher, A.; Shackleton, C.M. Socio-spatial dynamics in the use of wild natural resources: Evidence from six rapidly growing medium-sized cities in Africa. *Appl. Geogr.* **2015**, *56*, 107–115. [CrossRef]
78. Frayne, B.; Moser, C.O.N.; Ziervogel, G. *Climate Change, Assets and Food Security in Southern African Cities*, 1st ed.; Earthscan: Abingdon, UK, 2013.
79. Simatele, D.; Simatele, M. Climate variability and urban food security in sub-Saharan Africa: Lessons from Zambia using an asset-based adaptation framework. *S. Afr. Geogr. J.* **2015**, *97*, 243–263. [CrossRef]
80. Brown, D.; Chanakira, R.R.; Chatiza, K.; Dhliwayo, M.; Dodman, D.; Masiwa, M.; Muchadenyika, D.; Mugabe, P.; Zvigadza, S. *Climate Change Impacts, Vulnerability and Adaptation in Zimbabwe*; IIED Climate Change Working Paper No. 3; International Institute for Environment and Development: London, UK, 2012.
81. Codjoe, S.N.A.; Owusu, G.; Burkett, V. Perception, experience, and indigenous knowledge of climate change and variability: The case of Accra, a sub-Saharan African city. *Reg. Environ. Chang.* **2014**, *14*, 369–383. [CrossRef]
82. Chiotha, S.; Jamu, D.; Nagoli, J.; Likongwe, P.; Chanyenga, T.F. (Eds.) *Socio-Ecological Resilience to Climate Change in a Fragile Ecosystem: The Case of the Lake Chilwa Basin, Malawi*; Routledge: London, UK, 2018.
83. Rockefeller Foundation: 100 Resilient Cities. Available online: <http://www.100resilientcities.org> (accessed on 21 December 2018).
84. MacKinnon, D.; Derickson, K.D. From resilience to resourcefulness. *Prog. Hum. Geogr.* **2012**, *37*, 253–270. [CrossRef]
85. Krüger, F.; Drescher, A.; Titz, A. AfriCity Adaptability, Food Security, Risk, and the Right to the City in Sub-Saharan Africa: Towards Sustainable Livelihoods and Green Infrastructure. Project proposal (unpublished). 2016. Available online: [www.africity.fau.de](http://www.africity.fau.de) (accessed on 1 December 2017).
86. Larkin, B. The Politics and Poetics of Infrastructure. *Annu. Rev. Anthropol.* **2013**, *42*, 327–343. [CrossRef]
87. Purcell, M.; Tyman, S.K. Cultivating food as a right to the city. *Local Environ.* **2015**, *20*, 1132–1147. [CrossRef]
88. Scholz, W.; Robinson, P.; Dayaram, T. Colonial Planning Concept and Post-Colonial Realities. The Influence of British Planning Culture in Tanzania, South Africa and Ghana. In *Urban Planning in Sub-Saharan Africa. Colonial and Post-Colonial Planning Cultures*; Siva, C.N., Ed.; Routledge: London, UK, 2015; pp. 67–94.
89. Herslund, L.; Backhaus, A.; Fryd, O.; Jørgensen, G.; Jensen, M.B.; Limbumba, T.M.; Liu, L.; Mguni, P.; Mkupasi, M.; Workalemahu, L.; et al. Conditions and opportunities for green infrastructure—Aiming for green, water-resilient cities in Addis Ababa and Dar es Salaam. *Landsc. Urban Plan.* **2018**, *180*, 319–327. [CrossRef]
90. Kasala, S.E. A Return to Master Planning in Dar es Salaam: A Misconception of the Theory of Paradigm Shifts? *Glob. J. Hum.-Soc. Sci. B Geogr. Geo-Sci. Environ. Sci. Disaster Manag.* **2015**, *15*. Available online: <https://socialscienceresearch.org/index.php/GJHSS/article/view/1372> (accessed on 30 January 2019).
91. Pfaff, D. The capital cities of Africa with special reference to new capitals planned for the continent. *Afr. Insight* **1988**, *18*, 187–196.
92. Callagi, E. ‘Chief village in a nation of villages’: History, race and authority in Tanzania’s Dodoma plan. *Urban Hist.* **2016**, *43*, 96–116. [CrossRef]
93. Schäffler, A.; Swilling, M. Valuing green infrastructure in an urban environment under pressure—The Johannesburg case. *Ecol. Econ.* **2013**, *86*, 246–257. [CrossRef]
94. Manshard, W. Die neuen Hauptstädte Tropisch-Afrikas. *Z. Wirtsch. Geogr.* **1986**, *30*, 1–13. [CrossRef]
95. Bose, M. Die neuen Hauptstädte des 20. Jahrhunderts—Planung, Realisierung und aktuelle Anforderungen. In *Band 2.6: Fallstudie Lilongwe—Hauptstadt von Malawi Seit 1965*; HafenCity Universität: Hamburg, Germany, 2017.
96. Rohregger, B.A. Shifting Boundaries: Social Security in the Urban Fringe of Lilongwe City, Malawi. Ph.D. Dissertation, Erasmus University of Rotterdam, Rotterdam, The Netherlands, 2006.
97. Gerke, W.C.; Viljoen, C.J. *Master Plan for Lilongwe—The Capital City of Malawi*; Joint Town Planning Consultants IMEX Johannesburg: Johannesburg, South Africa, 1968.
98. Malawi Government, Office of the President and Cabinet, Town and Country Planning Department. *Lilongwe Outline Zoning Scheme*; Malawi Government, Office of the President and Cabinet: Lilongwe, Malawi, 1986.
99. Mensah, C.A. Urban Green Spaces in Africa: Nature and Challenges. *Int. J. Ecosyst.* **2014**, *4*, 1–11. [CrossRef]
100. Abbott, J. *Green Infrastructure for Sustainable Urban Development in Africa*; Earthscan: Abingdon, UK, 2012.

101. Shackleton, C.M. Is there no urban forestry in the developing world? *Sci. Res. Essays* **2012**, *7*, 3329–3335. [[CrossRef](#)]
102. Lindley, S.; Pauleit, S.; Yeshitela, K.; Cilliers, S.; Shackleton, C. Rethinking urban green infrastructure from the perspective of sub-Saharan African cities. *Landsc. Urban Plan.* **2018**, *180*, 328–338. [[CrossRef](#)]
103. Sandström, U.G. Green Infrastructure Planning in Urban Sweden. *Plan. Pract. Res.* **2002**, *17*, 373–385. [[CrossRef](#)]
104. Wright, H. Understanding green infrastructure: The development of a contested concept in England. *Local Environ.* **2011**, *16*, 1003–1019. [[CrossRef](#)]
105. Demuzere, M.; Orru, K.; Heidrich, O.; Olazabal, E.; Geneletti, D.; Orru, H.; Bhave, A.G.; Mittal, N.; Feliu, E.; Faehnle, M. Mitigating and adapting to climate change: Multi-functional and multi-scale assessment of green urban infrastructure. *J. Environ. Manag.* **2014**, *146*, 107–115. [[CrossRef](#)]
106. Tyrväinen, L. Economic valuation of urban forest benefits in Finland. *J. Environ. Manag.* **2001**, *62*, 75–92. [[CrossRef](#)]
107. Roy, S.; Byrne, J.; Pickering, C. A systematic quantitative review of urban tree benefits, costs, and assessment methods across cities in different climatic zones. *Urban For. Urban Green.* **2012**, *11*, 351–363. [[CrossRef](#)]
108. Nowak, D.J.; Dwyer, J.F. Understanding the Benefits and Costs of Urban Forest Ecosystems. In *Urban and Community Forestry in the Northeast*; Kuser, J.E., Ed.; Springer: Dordrecht, The Netherlands, 2007; pp. 25–46.
109. Tzoulas, K.; Korpela, K.; Venn, S.; Yli-Pelkonen, V.; Kaźmierczak, A.; Niemela, J.; James, P. Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landsc. Urban Plan.* **2007**, *81*, 167–178. [[CrossRef](#)]
110. Jim, C.Y.; Chen, W.Y. Ecosystem services and valuation of urban forests in China. *Cities* **2009**, *26*, 187–194. [[CrossRef](#)]
111. Troy, A.; Morgan Grove, J.; O’Neil-Dunne, J. The relationship between tree canopy and crime rates across an urban–rural gradient in the greater Baltimore region. *Landsc. Urban Plan.* **2012**, *106*, 262–270. [[CrossRef](#)]
112. Coutts, C.; Hahn, M. Green Infrastructure, Ecosystem Services, and Human Health. *Int. J. Environ. Res. Public Health* **2015**, *12*, 9768–9798. [[CrossRef](#)] [[PubMed](#)]
113. Kaoma, H.; Shackleton, C.M. The direct-use value of urban tree non-timber forest products to household income in poorer suburbs in South African towns. *For. Policy Econ.* **2015**, *61*, 104–112. [[CrossRef](#)]
114. Benedict, M.A.; McMahon, E.T. *Green Infrastructure: Smart Conservation for the 21st Century*; The Conservation Fund; Sprawl Watch Clearinghouse Monograph Series: Washington, DC, USA, 2002.
115. Benedict, M.A.; McMahon, E.T. *Green Infrastructure: Linking landscapes and Communities*; Island Press: Washington, DC, USA, 2006.
116. European Commission Communication from the Commission to the European Parliament; The Council, the European Economic and Social Committee and the Committee of the Regions. *Green Infrastructure (GI)—Enhancing Europe’s Natural Capital*; European Commission: Brussels, Belgium, 2013.
117. Jones, S.; Somper, C. The role of green infrastructure in climate change adaptation in London. *Geogr. J.* **2014**, *180*, 191–196. [[CrossRef](#)]
118. Buijs, A.; Elands, B.; Havik, G.; Ambrose-Oji, B.; Geróházi, É.; van der Jagt, A.; Mattijssen, T.J.M.; Steen Møller, M.; Vierikko, K. Innovative Governance of Urban Green Spaces—Learning from 18 Innovative Examples Across Europe. EU FP7 Project GREEN SURGE (ENV.2013.6.2-5-603567), Deliverable 6.2. 2016. Available online: [http://greensurge.eu/working-packages/wp6/files/Innovative\\_Governance\\_of\\_Urban\\_Green\\_Spaces\\_-\\_Deliverable\\_6.2.pdf](http://greensurge.eu/working-packages/wp6/files/Innovative_Governance_of_Urban_Green_Spaces_-_Deliverable_6.2.pdf) (accessed on 12 April 2018).
119. Buizer, M.; Elands, B.; Mattijssen, T.; van der Jagt, A.; Ambrose, B.; Geróházi, É.; Santos, A.; Steen Møller, M. The Governance of Urban Green Spaces in Selected EU-Cities. EU FP7 Project GREEN SURGE (ENV.2013.6.2-5-603567), Deliverable 6.1. 2015. Available online: [http://greensurge.eu/working-packages/wp6/files/Buizer\\_et\\_al\\_2015\\_D6.1\\_GREEN\\_SURGE\\_The\\_governance\\_of\\_urban\\_green\\_spaces\\_in\\_selected\\_EU\\_cities.pdf](http://greensurge.eu/working-packages/wp6/files/Buizer_et_al_2015_D6.1_GREEN_SURGE_The_governance_of_urban_green_spaces_in_selected_EU_cities.pdf) (accessed on 12 April 2018).

120. Davies, C.; Hansen, R.; Rall, E.; Pauleit, S.; Laforteza, R.; De Bellis, Y.; Santos, A.; Tosics, I. Green Infrastructure Planning and Implementation—The status of European Green space Planning and Implementation Based on an Analysis of Selected European City-Regions. EU FP7 project GREEN SURGE (ENV.2013.6.2-5-603567), Deliverable 5.1. 2015. Available online: [https://greensurge.eu/working-packages/wp5/files/Green\\_Infrastructure\\_Planning\\_and\\_Implementation.pdf](https://greensurge.eu/working-packages/wp5/files/Green_Infrastructure_Planning_and_Implementation.pdf) (accessed on 12 April 2018).
121. Ajuntament de Barcelona. *Barcelona Green Infrastructure and Biodiversity Plan 2020*; Medi Ambient i Serveis Urbans—Hàbitat Urbà: Barcelona, Spain, 2013.
122. NYS 2100 Commission. *Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure*; NYS 2100 Commission: New York, NY, USA, 2013.
123. The City of New York: plaNYC. A Stronger, More Resilient New York. Available online: [http://s-media.nyc.gov/agencies/sirr/SIRR\\_singles\\_Hi\\_res.pdf](http://s-media.nyc.gov/agencies/sirr/SIRR_singles_Hi_res.pdf) (accessed on 17 December 2018).
124. City of Chicago. *Green Stormwater Infrastructure Strategy*; City of Chicago: Chicago, IL, USA, 2014.
125. Li, H.; Ding, L.; Ren, M.; Li, C.; Wang, H. Sponge City Construction in China: A Survey of the Challenges and Opportunities. *Water* **2017**, *9*, 594. [CrossRef]
126. Halloran, A.; Magid, J. Planning the unplanned: Incorporating agriculture as an urban land use into the Dar es Salaam master plan and beyond. *Environ. Urban.* **2013**, *25*, 541–558. [CrossRef]
127. Wolf, S.M.; Kuch, A.; Chipman, J. *Urban Land Governance in Dar es Salaam. Actors, Processes and Ownership Documentation*; International Growth Centre. Working Paper; London School of Economic and Political Science: London, UK, 2018.
128. Smit, W. Urban governance and urban food systems in Africa: Examining the linkages. *Cities* **2016**, *58*, 80–86. [CrossRef]
129. Wolch, J.R.; Byrne, J.; Newell, J.P. Urban green space, public health, and environmental justice: The challenge of making cities ‘just green enough’. *Landsc. Urban Plan.* **2014**, *125*, 234–244. [CrossRef]
130. Gwedla, N.; Shackleton, C.M. Population size and development history determine street tree distribution and composition within and between Eastern Cape towns, South Africa. *Urban For. Urban Green.* **2018**, *25*, 11–18. [CrossRef]
131. Munang, R.; Thiaw, I.; Alverson, K.; Mumba, M.; Liu, J.; Rivington, M. Climate change and Ecosystem-based Adaptation: A new pragmatic approach to buffering climate change impacts. *Curr. Opin. Environ. Sustain.* **2013**, *5*, 67–71. [CrossRef]
132. Rakhshandehroo, M.; Mohd Yusof, M.J.; Arabi, R.; Jahandarfard, R. Strategies to Improve Sustainability in Urban Landscape. *J. Landsc. Ecol.* **2016**, *9*, 5–13. [CrossRef]
133. Mougeot, A. Introduction: Urban agriculture and the millennium development goals. In *Agropolis: The Social, Political and Environmental Dimensions of Urban Agriculture*; Mougeot, L.J.A., Ed.; Earthscan: London, UK, 2005; pp. 1–30.
134. Pothukuchi, K.; Kaufman, J. Placing the food system on the urban agenda: The role of municipal institutions. *Agric. Hum. Values* **1999**, *16*, 213–224. [CrossRef]
135. Musonga, H. Incorporating UPA in urban land use planning. In *Policy Prospects for Urban and Peri-Urban Agriculture in Kenya*; Ayanga, G., Kibata, G., Lee-Smith, D., Njenga, M., Rege, R., Eds.; Kari Headquarters: Nairobi, Kenya, 2004; Volume 5.
136. Mkwambisi, D.D.; Fraser, E.D.G.; Dougill, A.J. Urban agriculture and poverty reduction: Evaluating how food production in cities contributes to food security, employment and income in Malawi. *J. Int. Dev.* **2011**, *23*, 181–203. [CrossRef]
137. Bowyer-Bower, T. The Inevitable Illusiveness of ‘Sustainability’ in the Peri-Urban interface: The case of Harare. In *The Peri-Urban Interface: Approaches to Sustainable Natural and Human Resource Use*; McGregor, D.F.M., Simon, D., Thompson, D.A., Eds.; Earthscan: London, UK, 2006; pp. 149–164.
138. Thornbush, M. Urban agriculture in the transition to low carbon cities through urban greening. *AIMS Environ. Sci.* **2015**, *2*, 852–867. [CrossRef]
139. RUAF Foundation Building Communities through Urban Agriculture. *Urban Agric. Mag.* **2007**, *18*, 1–48.
140. Chiotha, S.S. Mainstreaming environment and sustainability: An analysis of a master’s in environmental science and a tree-planting project at Chancellor College, University of Malawi. *Int. Rev. Educ.* **2010**, *5*, 287–298. [CrossRef]
141. Horst, M.; McClintock, N.; Hoey, L. The Intersection of Planning, Urban Agriculture, and Food Justice: A Review of the Literature. *J. Am. Plan. Assoc.* **2017**, *83*, 277–295. [CrossRef]

142. De Zeeuw, H.; Van Veehuizen, R.; Dubbeling, M. The role of urban agriculture in building resilient cities in developing countries. *J. Agric. Sci.* **2011**, *149*, 153–163. [\[CrossRef\]](#)
143. Brown, K.H.; Jameton, A.L. Public Health Implications of Urban Agriculture. *J. Public Health* **2000**, *21*, 20–39. [\[CrossRef\]](#)
144. Olufunke, O.C.; Drechsel, P. Water for the cities: The growing paradigm of irrigated (peri)-urban agriculture and its struggle in sub-Saharan Africa. *Afr. Water J.* **2007**, *1*, 23–32.
145. D'Alessandro, C.; Hanson, K.T.; Kararach, G. Peri-urban agriculture in Southern Africa: Miracle or mirage? *Afr. Geogr. Rev.* **2018**, *37*, 49–68. [\[CrossRef\]](#)
146. Mbiba, B. Urban agriculture in Harare: Between suspicion and repression. In *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*; Bakker, N., Dubbeling, M., Gundel, S., Sabel-Koschella, U., de Zeeuw, H., Eds.; DSE: Feldafing, Germany, 2000; pp. 285–302.
147. Lwasa, S.; Mugagga, F.; Wahab, B.; Simon, D.; Connors, J.; Griffith, C. Urban and peri-urban agriculture and forestry: Transcending poverty alleviation to climate change mitigation and adaptation. *Urban Clim.* **2014**, *7*, 92–106. [\[CrossRef\]](#)
148. Lwasa, S.; Mugagga, F.; Wahab, B.; Simon, D.; Connors, J.P.; Griffith, C. A meta-analysis of urban and peri-urban agriculture and forestry in mediating climate change. *Curr. Opin. Environ. Sustain.* **2015**, *13*, 68–73. [\[CrossRef\]](#)
149. Ziervogel, G.; Pelling, M.; Cartwright, A.; Chu, E.; Deshpande, T.; Harris, L.; Hyams, K.; Kaunda, J.; Klaus, B.; Michael, K.; et al. Inserting rights and justice into urban resilience: A focus on everyday risk. *Environ. Urban.* **2017**, *29*, 123–138. [\[CrossRef\]](#)
150. Lefebvre, H. *The Production of Space*; Blackwell: Oxford, UK, 1991.
151. Lefebvre, H. *State, Space, World: Selected Essays*; University of Minnesota Press: Minneapolis, MN, USA, 2009.
152. Purcell, M.H. (Ed.) *Recapturing Democracy: Neoliberalization and the Struggle for Alternative Urban Futures*; Routledge: New York, NY, USA, 2008.
153. Marcuse, P. From critical urban theory to the right to the city. *City* **2009**, *13*, 185–197. [\[CrossRef\]](#)
154. Morange, M.; Spire, A. A Right to the City in the Global South? *Metropolitics* **2015**. Available online: <http://www.metropolitiques.eu/A-Right-to-the-City-in-the-Global.html> (accessed on 26 November 2018).
155. Samara, T.R.; He, S.; Chen, G. *Locating Right to the City in the Global South*; Routledge: London, UK, 2013.
156. Coggin, T.; Pieterse, M. Rights and the City: An Exploration of the Interaction Between Socio-economic Rights and the City. *Urban Forum* **2012**, *23*, 257–278. [\[CrossRef\]](#)
157. United Nations Human Settlement Programme (UN-Habitat). New Urban Agenda, Quito Declaration on Sustainable Cities and Human Settlements for All. Available online: [www.habitatIII.org](http://www.habitatIII.org) (accessed on 9 December 2018).
158. Roy, M.; Shemdoe, R.; Hulme, D.; Mwageni, N.; Gough, A. Climate change and declining levels of green structures: Life in informal settlements of Dar es Salaam, Tanzania. *Landsc. Urban Plan.* **2018**, *180*, 282–293. [\[CrossRef\]](#)
159. Swilling, M. Reconceptualising Urbanism, Ecology and Networked Infrastructures. In *Rogue Urbanism. Emergent African Cities*; Pieterse, E., Simone, A.M., Eds.; Jacana: Auckland Park, South Africa, 2013; pp. 65–81.
160. Pieterse, E.A.; Simone, A.M. *Rogue Urbanism: Emergent African Cities*; Jacana Media: Sunnyside, South Africa, 2013.

