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Localizing the Sustainable Development Goals Through the Lens of Urban Resilience: Lessons and Learnings from 100 Resilient Cities and Cape Town

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Abstract: Urban resilience is increasingly seen as essential to managing the risks and challenges arising in a globally changing, connected, and urbanized world. Hence, cities are central to achieving a range of global development policy commitments adopted over the past few years, ranging from the Paris Climate Agreement to the Sustainable Development Goals (SDGs). However, knowledge of the ways in which cities are going about implementing resilience or of how such efforts can practically contribute to the implementation of global agendas is still limited. This paper discusses the experience of cities that were members of the 100 Resilient Cities (100RC) network, an entity pioneered by The Rockefeller Foundation. It reviews the resilience strategies developed by 100RC members to show that 100RC cities are increasingly aligning their resilience work to global development policies such as the SDGs. It then draws on the case of the city of Cape Town in South Africa to illustrate the process of developing a resilience strategy through 100RC tools and methodologies including the City Resilience Framework (CRF) and City Resilience Index (CRI) and its alignment to the SDGs and reflects on lessons and learnings of Cape Town's experience for the global city network-policy nexus post-2015.

Keywords: urban resilience; 100RC; city networks; global policies; SDGs; Cape Town

1. Introduction

Over the past two decades, the concept of urban resilience has become key to local and global development agendas. While scholars critique the concept's fuzziness and the need for context-dependent interpretations and applications [1–4], it has become increasingly employed by policymakers, practitioners, and international and multilateral aid agencies and institutions [5].

Broadly, resilience refers to the ability to withstand shocks and stresses and to adjust to changing conditions (such as climate/environmental change), while urban resilience incorporates the need to manage the multiple risks and challenges that arise from rapid urbanization and greater global connectedness, ranging from deindustrialization to terrorist attacks, and that particularly affect the poor and most vulnerable in society. The increased recognition of the importance of urban resilience is reflected in the package of global development plans adopted in the past years. The role of urban resilience in relation to climate change, natural disasters, and urban development is key to the COP21 Paris Agreement on Climate Change, the Sendai Framework on Disaster Risk Reduction, and the New Urban Agenda. Resilience also cuts across the UN Agenda 2030 with its 17 Sustainable Development

Goals (SDGs) and features as part of targets related to goal 1 on poverty, goal 2 on hunger, goal 9 on infrastructure, and goal 11 on sustainable cities and human settlements [6].

Advancing urban resilience creates "a significant challenge, because it requires coordinating the efforts of numerous government departments, adopting flexible, and adaptive processes to accommodate changing circumstances, and allocating resources to preventive measures in anticipation of uncertain future threats" [7] (p. 404). Hence, a comprehensive framework is essential to building urban resilience. Over the past years, numerous instruments, methods, indices, and guidelines have been developed by UN agencies such as UN-Habitat as part of its City Resilience Profiling Programme and the UN Office for Disaster Risk Reduction as part of its Making Cities Resilient Campaign. International organisations such as the World Bank have produced similar guidelines as part of its work on city strength, while amongst private institutions, the World Council on City Data has developed several ISO certification programmes to collect data on standardized indicators to measure and compare services, quality of life and resilience in cities.

The US-based Rockefeller Foundation built on these different tools to develop its own concept and approach to building urban resilience and put this at the heart of its 100 Resilient Cities (100RC) network. Between 2013 and 2019, the network provided technical and financial assistance to cities for building resilience through planning and assessments tools such as the City Resilience Framework (CRF) and Index (CRI), developed by the international engineering consultancy, Arup, to assess relative vulnerabilities and strengths in a city as a basis for the development of a resilience strategy. As of 31 July 2019 the 100RC network ceased to exist, but a new grant has been announced to sustain the work of member cities within the network, with a new legal entity expected to be launched by mid-2020 [8].

100RC resilience planning tools were not designed for the purpose of global policy implementation as their development predates the adoption of most of the abovementioned agreements. 100RC also does not incorporate any of the specific global targets or metrics related to resilience in its work compared to, for instance, the C40 network, which aims for cities to deliver on the Paris Climate Agreement. However, the 100RC tools provide an important basis for assessing the overall capacity of a city to withstand shocks and stresses and for identifying plans and interventions to strengthen its resilience in line with local needs and priorities. In doing so, the resilience strategies that have been produced through these assessments represent a potentially useful tool in implementing multiple development agendas that have resilience at their core while building coherence among these different agendas by integrating and institutionalizing resilience in wider city planning and practice. This is important because, while cities are acknowledged as crucial actors in the implementation of global development goals and agendas, most of them have been designed by and for national governments, posing a range of challenges for their planning, monitoring, and implementation at the local level [9,10]. Their implementation therefore requires a process of "localization" or the process of adapting, implementing, and monitoring SDGs at the local level [11,12].

This paper starts by reviewing a total of 64 resilience strategies adopted by cities across the world since 2015 to gain insight into the extent to which the goals of these strategies are aligned with global policy agendas and frameworks. This review shows that a growing number of cities are already aligning their resilience strategies to the SDGs and/or other related global development policy agendas so as to contribute to their implementation. This paper then zooms in on the case of Cape Town, South Africa, which joined 100RC in 2016 in the third and final cohort of member cities, and outlines the process of aligning its resilience strategy to the SDGs. The paper concludes not only that the research shows the potential of how 100RC tools can be used for planning, measuring, and achieving resilience at the city level but also that its use is reflective of the ways in which cities post-2015 are increasingly strategically using their membership of city networks to localize global and local development agendas in an integrated way.

2. 100RC and Resilience Tools and Strategies

The 100RC Network was founded by The Rockefeller Foundation in 2013 as a spin-off organizational entity when The Rockefeller Foundation's Board of Trustees approved "a global challenge to identify 100 cities . . . to build greater resilience, particularly at the city level, as natural and man-made shocks and stresses grow in frequency, impact, and scale" [13]. This decision was made as a response to three identified global threats, namely, growing urbanization, globalization, and climate change. At the time, the commitment from The Rockefeller Foundation was to find 100 cities and to commit US $100 million to building urban resilience. The Rockefeller Foundation went ultimately beyond its initial commitment and invested US $164 million [14].

Resilience is defined by 100RC as "the capacity of cities (individuals, communities, institutions, businesses, and systems) to survive, adapt, and thrive no matter what kinds of chronic stresses and acute shocks they experience" [15]. Importantly, this definition focuses on all actors that exist in a city's geographical space, not just city governments, and it considers both shocks, like natural disasters, and longer-term stresses, like unemployment. Resilience in this definition is thus neither constrained to only disasters nor concerned with only environmental issues.

Cities which were accepted as members of the 100RC network received funding from The Rockefeller Foundation for the position of a Chief Resilience Officer (CRO) for a two-year period as well as technical assistance in the development of a resilience strategy which included access to a platform of innovative private and public sector tools to help design and implement that strategy. The network itself is also beneficial to the 100 cities as they are able to easily share learnings and best practices through a number of platforms including summits, knowledge exchanges, and collaboration workshops.

The CRF and the CRI both have the same basic structure which distinguishes four essential dimensions of resilience:

1.　health and wellbeing;
2.　economy and society;
3.　infrastructure and environment; and
4.　leadership and strategy.

Each dimension in turn contains three, or a total of 12, drivers which reflect more specific characteristics of resilient cities, such as integrated development planning or sustainable economy. Finally, each driver comprises a number of sub-drivers which identify specific and more detailed actions to guide assessment, such as comprehensive city monitoring and data management or cohesive communities (see Figure 1).
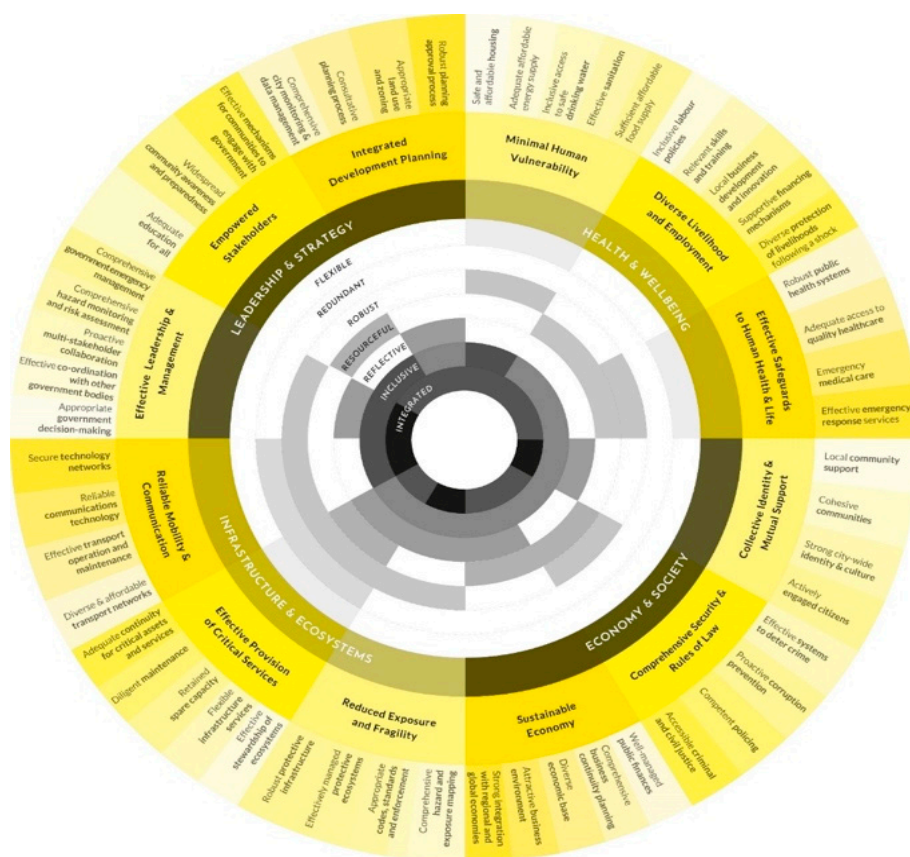
Figure 1. City Resilience Index. Source: The Rockefeller Foundation and Arup (2016). Available online: https://assets.rockefellerfoundation.org/app/uploads/20171206110244/170223_CRI-Brochure.pdf (accessed on 10 December 2019).

According to Arup [16], the framework took three years to develop and included an extensive review of other urban and/or resilience frameworks and academic literature, including the work of the American geographer Susan L. Cutter, who has published widely on disasters and disaster recovery. Compared to other resilience frameworks, the CRF is an overarching framework which works alongside other tools to help cities understand their resilience and the areas where their strategies need to focus. The tools which work together with the CRF as lenses of analysis include (1) an actions inventory, which allows cities to take stock of a variety of resilience building programs and activities which already exist in their city, and (2) a perceptions inventory, which allows a city to capture qualitative data from stakeholders about perceived areas of strength or weakness. Together, these lenses assist cities in the preliminary stages of strategy development to understand their base context and resilience strengths and weaknesses.

The CRI builds on the CRF by providing a qualitative and quantitative assessment methodology which establishes a baseline assessment of resilience in a city at a particular point in time. According to Arup, the City Resilience Index is a comprehensive tool for cities to understand and assess their resilience, enhancing their ability to build sound strategies and plans for a strong future. It comprises 156 qualitative and 156 quantitative questions, which are taken together to produce respective profiles of resilience and ultimately a city's overall CRI profile. CRI is unique in focusing on assessing the overall capacity of cities to withstand multiple shocks and stresses and, based on these outputs, to enable decision making in order for cities to become resilient. While most information regarding the CRI is freely available on the Arup and a special CRI website, not all cities proceed with the CRI after conducting the CRF as use of the tool requires payment and a labour intensive process.

3. 100RC and Global Policies

A body of work on the practice of resilience making in 100RC cities is growing, ranging from accounts on the practical implementation of resilience from a city perspective [17,18] to more critical accounts that draw attention to its inconsistencies and contestations related to the increasing private sector involvement in urban development planning and governance [19,20]. This work links up with a growing literature on the ways in which urban governance is being reconfigured in an age of "rising city networks" [21]. In 2015, there were at least 170 active city networks—up from 55 in 1985—that contributed to the transfer and circulation of urban knowledge and policies, especially in the realm of climate change [22,23].

City diplomacy through these networks also contributed to "leave no city behind" in the adoption of the various global agendas between 2015 and 2016 [24]. However, there are many different types of city networks, ranging from exclusive networks that are only open to a limited number of municipalities, such as 100RC, to mass networks open to almost all municipalities, such as Local Governments for Sustainability (ICLEI), with subsequently varying organizational structures, governance, and partnerships [25]. Moreover, the proliferation of these networks has led to the fragmentation and potential silo-ing of urban matters, raising questions around the ways in which cities can engage this networked landscape more strategically [26]. For instance, while membership in city networks such as C40 and ICLEI plays an important role in terms of preparing cities for climate change and the monitoring of achievements towards the Paris Climate Agreement, different reporting mechanisms are not always harmonized [27,28]. Moreover, these efforts are generally not interlinked with the monitoring and implementation of other global policies or development agendas.

100RC in this sense is not an exception as the CRF or the CRI were not designed to aid cities in contributing to the implementation of global development policies. Nevertheless, their focus on resilience turns them into potentially useful tools for the process of adapting, implementing, and monitoring global policies to the local level. Indeed, our research shows that cities are increasingly working towards such localization.

About 80 cities have developed comprehensive resilience strategies to date [8]. We reviewed the 64 resilience strategies that were published by cities on the 100RC website by August 2019 and analyzed the extent to which these strategies are aligned with global policy agendas. This was followed up with telephonic interviews and email correspondences with a number of selected cities through a method of snowballing to determine the motivations for global policy alignment, the method(s) employed for the alignment, and possible plans for the monitoring and implementation of the goals and interventions. In reviewing the global policy alignment of the resilience strategies, we placed a particular focus on the SDGs, considering its overarching reach and its extensive monitoring and review framework which includes reference to other global agendas.

Figure 2 illustrates this review with (from the left to the right) cities that make reference to global development agendas but not the SDGs, followed by those that merely make reference to the SDGs and those that align their goals and actions to the SDGs at the goal and/or target levels (indicated with the plus sign at the SDG icon), while the column on the right lists cities that do not make reference to the SDGs or any other global development agendas.

This review reveals that about half (28) of the 100RC cities with resilience strategies do not make reference to the SDGs. Reference to and global policy alignment of resilience strategies increases after 2017, with the cities of New York (USA), Rotterdam (Netherlands), and Bristol (UK) being the only cities with resilience strategies adopted before 2017 that make reference to the SDGs, while Mexico City refers to the Paris Climate Agreement.

From 2017 onwards, a number of cities (10) reference other global development agendas, such as the Sendai Agreement for Disaster Risk Reduction, adopted in March 2015 (Ramallah, Palestine; Santa Fe, US; Sydney, Australia; and Vancouver, Canada); the Paris Climate Agreement, adopted in December 2015 (Paris, France; most of the US cities such as Dallas, Chicago and Washington; Toronto, Canada; Huangshi, China; Singapore; and Chennai, India—which refers to both the Sendai and Paris

agreements); or the New Urban Agenda, adopted in October 2016 (many of the Latin American cities such as Quito, Ecuador; Montevideo, Uruguay; and Buenos Aires, Argentina as well as Thessaloniki, Greece; Santa Fe, US; and Melaka, Malaysia).

Figure 2. Resilience strategies and global policy alignment. Source: Authors.

Cities that have linked the goals and actions of their resilience strategies to the SDGs at the goal level are Accra (Ghana), Amman (Jordan), Buenos Aires (Argentina), Juarez (Mexico), Kyoto (Japan), Montevideo (Uruguay), Ramallah (Palestine), Rome (Italy), Salvador (Brazil), Santa Fe (US), Sydney (Australia), The Hague (Netherlands), Pune (India), and Honolulu and Louisville in the US. Quito in Ecuador, Melaka in Malaysia, and Cape Town in South Africa are the only cities to align the goals and actions of their resilience strategies to the SDGs down to a target level.

There are still many 100RC cities, among those reviewed, that do not explicitly align their resilience strategies to global policies; this is not to say that those cities are not implementing plans that align with these objectives. Many of their goals and actions in fact implicitly link up with the objectives of these global agendas. It may also be that cities did not include references in their resilience strategies but have, since their publication, started engaging with global policies. Nevertheless, the overview shows us that an increasing number of cities across the world are making efforts to adapt global policies to the local level. Most cities are doing this on their own initiative as they see value in finding synergies between the resilience strategies and other development and planning tools and policies.

The SDGs are seen as a useful overarching framework in this regard due to its universal reach and application. According to the CRO of The Hague, more and more policies of the city refer to the SDGs, as these represent "an essential framework that is recognisable for many of our partners (institutions, businesses, etc.) that also include the SDGs in their monitoring" [29]. Similarly, according to the director of the Executive Unit of Resilience of Montevideo, the SDGs function as a common framework to measure all local government advances towards sustainable development even when cities are members of different international city networks [30]. Cities also tend to find the SDGs easier to work with, for instance, compared to global agendas such as the New Urban Agenda that have no clear monitoring framework and "go back and forward with different terms to say that they are not forgetting anything" [31]. Compared to other local strategic development plans and tools, the resilience strategy in turn is seen as the most appropriate strategy to link to the SDGs, due to its long-term time frame (35 years) and transversal nature, combining social, economic, and environmental interventions [32]. Integration between the different agendas is aided when there is a close connection between the city's planning department and international relations department, which oversees the implementation of the city's global commitments. This is the cases of, for instance, not only Montevideo but also New York and Buenos Aires [33,34].

Drawing on the case of Cape Town, in the next section, we take a more in-depth look into the process of developing a resilience strategy through 100RC tools and methodologies including the CRF and CRI, some of their strengths and weaknesses, and an analysis of the strategy's alignment with the SDGs.

3.1. Resilience in Cape Town

Cape Town has been a member of the 100 RC network since 2016. Between 2015 and 2018, the city experienced the worst drought in its recorded history, which led to the creation of a Water Resilience Task Team, headed by the City's CRO [35]. Alongside increasing temperatures and rising sea levels, the effects of climate change in Cape Town are exacerbated by physical vulnerabilities such as poor drainage in low-lying and informally built parts of the city as well as socioeconomic vulnerabilities related to high levels of poverty and inequality, leading the city to recognise the importance of responding to the challenges of the 21st century through resilience building efforts.

The prioritisation of resilience at a high level within the City of Cape Town is evident in its Climate Change Policy [36] and its Integrated Development Plan (IDP) 2017–2022 which lists resilience as one of its six guiding principles and states that "The City views urban resilience as a core factor in achieving its strategic objectives of building a safe, caring, opportunity, inclusive, and well-run city. Therefore, the City is committed to building resilience to urban challenges that leave households vulnerable to social, environmental, and economic shocks. Resilience, as a guiding principle, should be institutionalised across the organisation and be incorporated into the City's strategic, planning,

and decision-making mechanisms" [37]. Hence, the City's approach to resilience incorporates climate change stress, together with various resultant climate shocks, and looks more broadly at other non-climate-related shocks and stresses that the city is vulnerable to.

Following the successful selection as a final wave city of the 100 cities in the 100RC network, the City appointed a Chief Resilience Officer (CRO) for Cape Town with the endorsement of the City Council—an action which provided additional political buy-in to the activities of the resilience programme. Following this appointment, the CRO began to establish a Department of Resilience, located within the City's Directorate of Corporate Services, including the appointment of a director of resilience. In September 2017, the Resilience Department began with phase I of the strategy development process, which culminated in the publication of the Preliminary Resilience Assessment for Cape Town in September 2018.

Cape Town took a bottom-up approach to the development of its resilience strategy, and in phase I, a range of stakeholders, citizens, and subject experts across Cape Town were consulted to seek their input on resilience factors in Cape Town. This provided data and information which was analysed through the 100RC tools to provide a detailed understanding of the city's resilience profile. Specifically, during each engagement, perceptions of resilience were gathered and mapped against the drivers of the CRF which provided insight into the areas of strength and weakness in Cape Town. For instance, participants were asked to map perceptions using colour-coded stickers against the CRF quadrants. This data was then manually tallied and analysed and in turn compared and contrasted against the outputs of the Actions Inventory which was completed through desktop research. While these perceptions tools are less rigorous compared to the CRI, which has a thorough set of qualitative and quantitative metrics, the insights gained assisted in identifying focus areas for the strategy development.

Simultaneously, Cape Town proceeded with the CRI process. On the qualitative side, the specific perceptions mentioned above were collated with the assistance of the CRI questionnaire, which provided a useful methodological basis for gathering perceptions aligned with the drivers of resilience. On the quantitative side, the city's research department assisted in obtaining as many of the 156 data points as possible. While the team could only source data for 120 of the 156 data points in the index, this is a high percentage of completeness compared with other cities that have completed the index. As resilience is an abstract concept that can only be measured following a real-life shock or period of stress, the quantitative part of the CRI is based on proxy measurements within each sub-indicator that indicates how the city is currently performing. The index thus allows cities to establish a baseline, to identify aspects of their resilience profile that may need strengthening, and to track performance over time. The data collection in this process was facilitated through the city's recent certification by the World Council on City Data for the international standard ISO 37120, which comprises 100 indicators on Sustainable Development of Communities: Indicators for City Services and Quality of Life, which meant that some overlapping data was easily accessible.

The CRI was however not without critique. For example, Cape Town noted that informality was not covered adequately by the CRI, and while disaster-related questions were overly proportioned, other important themes like food and education were under proportioned. Nonetheless, compared to other tools, the Cape Town team found the CRI process beneficial in the strategy development process.

3.2. Alignment of Cape Town's Resilience Strategy to SDGs

The CRF and CRI together with other methodologies assisted Cape Town in structuring the focal areas for phase II of their work—the research and development of the resilience strategy itself. This strategy comprises of 5 pillars, 20 goals, and 75 actions. Each of these actions is aligned with the relevant CRF drivers that it aims to improve, with the relevant SDG goals and targets, and with other actions in the strategy that it works alongside. The draft strategy was released for public comment in May 2019 and adopted by the City of Cape Town Council in August 2019. Cape Town's resilience challenge is to build "a resilient Cape Town that is a compassionate, connected, and capable city, where

Capetonians collaborate across households, communities, and institutions to build collective responses to the current and future social, environmental, and economic challenges" [38].

The link between the resilience strategy and the SDGs is a product of work conducted under an international comparative research project on the implementation of the New Urban Agenda and SDGs. This project is funded through the Mistra Urban Futures network and implemented in 7 cities: Cape Town (South Africa), Gothenburg (Sweden), Kisumu (Kenya), Malmö (Sweden), Sheffield (UK), Shimla (India), and Buenos Aires (Argentina). The project built on a pilot project which tested the indicators of the urban SDG in 5 cities in the run up to the adoption of the SDGs in 2015 [39]. In Cape Town, the work builds on a long-standing collaboration between the City of Cape Town and the African Centre for Cities, a research center based at the University of Cape Town. For a period of two years (2017–2019), a researcher from this center was embedded in the City of Cape Town whose job was to study, inform, and facilitate the preparation of a proposed approach and framework for SDG implementation in the city.

The resilience strategy and SDG alignment exercise consisted of linking each individual action from the resilience strategy with the most relevant SDG target. The SDG indicator framework, as developed by the Inter-Agency and Expert Group on SDG Indicators and adopted by the UN General Assembly, consists of 17 objectives, 169 targets, and 232 unique indicators. The targets consist of outcome-oriented targets (designated by numbering, e.g., 1.1 and 1.2—the *what*) and means of implementation-oriented targets (designated by lettering, e.g., 1a and 1b—the *how*). As this kind of alignment represents a new and emerging practice, there are no established methods to inform a scientific and objectively replicable way to conduct this alignment and the results may therefore vary from city to city. Nevertheless, in our review of other resilience strategies and engagements with other 100RC cities, we found that ours resembled the method employed by The Hague in that the city of Cape Town team distinguished between the "why", "what", and "how" of each action of the resilience strategy. Instead of linking the actions thematically to the SDGs at the goal level ("why" or "what"), we focused on the "how" and looked for the SDG target that represented a best match—allowing for a deeper and more insightful engagement rather than a superficial thematic alignment. For instance, action 1.2.4 of Cape Town's resilience strategy on encouraging cross-societal support for diversionary programmes in Cape Town includes efforts to create pathways for people at risk, which create alternative pathways that can increase social cohesion and decrease violence and trauma. However, instead of linking the action, for example, to SDG 3 on health, the "how" of the action matched best to SDG 16 on peace, justice, and strong institutions, more specifically, target 16.a on strengthening relevant institutions for building capacity to prevent violence and to combat terrorism and crime.

Linking Cape Town's resilience strategy this way to the SDGs shows several key SDGs emerging as being most directly relevant and aligned to the resilience strategy. An overview is given in Table A1 in Appendix A. Because of reasons of space, the alignment is limited to showing the alignment between the strategy's goals and identified SDGs at the goal and target levels without including all individual 75 actions to which they are linked. Repeated SDG targets that link to several actions of the strategy are only mentioned once. The full alignment is included in the city's resilience strategy, which can be accessed through the City of Cape Town website.

4. Discussion

Unsurprisingly, the key SDG that cuts across all the goals of the resilience strategy is goal 11 on sustainable cities and human settlements, with actions of all but one pillar of Cape Town's resilience strategy matching with targets under this goal. A number of targets also emerge as part of SDG 16 on peace, justice, and strong institutions under pillar 1 and of SDG 17 on partnerships under pillar 3, highlighting the transversal and collaborative nature of the strategy and resilience making. Targets related to SDG 13, specifically target 13.3 on improving education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning, on climate action are featured under the actions of pillars 2 and 4 of the strategy. This shows how the

actions of the strategy are specifically concerned with building the capacity that is required to plan for and to manage shocks and stresses. Moreover, each action in the resilience strategy aligns with multiple other actions, showing not only interconnections but also transversality. While there may be a lead for each action, all actions require multiple government departments or collaborations across government spheres or with external actors to be realized fully. This is also illustrated by the matches between the actions of the strategy and the means of implementation of target 11b on the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, which is in line with the Sendai Framework for Disaster Risk Reduction 2015–2023 holistic disaster risk management at all levels, which are featured under pillars 4 and 5.

Taken together, the goals and actions of the strategy link up to at least one target from each SDG, (except for SDG 15 on life on land), illustrating the breadth and holistic nature of the strategy. What is interesting is that the resilience strategy was not designed to align so comprehensively with the SDGs. This was an outcome of rigorously using the CRF, which helped to target which resilience areas to work on.

Taking the resilience strategy and alignment exercise to look at and "speak back" to the SDGs also surfaces some interesting findings. Many of the SDGs were written with the national government as the main implementing actor in mind, but they cannot be achieved without the involvement of local governments [40]. This requires several SDGs—beyond just having SDG 11—to be adapted to the local level to make them work. For instance, SDG 17.17 on encouraging and promoting effective public, public–private, and civil society partnerships; building on the experience; and resourcing strategies of partnerships is focused on the national government level, but institutional capacity is crucial for building resilience at the city level, which is not specifically accounted for in the urban SDG. The targets that come closest are target 11.3, which focuses on participatory, integrated, and sustainable human settlement planning and management, and target 16.7, which focuses on ensuring responsive, inclusive, participatory, and representative decision-making at all levels.

There are also a number of specific actions that stand out in Cape Town's resilience strategy that are not covered in the SDGs. This highlights the importance of complementing the implementation of global agendas with a bottom-up approach, which the CRI and CRF processes provide by bringing local issues and priorities to the surface. For instance, part of goal 1.1 on increasing awareness of, access to, and uptake of mental health support is action 1.1.2 on mental health training and diagnosis, which recognizes the role of traditional healers who, for many Capetonians, are the first choice of healthcare. In the SDGs, traditional knowledge is only recognized with regard to agriculture (SDG 2.5). Furthermore, part of goal 2.1 on growing partnerships that strengthen transportation systems and improve mobility is action 2.1.3 on leveraging data and mapping applications to improve integration of informal transportation systems which recognizes the importance of integrating all forms of transport in the city. The SDGs include target 11.2 on access to safe, affordable, accessible, and sustainable transport systems for all, notably by expanding public transport systems, but do not acknowledge informal transport specifically despite the importance for many cities in the global South. Similarly, part of goal 3.2 on enabling enterprise development in the informal economy is action 3.2.1 on creating informal economy activity hubs to support light manufacturing. Although this links to SDG target 8.3 on job creation, this target does not specify the importance of informal economy and only mentions the "formalization and growth of micro-, small-, and medium-sized enterprises".

Previous analyses of the SDG indicators already surfaced the need to account for informality [41]. In the context of the 100RC work, the city of Cape Town has called for more attention to the importance of informality through the 100RC Network Exchange in Addis Ababa in December 2018. During this exchange, Cape Town benefited from engagement with Accra, Addis Ababa, Chennai, Lagos, Paynesville, Montevideo, and Salvador around building resilience in the informal sectors in cities. Cape Town has thus far led this conversation within the network, and several actions in the

resilience strategy intend to impact positively on building resilience in informal settlements and the informal economy.

When looking at the potential contribution of the 100RC tools to the SDGs, the question arises whether the CRI could be used as a tool to monitor progress on SDG implementation. This purpose is not originally built into the CRI, but it could be useful for cities to do this. For instance, the deployment of the CRI can be repeated every few years to track relative progression or regression of indicators aligned with both the CRI and the SDGs. Some cities indicate in their resilience strategies that they intend to link their CRI's to monitor progress on SDG implementation. For instance, the Indian city of Pune intends to use the Pune Sustainability Monitor to localize SDGs for Pune City and to create monitoring capacity within Pune Municipal Corporation [42]. Melaka's resilience strategy mentions that the strategy review will involve using the CRI, SDG, and NUA indicators to monitor progress [43].

The city of Cape Town in turn is exploring possibilities for monitoring at the community level through action 4.2.1, which is a flagship action dedicated to developing neighbourhood resilience assessments with the aim of building greater awareness at a community level of shocks and vulnerabilities, more prepared communities for shock events, and the production of standardized data for guiding and monitoring the effectiveness of localized SDG interventions. The city is further working on aligning the city's wider policy ecosystem and related monitoring tools with the SDGs as part of a multi-pronged strategic action plan for the implementation of the SDGs adopted in April 2019. As part of a growing group of cities worldwide, the city has also committed to presenting a voluntary local review on its progress in localizing the SDGs to the next UN High Level Political Forum [44].

5. Conclusions

Nearly five years since the adoption of the SDGs, relatively little is known about the ways in which cities are going about the planning, monitoring, and implementing global policy agendas at the local level. Moreover, while a growing number of city networks have been instrumental in pushing for the recognition of the importance of cities for the implementation of global policy agendas, there has been little coordination amongst them in terms of their role or contributions towards the localization of global goals.

Our study of resilience strategies adopted by former 100RC cities across the world shows how cities are taking it upon themselves to integrate their work as members of global city networks with the implementation of global development goals and agreements in ways that reflect their local needs and priorities. This shows how cities are starting to engage in the multitude of networked landscapes more strategically [26]. More specifically, the cities that we reviewed are taking ownership of the SDGs and adopting them as a framework under which different global agreements are integrated. For many cities, resilience strategies represent a useful entry point for localizing the SDGs due to their transversal nature, therefore going beyond the predominant climate focus of other global networks and agreements [45,46]. Using the SDGs as an overall framework allows for the integration of different tools, policies, and strategies so that they do not repeat, contradict, or conflict with one another in a way that can be compared at a global level.

The work in Cape Town illustrates the potential usefulness of the 100RC tools for planning for resilience and the various ways in which the resultant actions link up to the SDGs. While there are certain shortcomings in the 100RC tools in terms of, for instance, the overrepresentation of disaster-related questions compared to social themes, the tools can help in identifying local focus areas and can surface the important need for actions in the realm of capacity building. In doing so, they highlight the importance of planning and capacity and the role of resources, data, and technology that comes with building urban resilience—all crucial for achieving any of the global goals.

On the other hand, the development of a resilience strategy in a context such as that of Cape Town also surfaces areas that are not adequately covered in the SDG goals and targets, for instance, when it comes to traditional forms of knowledge or informality. This points not only to the importance of tools that can contribute to localizing global goals in ways that reflect and respond to local needs

and realities but also to the importance of the membership of cities from the global south in global knowledge exchanges [47], while acknowledging Cape Town's privileged position compared to other cities on the continent in terms of its institutional capacity, resources, and other benefits resulting from its membership of exclusive city networks such as 100RC. Partnerships with research and academic institutions can contribute to generating and enabling knowledge exchange within and across cities to accelerate progress on the implementation of global development goals [48]. Indeed, in addition to Cape Town, a growing number of cities amongst those we reviewed, such as Bristol, Melbourne, Los Angeles, and Louisville, worked with academic researchers in aligning their resilience strategies to the SDGs. Going forward, the work of these cities shows the growing desire, capacity, and will to build resilience in collaborative, integrated, and locally meaningful ways.

Appendix A

Table A1. Cape Town resilience strategy goals and corresponding Sustainable Development Goals (SDGs) at the target and goal levels.

Cape Town's Resilience Strategy	SDG Alignment	
Goals	Targets	Goals
Pillar 1: Compassionate, holistically healthy city		
Goal 1.1: Increase awareness of, access to, and uptake of mental health support. Goal 1.2: Embrace a more holistic approach to policing and crime prevention to break the cycle of violence and to lower recidivism rates and trauma. Goal 1.3: Combat discrimination and build social cohesion. Goal 1.4: Promote a culture of health that increases well-being and decreases trauma.	Target 3.4: By 2030, reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being. Target 16.1: Significantly reduce all forms of violence and related deaths everywhere. Target 3.5: Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol. Target 16.2: End abuse, exploitation, trafficking, and all forms of violence against and torture of children. Target 10.3: Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies, and practices and by promoting appropriate legislation, policies, and action in this regard. Target 5.2: Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation. Target 10.2: By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status. Target 2.1: By 2030, end hunger and ensure access to all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious, and sufficient food all year round.	SDG 2 hunger SDG 3 health SDG 5 gender SDG 10 inequality SDG 16 peace and justice

Table A1. *Cont.*

Cape Town's Resilience Strategy	SDG Alignment	
Pillar 2: Connected, climate-adaptive city		
Goal 2.1: Grow partnerships that strengthen transportation systems and improve mobility. Goal 2.2: Engage communities and the private sector to improve public spaces. Goal 2.3: Build climate resilience. Goal 2.4: Innovate for improved conditions, service delivery, and well-being in informal settlements; Capetonians turn the challenges of resource constraints and rapid technological change into new opportunities.	Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management. Target 11.2: By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, of women, of children, of persons with disabilities, and of older persons. Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning and management in all countries. Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes. Target 11.7: By 2030, provide universal access to safe, inclusive, and accessible green and public spaces, in particular for women and children, for older persons, and for persons with disabilities. Target 13.3: Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning. Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate. Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and to substantially reduce the number of people suffering from water scarcity. Target 14.2: By 2020, sustainability manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.	SDG 6 water SDG 11 cities SDG 13 climate action SDG 14 life below water
Pillar 3: Capable, job-creating city		
Goal 3.1: Foster green economic growth. Goal 3.2: Enable enterprise development in the informal economy. Goal 3.3: Connect the workforce with a changing economy. Goal 3.4: Partner with businesses to achieve a resilient local economy; Capetonians prepare for, respond to, and recover from disasters while building back better.	Target 8.2: Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high value added and labour-intensive sectors. Target 12.7: Promote public procurement practices that are sustainable in accordance with national policies and priorities. Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management. Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation and encourage the formalization and growth of micro-, small-, and medium-sized enterprises, including through access to financial services. Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship. Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. Target 17.17: Encourage and promote effective public, public–private, and civil society partnerships, building on the experience and resourcing strategies of partnerships. Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.	SDG 4 education SDG 8 decent work and economic growth SDG 9 infrastructure SDG 11 on cities SDG 12 responsible consumption and production SDG 17 on partnerships

Table A1. *Cont.*

Cape Town's Resilience Strategy	SDG Alignment	
Pillar 4: Collectively, shock-ready city		
Goal 4.1: Future-proof urban systems. Goal 4.2: Strengthen individual, household, and community resilience. Goal 4.3: Encourage responsible investment in household and business resilience. Goal 4.4: Explore funding mechanisms for shock events.	Target 13.3: Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning. Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, and resilience to disasters and develop and implement in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 holistic disaster risk management at all levels. Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix. Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters. Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. Target 6.b: Support and strengthen the participation of local communities in improving water and sanitation management.	SDG 1 on poverty SDG 6 water SDG 7 energy SDG 9 infrastructure SDG 11 on cities SDG 13 climate action
Pillar 5: Collaborative, forward-looking City		
Goal 5.1: Develop and approve portfolios of projects that maximise the resilience dividend. Goal 5.2: Mainstream resilience in decision-making. Goal 5.3: Enhance knowledge management and data-use. Goal 5.4: Monitor and evaluate resilience outcomes.	Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, and resilience to disasters and develop and implement in line with the Sendai Framework for Disaster Risk Reduction 2015–2023 holistic disaster risk management at all levels. Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated, and sustainable human settlement planning and management.	SDG 11 on cities

Source: Compiled by the authors based on City of Cape Town resilience strategy.

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