Generating Transformative Capacity: ICLEI Africa's Urban Natural Assets for Africa programme

ABSTRACT

Over the past five years, there have been growing calls for transformative responses to sustainability challenges, supported by increased transformative action in the pursuit of environmental justice. In parallel to this development within the policy arena, the concept of transformation and its potential is also attracting more attention within the research community. This paper uses the example of the UNA programme to explore what transformative change might mean for cities and how this might be achieved through enacting just processes. It explores in some more detail different approaches to transformative change to explain how and why an enabling perspective on transformation is considered to be fruitful in developing the understanding of transformative capacity for change. The paper then explores how the programme was able to foster this capacity, with what consequences for the African cities and what it implies for the nature of change for urban social and environmental justice in the future.

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1. Introduction

Over the past five years, there have been growing calls for transformative responses to sustainability challenges. From large international scientific bodies, like the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), through to social movements including Fridays for Future and Black Lives Matter attention is increasingly being drawn to the urgent need for change if the world is to address pressing issues such as climate change, the loss of biodiversity, or inequality. Given the limited progress made in addressing such challenges, such calls point out that action is needed which is both more ambitious and more rapid, addressing not only the symptoms of the issues at hand but also their underlying causes and doing so in a manner that 'leaves no-one behind', in keeping with the mantra of the Sustainable Development Goals (SDGs) (Samman et al. 2018) and the pursuit of environmental justice. Such responses are seen as *transformative* not only because they are intended to deliver outcomes which will significantly transform

1

the trajectories of the changing climate, our capacity for resilience, the loss of biodiversity, or the nature and consequences of inequalities – in short because they seek to address both environmental challenges and the questions of social injustice that accompany them – but because they are intended to fundamentally reconfigure economies and societies in order to do so.

In parallel to the development of calls for transformative action within the policy arena, the concept is also attracting more attention within the research community. Different approaches "distinguish between the scope of transformation in terms of what system is going to be changed under what time frame" and in terms of how they envisage change to be enabled "in terms of drivers and agency" (Wibeck et al. 2019: 2). Whilst historically revolutions have been regarded as the force for transformative change, contemporary accounts tend to regard the scope of transformation in different terms. For some the focus is on changes which take place across the socio-technical systems that shape society and the economy without necessarily challenging existing power relations while for others transformative change requires reworking political economic and social structures in order to address current inequalities (Burch et al. 2014; McCormick et al. 2013; Pelling & Manuel-Navarrete 2011). Cutting across this sliding scale of where transformative change is envisioned as taking place are differences of view about how it can be realised. In some accounts transformative change is regarded as a matter of getting the means of change right – enacting just processes through ensuring participation in decision-making processes, recognition of diverse knowledge, or forms of integrated governance – in order to generate the necessary drivers and agency for transformative change (Chaffin et al. 2016; Nevens et al. 2013; Turnhout et al. 2020). For others, focus is instead given to the importance of the distributional consequences of transformative action, with an avowed commitment to redressing past injustices and empowering new forms of equality being regarded as an essential element of any programme for transformative change (O'Brien 2018; Pelling et al. 2015; Revi et al. 2015; Romero-Lankao et al. 2018). Here, the drivers and agency for change are to be found in a process of reworking rights and responsibilities for action, and a reconfiguration of who wins and who loses from such processes of change.

2

For the most part, accounts of transformative change tend to either start with the question scope – of system-wide or structural change – and then advocate for processes which may (theoretically) lead to such ends, or instead hone in on the detail of where particular drivers and agency for transformation are to be found, designing detailed processes for participation or calling for the design of new institutions or approaches to governance that are regarded as being more just. In practice, things are rarely so clear cut. The work of urban transformative change on the ground, undertaken by a host of organisations working in cities globally from transnational municipal networks to community-based organisations, local authorities to international donors, is often driven by the immediacy of needing to produce results while being equally committed to the use of processes that are in themselves transformative. ICLEI Africa's Urban Natural Assets for Africa (UNA) programme is a case in point. As the authors bought together our diverse experiences of working with the idea of transformative change together in this joint writing project, we found that it was an example of a programme for transformative change that could not neatly be described through one of the typical lenses through which transformative change is often viewed in the literature. Rather, as we suspect may be the case for many such programmes, what were initial goals for achieving transformative outcomes on the ground in terms of the ways in which urban natural assets are valued and used within cities – i.e. in terms of how they contribute to just outcomes - then came to require the development of new approaches through which to engage and sustain diverse actors in working together towards these goals, in turn addressing current forms of exclusion, vulnerability and inequality, leading to new sets of outcomes which have in themselves been transformative. In addition, due to the emergence of these new approaches and additional needs related to achieving the outcomes, the programme found itself shifting between either an outcome or a process driven focus, adopting an adaptive and flexible management style which in itself supported the conditions necessary for transformative change. In short, that generating transformative change is an unfolding process where different aspects of transformation come to be central at different times and where this varies for the diverse actors involved.

In this paper, as part of a special issue undertaking the transdisciplinary exploration of transformative change for urban sustainability, we use the example of the UNA programme to explore what it is that transformative change might mean for cities and how this might be achieved. In the next section, we explore in some more detail different approaches to transformative change to explain how and why we came to consider an enabling perspective on transformative change to be fruitful in developing our understanding of how the UNA programme has/not been able to generate transformative capacity for change (Castan-Broto et al. 2019; Scoones et al. 2019). Section 3 then introduces the UNA programme in more detail, before in Section 4 we explore how the programme was able to foster transformative capacity and with what consequences for the project cities. Section 5 then reflects on the UNA case and what it implies for the nature of transformative change for urban sustainability in the future.

2. The Nature of Transformation

The potential for and nature of transformative shifts within society has been a long-debated subject across the social sciences and humanities. While often concerned with historical events, growing debates over how society can move towards sustainability have led to growing interest in transformative change within this field (Patterson et al. 2018). As set out in the Introduction to this Special Issue, the result has been the development of a wide range of perspectives on what transformative change entails and how it can be reached where different emphasis is placed on the need for shifts across systems or in their structural conditions, or in terms of the means through which change is realised or its distributional outcomes. Rather than being distinct choices, most often perspectives on transformative change bring these different facets of transformation together to a greater or lesser degree. Yet it is clear that as these concepts are developed, taken up and translated within policy and practice differences in emphasis between a focus on system-wide or structural change and/or between placing weight on the importance of reaching transformative outcomes (for example, in terms of achieving a target of a 1.5 degree warming for the

planet) or instead on the importance of transformative processes (for example, on the co-creation and co-design of sustainability interventions) comes to be more critical. In so doing, different aspects of social and environmental justice come to be emphasised, with different intentions and consequences for those communities and environments involved. As such it is important to understand the differences between such approaches and their implications.

For Scoones et al. (2020) it is possible to distinguish between three distinct approaches to transformation. First, they suggest are structural approaches which are concerned with "fundamental changes in the way production and consumption is governed, organized and practiced by societies" (Scoones et al. 2020: 66). Whilst Scoones et al. point to the historical tradition of such approaches, and in particular the work of Marx, such structural approaches have also been critical to an important area of work on sustainability concerned with understanding the underlying drivers of vulnerability to climate change and the possibilities for adaptation and resilience. This body of work has drawn attention to the importance of structural inequalities in shaping the outcomes of climate-related risk and disasters and the imperative of responses that place questions of justice at their heart to tackle these issues. Pelling et al. (2015: 113) describe how transformative change has come to be seen within this field as involving "radical shifts, directional turns or step changes in normative and technical aspects of culture, development or risk management." As they go on to describe, while transformative change can be seen as an 'option of last resort', a radical option taken when more incremental possibilities for adaptation have been exhausted, it can be more usefully be regarded as a deliberate choice to move towards alternative development pathways. In this perspective, the call for transformative responses is intended to call on "decision-makers and those assessing adaptive capacity and action to extend their concerns from the proximate causes of risk (e.g., dwelling quality, livelihood structure or demographic characteristics) to its structural or root causes (e.g., social, cultural and economic relationships, power hierarchies)" (Pelling et al. 2015: 114).

Viewing transformative change as a matter of addressing the structural or root causes of vulnerability in order to generate more just outcomes has received growing attention within the field of climate change policy and practice. First articulated in the IPCC's Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) (IPCC 2012), transformative responses for climate adaptation came to have a more prominent position within the IPCC Fifth Assessment Report where it was recognised that such approaches include those which address the "underlying failures of development" (Pelling et al. 2015: 114). Following the Paris Agreement, there has been further recognition of the need for transformative action if the goal of a 1.5-degree world is to be reached. The IPCC's special report on 1.5 degrees placed transformative change at the heart of its report, calling for "climate-resilient development pathways ... trajectories that strengthen sustainable development, including mitigating and adapting to climate change and efforts to eradicate poverty while promoting fair and cross-scalar resilience in a changing climate" (Bazaz et al. 2018: 73).

Scoones et al. (2020: 66) identify a second set of "systemic approaches" to transformation which are those focused on "intentional change targeted at the interdependencies of specific institutions, technologies and constellations of actors in order to steer complex systems towards normative goals." In relation to sustainability challenges, such a perspective on transformation can be found both in the literature on socio-ecological systems and in the field of socio-technical transitions studies. Socio-ecological systems thinking is based on the notion of complex adaptive systems and concerned with how, when and under what conditions such systems can be made more resilient, where resilience implies both social well-being and ecological integrity. As Patterson et al. (2017) put it, in this line of thinking it is the 'transformability' of such systems that is at stake, the capacity to create a "fundamentally new system" which in turn contributes to its resilience (Patterson et al. 2017: 6). In this line of thinking there is a strong emphasis on the possibilities of purposively intervening to manage such systems through a transformative process and the roles of both social innovation and strategic agency in realising transformative change for environmental outcomes are emphasised, with more limited attention given to their contribution to social

justice. Work in this tradition then tends to emphasise the importance of transformative processes, with in particular a focus on how new forms knowledge generation and of participation in decision-making are central to enhancing procedural justice and the 'transformability' of the system (Nevens et al. 2013; Hölscher, K. et al. 2019).

In parallel, the field of socio-technical systems has also emphasised the importance of fostering system-wide change in order to realise sustainability transitions. Initially, the notion of transformation was elaborated by Berkhout et al. (2004) as one form of transition, an emergent process, arising "from uncoordinated pressures, outside the regime, often driven by small and new firms" (Geels and Schot 2007: 401). More recently, Geels et al. (2016: 898) argue that alongside such incremental dynamics, transformative pathways can occur when "incumbent actors do not ... remain 'locked in' to the existing regime ... [but instead] change strategic direction and reorient themselves" to embrace radical change in ways that take place at different 'depths' "depending on the kinds of organizational elements that are adjusted" and whether these encompass day to day operations or underpinning beliefs and values. Rather than the kind of radical disjuncture that arises from the de-alignment of existing systems and political orders, here transformation remains a relatively controlled process albeit one that is far-reaching in its effects. For some, such are the parallels between the concept of transition and that of transformation that they can largely be used interchangeably (Hölscher et al. 2018; see also Wolfram et al. 2016). Where transition processes yield transformative outcomes this is often attributed to the pace and scale of change, moving away from the incrementalism that can be associated with socio-technical transitions, and to instances in which alternatives that were once seen as radical to incumbent actors or mainstream practice come to be established and normalised (Hölscher, K. et al. 2019; Werebeloff et al. 2016).

Yet despite the insights that both socio-ecological and socio-technical approaches have offered into the interwoven institutional, technical, cognitive and material dynamics of transformative change, such approaches have tended to "downplay the complexity of politics, power and asymmetries in human-

7

environment dynamics" that contribute to inequalities and "have often implicitly presumed the embrace of Western ideals of deliberative democracy [and] pre-existing capacities for collective action" that are far from uniformly experienced globally (Scoones et al. 2020: 67). As suggested above, prevalent amongst such approaches has been an emphasis on 'getting the governance right' – the creation of institutions and the exercise of processes – that are by design seen to be the means through which transformative outcomes can be generated. Drawing on principles from systems thinking, such approaches often emphasise the need for governance to be integrative (i.e. to operate across different issue areas or institutions in order to provide system-level governance) and adaptive (i.e. to be reflective and recursive, allowing for changing conditions to lead to new priorities and approaches), whilst at the same time stressing the importance of including multiple constituencies in decision-making in order to ensure that such processes are fair. Yet besides the practicalities of generating such governance arrangements across the diverse conditions within which transformative change is needed, questions also arise as to whether such an approach to governance can deliver transformative outcomes even within the terms given by systemic approaches to this challenge (Romero-Lankao et al. 2018; Turnhout et al. 2020).

Whilst structural and systemic approaches to the question of transformation often receive the most attention within debates about how to advance the sustainability agenda, Scoones et al. (2020: 67) point to a third set of "enabling approaches" which "draw on both these traditions to highlight the agency and uncertainties inherent in choosing aims and directions for transformative change." As they go on to explain, such approaches "focus less on specific desired configurations of the system state than structural approaches, and less on the management of system dynamics than system approaches. Instead, these approaches emphasize creating the social attributes — capacities — that empower individuals and communities to take action on their own behalf" (Scoones et al. 2020: 67). Of particular relevance for this paper is an emerging field of research that has sought to develop the notion of transformative capacity within the urban arena (Castan-Broto et al. 2019; Wolfram 2016; Ziervogel 2019). Based on an extensive review of the concept of capacity as it relates to the urban arena and to transformative change, Wolfram

(2016: 126) defines urban transformative capacity as the "collective ability of the stakeholders involved in urban development to conceive of, prepare for, initiate and perform path-deviant change towards sustainability", it is in turn seen as "a qualitative measure for an emergent property that reflects attributes of urban stakeholders, their interactions, and the context they are embedded in." In essence, as Castan-Broto et al. (2019: 451-452) summarise, the components identified by Wolfram (2016) as being critical in fostering transformative capacity can be organised under three broad categories: "(1) agency and forms of interaction, (2) development processes and (3) relational dimensions" where the first set relate to who is involved in transformation and how they are engaged, the second to the means through which transformative change takes place on the ground, and the final set are concerned with the ways in which transformative capacity is generated across and within levels of governance and the interaction of diverse interests, issue-areas and socio-material systems.

Despite the comprehensive approach developed by Wolfram (2016) to consider how the capacity for transformative change might be established, this approach still draws most heavily on the tradition of 'systemic approaches' to transformation identified above. There is throughout the approach an emphasis on agency in various and diverse forms (from participation, to intermediation and leadership) as well as a focus on the ways in which the design of governance institutions and processes can enable change, without as much attention to the structural conditions which shape the possibilities for and resistance to governance interventions or moves towards transformative change, or which themselves need to be reconfigured in order to realise both more just outcomes and just processes. Drawing on Avelino and Rotmans (2011), power here is also regarded in terms of (individual) agency as the capacity of actors to mobilize resources towards a certain goal, in turn meaning that 'transformative capacity' thus represents the power to change, and arises from (empowered) actors that can modify the rules governing the interpretation of and access to human and non-human resources" (Wolfram 2016: 126). As a result, the ways in which transformative capacity is enabled (and constrained) through the more structural dynamics identified in alternative approaches to transformative change appear rather hidden from view, such that

both the notion of agency and the scope of transformative change itself may become relatively narrow in its interpretation. Ziervogel et al. (2016: 955) take the notion of transformative capacity a step further in this direction, suggesting that it includes "the capacity of individuals and organisations to be able to both transform themselves and their society in a deliberate, conscious way. This includes the capacity to imagine, enact, and sustain a transformed world and a way of life that is in balance with the carrying capacity of our earth, and where all life flourishes". From this starting point, urban governance for transformative change is explicitly seen as a project that seeks to enable more just outcomes and involves generating the capacity to envisage and enable new ways of governing urban risk and implementing adaptation through practice which: "(1) recognizes the everyday reality of the urban poor and works with them to identify priorities for transformative change; (2) supports sustained intermediaries who are urban poor themselves; and (3) draws on diverse modes of governance to find new ways to engage diverse actors and experiment with inclusive adaptation planning and practice." (Ziervogel 2019: 494).

Yet to date analyses of transformative action on the ground, either defined in terms of system wide or structural change, remains relatively limited. In their application of Wolfram's (2016) framework to the analysis of the transformative capacity of 400 sustainability initiatives in cities globally, Castan-Broto et al. (2019: 460) find limited evidence that transformative capacity is being generated and conclude that the "widespread lack of evidence for the various components that form transformative capacity raises concerns that this set of transformative attributes is in fact rarely found in sustainability action on the ground." On the one hand this points to the rarity of transformative capacity, perhaps something that is not so surprising given the high bar established for what is required for transformative change. On the other hand, however, it raises questions about whether the assumptions and often normative claims established in the literature about what transformative capacity necessarily involves hold true in practice. In this paper, we set out to explore how far an established initiative – the UNA programme – could be considered as a programme through which transformative capacity has been generated and what this in turn tells us about the nature of the interventions required in order to generate transformative change.

In so doing, we both draw on and seek to develop the focus on agency that has been central to these accounts taking seriously the argument put forward by Scoones et al. (2020) that any enabling approach to transformative change needs to attend to and work with the "inherent uncertainties" that accompany both its processes and outcomes, such that such uncertainties and the socio-material conditions within which transformative change unfolds need to also be taken into our account of how transformative capacity may be both generated and restrained.

3. Exploring Transformations in the UNA Programme

Along with other papers in this Special Issue, our exploration of how and why transformative change has been generated through the UNA programme has come about through a collaboration between research and practice. Often this kind of transdisciplinary collaboration is established at the start of a project, but our particular collaboration as part of this special issue has focused on bringing research and practice together to undertake analysis and writing in order to share the insights of practice in a more academic context. Our approach focused on a joint literature review which was complimented by a review of all the UNA materials and resources as well as all conversations, questions and discussion through which we generated a joint understanding of transformative change and the most salient points about its relevance for this case were identified. The experience and implicit knowledge gained through deep immersion in the implementation of the UNA programme and through the UNA team's understanding of project city contexts, lessons, opportunities, success and struggles were then drawn out through iterative rounds of writing, discussion and reflection to develop the material for the paper. As such the insights provided come both from analysis of written materials but also from participant observation in the process itself.

The UNA programme, implemented by ICLEI's Cities Biodiversity Center located in Cape Town, South Africa has been designed to transform development trajectories for African cities through governance and

11

planning. This has been achieved through the lens of nature-based solutions (NBS), where these have been prioritised as the key vehicle and mechanism for building local urban resilience. As a result, the programme seeks to improve human well-being and build climate resilience through integrating NBS into land-use planning and decision-making processes (ICLEI CBC, 2019h). Since the programme's initiation in 2014, three flagship projects have been implemented under the UNA umbrella: Urban Natural Assets for Africa (UNA Africa), Urban Natural Assets for Africa: Rivers for Life (UNA Rivers) and Urban Natural Assets for Africa: Coasts for Life (UNA Coasts). All projects are funded by the Swedish International Development Cooperation Agency (Sida) through SwedBio at the Stockholm Resilience Centre (SRC) and share several common overarching objectives (see Figure 2).

The UNA Africa project was the first initiative implemented under the UNA umbrella (from 2014 – 2015) and took a two-phase approach that centred on needs assessment and tailor-made capacity building in four African cities (Cape Town in South Africa; Addis Ababa in Ethiopia; Dar es Salaam in Tanzania and Lilongwe in Malawi). Evolving from UNA Africa, the UNA Rivers project (2016 - 2020) initiated the focus of mainstreaming NBS into planning for increased resilience, but with a targeted focus on cities' river systems. UNA Rivers continued to work in three of the original project cities (Addis Ababa, Dar es Salaam and Lilongwe) and during the first three years of the project also expanded to Kisumu (Kenya) as well as Entebbe and Kampala (Uganda). Working with a similar framework as UNA Rivers, the UNA Coasts project began in 2018 and shifted the focus to urban natural assets situated within cities' highly dynamic and sensitive coastal zones. UNA Coasts works with Quelimane and Nacala in Mozambique.

The main characteristics or method of the programme is complex to unpack as the programme followed an adaptive, flexible and experimental approach whilst city needs and city contexts drove activities, outcomes and processes. As a result, each of the eight cities have undertaken diverse activities with varying outcomes.

While the programme was established with a commitment to transformative change, this did not take the form of a blueprint for either the processes to be followed or the specific outcomes to be achieved. The only real pre-designed characteristics of the programme were various "principles" that were identified by the project team as effective levers for local government action based on their previous experience. Some of these principles include: building on existing work; aligning with city needs; building strong relationships; and creating transformative spaces (ICLEI CBC 2019b). These principles underpinned the design of the programme and enabled an emergent and evolving process which, as we explore in detail below, has been central to its ability to enable transformative capacity. In terms of its outcomes, the UNA Africa component of the programme (see Figure 3) centred-on four key outcome areas which emerged during the first phase and then guided the design of the subsequent the UNA Rivers and UNA Coast projects while also informing the objectives specific to these initiatives. These four outcomes were to: establish improved linkages between land-use planners and environmental officers; support co-ordination between all key actors in the urban nature-based resilience space; implement on the ground pilot or demonstration projects; and provide biodiversity and natural asset baseline data to decision makers. In this sense, the outcomes of the project were primarily focused on generating novel forms of capacity – networks, partnerships, pilots and knowledge – that could be generative of transformative change.

Translating the principles of the programme into action on the ground began in each city with an extended planning phase where city officials were asked to unpack their burning issues and identify related needs, city decision processes and support areas linked to the overarching objectives (see Figure 2). For example, under the objective of providing access to resources and tools, decision-makers were asked to reflect on the data or information they might need to help make more informed decisions for urban nature-based resilience. These discussions then informed the co-production of natural asset hotspot maps, which in turn helped to pinpoint which next steps should be taken in the programme. This needs-based assessment was designed to be reiterated multiple times so that through-out the programme, project

13

cities and UNA team members reflected on the previous activities and reassessed focus areas based on learnings and outcomes as well as any changes in city processes or structures. For example, the development of the cities Disaster Risk Reduction Strategy and Action plan became a key priority for political representatives in the city of Kampala during the project period (ICLEI CBC, 2019g.). As such, activities were redesigned to complement the development of this plan. This included implementing a series of multi-level and multi-disciplinary engagements to foster collaboration across regional mechanisms for the implementation and coherence of instruments and tools relevant to disaster risk reduction, such as aligning climate change and biodiversity agendas to broader disaster risk reduction efforts. This reiterative process also drew on the programme's engagement at the international level with developments at this level then influencing programme activities. As the potential for increasing the flow of finances for NBS interventions began to emerge within global discourses, for example both the UNFCCC COP 27 and CDB Biodiversity COP 15 had a strong focus on finance and incorporated side sessions/events on unlocking finance for local and sub-national government (Mckinsey & Company, 2021), many UNA activities sought to align their activities to address this need. This included designing activities such as the facilitation of multi-stakeholder training on unlocking finance for NBS, increased advocacy for improved intergovernmental transfers towards local NBS and a focus on developing pre-feasibility studies or investment cases for project city pilot projects. In particular, through the UNA: Coasts for Life component of the programme, a service provider was appointed to conduct a high-level review and comparison of five project options, select the most likely to attract finance and then develop the chosen concept to pre-feasibility in line with the relevant funder's requirements. The five concept notes focused on mangroves, sustainable forestry, improving the resilience of housing to flooding, sustainable access to safe water and pollution prevention, of which the sustainable forestry concept was then developed into a pre-feasibility study and discussed with potential funders.

As such, although the programme never explicitly used the terms, it adopted a 'design thinking' approach for its implementation (Shapira et al. 2017). This iterative co-design and co-production approach enabled

the programme not only to identify and address city needs, but also to identify their underlying causal drivers (ICLEI CBC, 2019h). As needs were progressively addressed, the structural and underlying conditions shaping urban challenges became more and more evident which in turn meant that additional needs emerged, which then also needed to be addressed as part of the process of achieving transformative change (Figure 4). This process also meant that in each city different activities and outcomes were generated based on local needs and underlying drivers. For example, the intention of delivering on the ground demonstration projects evolved into a different process and design in each project city (ICLEI CBC, 2019i). For example, recognising that cities want tangible results from pilot projects but also that the programme wanted to support this in a strategic way, in Nacala and Quelimane implementation activities focused on establishing effective conditions and processes for successful on the ground projects, through developing pre-feasibility cases that created real-case opportunities for financial capital to flow into urban resilience and adaptation efforts. This focus on making the financial case for wider implementation was emergent, illustrating that transformative change cannot always be "programmed" from the start. Rather than being 'programmed' from the start, the UNA programme has been flexible with incorporating what has been learnt as the programme progresses.

Showcasing and communicating the outcomes of this programme has always been a major stumbling block. This is due both to the fact that the programme has focused on being adaptive to the needs of local stakeholders as well as the fact that it has been running for seven years in eight different cities generating a hugely diverse range of processes and activities that are difficult to capture. In addition, the process focus of the programme and the fact that UNA has helped to develop *enabled people* who have the tools and knowledge to prioritise nature when planning cities and *enabling environments* that integrate sustainability into decision-making have made it challenging to measure the success of the programme. To communicate its outcomes effectively, the programme has made use of impact pathway approach (Douthwait et al. 2003) which saw programme staff, stakeholders and beneficiaries reflect on all outputs,

processes and activities and identify eight impact pathways by which the programme has contributed to transformative change in social, environmental or economic conditions (Figure 5).

4. Building Transformative Capacity through the UNA programme

From the outset of our work on this case, it has been clear that some of the ready made descriptions of what transformative change entails were a poor fit for the UNA programme (and others like it) where transformative outcomes are both intentionally pursued but also emergent, where new processes are designed and followed, but existing institutions and planning processes are also incorporated, and where elements of system change are accompanied by efforts to address the structural conditions of urban sustainability challenges.

The UNA programme adopts the stance that change comes from within the system or networked configuration of social and material entities that make up, in this case, the urban arena and therefore fosters transformative change through its focus on identifying and generating transformative capacities. This was an emergent approach as the learning garnered in the programme became more explicit about the critical importance of cultivating both enabled people and processes, as well as attending to how elements of the existing urban landscape and fabric could be reimagined and repurposed towards new kinds of practices and outcomes. At the same time, as detailed in Section 3, building transformative capacity has meant not only working within the existing social, economic or political order, but identifying the causal roots of urban challenges and seeking to build capacity to address these structural conditions. In practice this has involved: 1) generating transformative **agency** through building individual's abilities and ensuring sustained engagement of actors within institutions and processes to drive and deliver change (Castan Broto et al. 2019; Folke et al. 2005; Ziervogel. 2019); 2) building capacities to create "**untried beginnings**" (Westley et al. 2011: 762); and 3) implementing sustainable knowledge production processes with room to **challenge and overcome dominant power relations** (Cote and Nightingale

2012) and build institutional cultures in which cities embrace more adaptive policies that are responsive to the realities on the ground (Ziervogel. 2019). We expand on each below.

4.1. Generating transformative agency

The programme has found that transformative agency cannot be delivered by single actors or institutions, but is shared across diverse agents of change (ICLEI CBC 2018f; ICLEI CBC 2019g). It has sought to generate transformative agency through two approaches. First, there has been a focus on **building the ability of individuals**. The programme found that prioritising facilitated processes that focused on "relationship building" (ICLEI CBC, 2019d) and the co-production of knowledge through collaborative spaces (ICLEI CBC, 2019e) were critical in generating invaluable learning and capacity for individuals. In turn, this led to shifts in the way different stakeholders work together, often unlocking new opportunities. For example, the City of Nacala pioneered an approach for interactive coastal asset management with a diverse range of stakeholders coming together to identify their city's most important coastal natural assets. Stakeholders brought information that they individually held and through a 'melting pot' of exchanges shared this knowledge with one another. These activities generated useful data that were turned into valuable decision-making tools, such as the Coastal Natural Asset Management plan (ICLEI CBC, 2020) for the city, as well as new methods and models for sharing future information. Building capacity at the individual level and enabling those often excluded from technical decision-spaces to share their knowledge here generated collective capacity that was in turn able to create new kinds of visions and knowledge that have transformed how nature is seen in the city. For example, during participatory exercises city officials in Lilongwe did express the deepened understanding of the reliance on nature for communities' livelihoods (through having vulnerable communities' part of these co-creation spaces). Critically, the programme did not seek only to build technical capacity and capability, but rather through the co-production spaces it created aimed to support a change in the planning culture, whereby city officials began to view themselves as innovative facilitators of co-production planning processes rather than as abstract desk-top planners

and top-down implementers. This was observed by the UNA team where they witnessed city planners starting to recognise their role as boundary agents. They began to understand that they as city planners had key connections with multiple departments within the city council and therefore took it on themselves to bring others into the transformative spaces the project provided. In this way, UNA hoped to ensure that the processes it priortised would be taken up by the cities themselves, such that transformative change would come to be sustained over time.

Indeed, a second means through which the UNA programme has sought to generate transformative agency has been through **ensuring sustained and effective engagement of actors within existing institutions and processes**. When partnerships are developed between stakeholders – when independent departments start to collaborate – "entry points" for exchange naturally emerge and important information can more easily be mainstreamed. As Ziervogel (2019: 503) suggests, "traditional modes of planning, existing competencies and sectoral approaches in cities are insufficient for achieving climate adaptation, urban resilience and risk reduction." The UNA programme has found that in the complex conditions of decision-making in African cities it is not enough to simply produce information and then search for "entry points" in decision-making into which this knowledge can be inserted (ICLEI CBC, 2018f). Such "entry points" rarely emerge naturally, but rather need to be created. Generating the partnerships and exchanges needed through which such entry-points can be generated requires a fundamental shift in the way decision-making and planning is currently carried out such that principles including reflection, knowledge construction and learning come to be prioritised. For example, the UNA team has seen how the collaborative process of designing decision-making tools (CBC ICLEI, 2019b) has improved engagement across different stakeholders which have led to the generation of new transformative agency. Town planners and environmental officers were brought together to engage and collaborate on priority hotspot maps for urban natural assets. The intention was for these to be used as a decision-making tool so that planners could better integrate nature considerations into land use planning processes. When these two groups first started collaborating the planners were hesitant to

engage as they wanted to maintain existing relations in which environmental officers provided information when required and did not see any value in additional exchange. Many years into the process, a new town planner joined the team and expressed the same view the other practitioners had originally held: Why do environmental officers need to be included in this activity? Why are urban natural assets the primary focus? It was the other town planners, not the environmental officers, who provided the answer and explained why nature experts had to be in the room. Through the proximity and constant engagement created by this new process, the town planners had come to appreciate the value of nature in urban planning – the relationships they had formed with the environmentalists had shifted the way they thought about and approached city design such that improving outcomes for nature was seen to be deeply connected to improving outcomes for urban communities. In other words, strong "entry points" for exchange had been created, in turn generating agency through which existing approaches to urban planning were transformed and nature-based solutions were integrated into decision-making more effectively in the pursuit of environmental justice (ICLEI CBC, 2019d).

Much of the success of the UNA programme is a direct result of having worked with the same project city for multiple years, over multiple project periods – in the case above first through the UNA Africa and then subsequently the UNA Rivers programme. This enables what UNA terms **deep scaling** or the ability to iteratively build on the relationships built and groundwork laid in previous projects (ICLEI CBC, 2019a). This recognizes both that transformative change takes time and that successful action requires activities that are locally embedded. It requires that the project team always ensures it understands what has already been done, and what's currently being done, in a city before moving forward with project activities. This suggests that while effective processes that contribute to procedural justice can be designed over the short-term, creating the conditions for ongoing engagement and inclusion of multiple voices is central to realising transformative change. Subsequently, in order to expand on this landscape, and tap into opportunities for long-term sustainable change, the programme spent a large proportion of time becoming familiar with institutional arrangements to understand how decisions are made, and by whom,

which in turn relies on building both individual agency and the space for developing entry points, as set out above, alongside intensive commitment of time and effort to create close working relationships between the city and the project team (ICLEI CBC., 2019d).

4.2. Capacities to create "untried beginnings"

Within the UNA programme transformative change is not found in radical breaks from today's society, but rather as both an emergent process and one which involves the reconfiguration rather than rejection of existing social and material entities in the urban arena (Wilbeck et al. 2019). A key finding from the programme is that you should not assume you need "new things" in order to get rid of the old in order to transform a place, practice or community. This is most clearly demonstrated through its experimentation with the idea of **urban tinkering**.

While some revisions have been made over time, African cities' colonial legacy, as it relates to both policies and physical infrastructure, has perpetuated a particular approach when it comes to urban design such that planning tends to be based on principles and methods adopted from the Global North (Olujimi & Gbenga, 2015). In seeking to address the injustices that such legacies have generated, the UNA programme actively sought to challenge this through prioritising the interrogation of alternative approaches to city planning that are flexible, community-driven and better suited to the African context by taking account of urban informality (ICLEI CBC, 2019b). In this way the programme aims to support the improved integration of nature into decision-making and planning and provide city officials with approaches that adequately deal with informality and urban sprawl. Urban tinkering is one such alternative approach to planning (Elmqvist et al. 2018; see also Bulkeley et al. 2015; Evans et al. 2018). This system thinking-based methodology works with what's already on the ground and makes small adjustments to existing urban elements and structures to make the environment as a whole more resilient to shocks and changes. Yet despite its suitability to contexts where there is limited capacity and significant

challenges faced in achieving change on the ground, because of both its rather ephemeral character and focus on working with emergent processes, even if it had been known at the stage of project design its value would likely have been overlooked. Yet once the programme had started to build momentum through generating transformative agency, it had built sufficient traction and trust to begin to experiment with 'untried beginnings' to address the city needs that were emerging and urban tinkering offered an approach that could relatively easily be advanced without too much concern over its potential failure or unintended consequences.

To test the value of this technique in the African context, an urban tinkering pilot project was implemented along the Auji River in Kisumu city (Kenya). The approach was found to open up a world of possibilities with solutions being tailor-made to existing challenges. Re-imagining the use of existing urban elements and identifying valuable shifts in how they work - for example in terms of infrastructure functions - created the opportunity for adaptability and innovation, allowing infrastructure elements to serve multiple, often unrelated, functions. For example, sections of canalization along the river were becoming damaged with the cement floor and walls breaking apart. At first this was seen as an issue that needed fixing but on further reflection it was these areas that were then identified to be intentionally further broken down and developed into mini retention pods to reduce flooding downstream. It was evident that this approach released the burden felt by city officials as they embark on service delivery in such highly dynamic environments such that they are able to both think beyond immediate needs and pressures and to consider alternative means through which they can be met (ICLEI CBC, 2019b). At the same time, the urban tinkering method itself both encourages flexibility and promotes an environment that allows for experimentation and innovation. Often the rhetoric behind transformative change is that we cannot afford to fail. Urban tinkering however supports a "safe-to-fail" mindset, reversing the logic that transformative change comes from interventions that can not afford to fail either because the challenge they are designed to met is too important or, perhaps more pragmatically, success needs to be demonstrated to met funders expectations. Through this approach, and the enabled environment and mindset urban tinkering asks

for, capacities to test, innovate and experiment has been built in UNA cities which in turn has had the greatest effect in enabling transformative change. In keeping with the synopsis of what makes an enabling approach to transformative change work provided by Scoones et al. (2020), the programme has observed on the ground how the capacities and confidence to test new beginnings is pivotal in overcoming some of the greatest challenges faced at a local level.

4.3. Addressing Structural Complexities

Building transformative capacity is also about effectively engaging with the entanglement of institutional structures and power dynamics in order to address current inequalities. The UNA programme found that such work is needed in order to strengthen governance processes. An important role of the programme is therefore getting national and city officials, scientists and community members together to co-create knowledge that can be used to guide municipal decision-making to tackle the more structural issues at work through unpacking and engaging with these complexities. This has been undertaken through dialogic knowledge production processes, including games and interactive exercises, that allow important conversations and areas of tension to emerge. The processes of scenario planning proved to be instrumental in bringing about change in Dar es Salaam, Tanzania (ICLEI CBC 2018f). Various stakeholders from different disciplines were asked to imagine possible futures for their city. During the scenario planning exercise, conversations emerged that significantly broadened perspectives, assumptions and understandings and enabled views of the future to become more complex and layered. Important areas of tension also emerged around whether or not current policies, plans and interventions were sufficient to positively alter the future. Often, co-production processes or other forms of stakeholder engagement focus on building consensus. In contrast, the UNA programme suggests that knowledge co-production processes are important means through which the causal drivers of key challenges can be iteratively uncovered and that in doing so tensions between continuing with business as usual and tackling structural conditions can come to the surface. Rather than seeking to reduce or cover these tensions, the

programme found that they were critical in shaping learning opportunities, with many participants subsequently changing their views on what needs to be done as they move forward.

Dialogic processes promote experiential learning ("learning by doing"), which has proven within the programme to be more effective than traditional methods in helping stakeholders engage with new practices and ways of thinking. One key reason behind the importance of using innovative methods for knowledge production lies in their ability to both reveal and level the power dynamics in a room. This was clearly seen during a knowledge production process titled *Spilling the Beans* (ICLEI Africa, 2019), a game adapted from the *Future Resilience for African Cities and Lands* (FRACTAL) project, when City mayors and politicians stepped out of their "formal role" to effectively engage community members. Another important reason to use dialogic exercises is because they provide space to "pause", allowing for reorientation. It is difficult for a single city official to make innovative and context-specific decisions when they are not necessarily equipped with the technical skills to deeply unpack unique and wicked problems. UNA has found that these knowledge production processes are effective at equipping urban leaders with the tools, processes and knowledge they need to engage with cities as complex adaptive systems and to make interventions that will create thriving, sustainable cities over time.

In addition to supporting reflection and building analytical systems thinking tools, these processes are critical in building an institutional culture in which sustainability objectives are seen as ongoing process of social learning. The UNA programme asks its project cities to embrace processes and plans that are highly adaptive. During support activities that aimed to embed this framing into the city culture, it was the change in individual's abilities to be flexible and adapt to what is happening on the ground that was observed as being essential in supporting sustained change at the local level. For example, in Lilongwe the implementation of a compost initiative with local communities was designed as an emergent process with local authorities recognizing the need to be adaptive to the issues and opportunities that rose through the process of implementation. Taking this approach across the cities engaged in the programme led to

reflection on the best approach needed at a local level for achieving sustainability objectives. There was unanimous agreement amongst programme participants that future decision-making needed to allow for flexibility and that learning needed to consistently underpin future discussions.

5. Conclusion

In this paper we have sought to engage with what it means for urban policy-makers and practitioners to engage in transformative change. Following the experience of the UNA programme we found that transformation involves neither a focus on specific pre-determined outcomes, nor the intricate design and implementation of processes through which transformative change can be readily produced. The programme has instead taken a middle path, focusing on an *enabling* approach to transformative change in which both the components of urban systems and the underlying structural conditions which shape the possible room for action have come into play through an iterative programme in which visions and expectations of what transformative change will entail are continually adjusted as varied processes are undertaken to generate agency, foster experimentation and challenge existing knowledge and practice (Ziervogel 2019). The UNA programme demonstrates that fostering transformative capacity requires the generation of both individual and collective agency, establishing the conditions for experimentation and taking a 'safe to fail' approach in order to open up new possibilities for intervention, and establishing knowledge co-production processes which enable tensions to emerge that in turn reveal the structural drivers and institutional complexities underlying the urban challenges which are being addressed, opening up questions about what constitutes just and sustainable outcomes, for whom, and how these can be realised .

In short, from the UNA programme we can learn that transformative *capacity* is configured through creating people able to undertake change, the processes through which this can take place, and the openings within institutions and structural conditions through which this can be realised. This has clear

24

implications for national and global policy processes which seek to initiate transformative change. Rather than being clear from the outset, the visions, expectations, outcomes, techniques and practices through which this could be generated emerged through an iterative process that bears a strong resemblance to 'design thinking' in its intention and operation – in particular characterised by a strong willingness to 'go back to the start' and continually reflect on whether the goals and processes being adopted by the programme sufficiently resonate with local needs and to engage in an open process through which the nature of the challenges to be addressed is continually under question. This is politically challenging to do and if it is to be effective at scale will require the backing of international donors as well as a willingness by local, national and international policy makers to accept that change is not a linear process and space needs to be made for false starts and failures. Going back to the start can suggest that initial ideas or approaches were inadequate or misplaced. Yet creating a space in which it was not safe to fail but desirable, where things that were untried were celebrated as needing exploration, and where the incremental shifts accrued through urban tinkering were recognised and built upon has enabled the UNA programme to develop an approach in which transformative change is possible. Through the programme, urban nature in partner cities is now seen differently across diverse policy-makers, practitioners and communities. Nature is coming to be regarded as an asset in these cities, and while there is a long way to go, with change being neither straightforward or quick to emerge, actors are now empowered to bring their knowledge and voices to the table with new organisational cultures supporting learning across multi-actor decision-making processes. We find ourselves in agreement with Ziervogel (2019: 503) who suggests that "although large scale change is needed, it is just as important to acknowledge that incremental adjustments can also move a system towards transformation." The journey towards achieving more progressive outcomes on the ground for communities and for biodiversity still has a long way to go, but the UNA programme has enabled new pathways to be forged through which transformative change can be pursued.

References

Bazaz, A. et al. (2018), Summary for Urban Policy Makers: what the IPCC Special Report on Global Warming of 1.5 degrees means for cities, IPCC, available online: https://www.c40.org/researches/summary-for-urban-policymakers-what-the-ipcc-special-report-on-global-warming-of-1-5-c-means-for-cities

Bulkeley, H., Castan Broto, V. and Edwards, G. (2014), *An Urban Politics of Climate Change: Experimentation and the Governing of Socio-Technical Transitions*. Routledge

Burch, S., A. Shaw, A. Dale, J. Robinson. 2014. Triggering transformative change: a development path approach to climate change response in communities. Climate Policy 14(4)" 467-487.

Castan Broto, V., Trencher, G., Iwaszuk, E. and Westman, L. (2019) Transformative capacity and local action for urban sustainability *Ambio* 48:449–462

Chaffin, B. C. Ahjond S. Garmestani, Lance H. Gunderson, Melinda Harm Benson, David G. Angeler, Craig Anthony (Tony) Arnold, Barbara Cosens, Robin Kundis Craig, J.B. Ruhl, and Craig R. Allen (2016) Transformative Environmental Governance, *Annual Review of Environment and Resources* 41: 399 - 423

Chirisa, I., (2008). A population growth and rapid urbanization in Africa: Implications for sustainability.

Cote, M., and Nightingale. A. (2012). Resilience thinking meets social theory: Situating social change in socio-ecological systems (SES) research. *Progress in Human Geography* 36: 475–489

Douthwait, B., Kuby, T., van de Fliert, E. and Schulz, S. (2003) Impact pathway evaluation: an approach for achieving and attributing impact in complex systems *Agricultural Systems* 78 (2): 243-265.

Emqvist, T., Siri, J., Andersson, E., Anderson, P., Bai, X., Kishore Das, P., Gatere, T., Gonzalez, A., Goodness, J., Handel, S. N., Hermansson Török, E., Kavonic, J., Kronenberg, J., Lindgren, E., Maddox D., Maher, R., Mbow, C., McPhearson, T., Mulligan, J., Nordenson, G., Spires, M., Stenkula, U., Takeuchi, K. and Vogel, C. (2018) Urban Tinkering. *Sustainability Science*. 13:1549-1564.

Evans, J. et al. (eds) (2016) *The Experimental City*. London & New York: Routledge.

Folke, C., T. Hahn, P. Olsson, and J. Norberg. (2005) Adaptive governance of social–ecological systems, *Annual Review of Environment and Resources* 30: 441–473.

ICLEI CBC, 2020. Nacala City: Coastal Natural Asset Management plan. Cape Town, South Africa: ICLEI CBC.

ICLEI CBC, 2019a. Handbook 1: Key pillars of the UNA programme approach, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/wp-content/uploads/2019/12/WEB_ICLEI-UNA-Handbook-Series_HANDBOOK-1.pdf

ICLEI CBC. 2019b. Handbook 3: Innovative approaches to planning in an African context: Urban tinkering in Malawi, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-3/

ICLEI CBC. 2019c. Handbook 6: Involving community members in planning and implementation: Using creative tools to encourage local participation and action in sub-Saharan Africa, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-6/

ICLEI CBC., 2019d. Handbook 7: The importance of relationship building: Fostering trust through time investment and innovative interactive exercises, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-7

ICLEI CBC., 2019e. Handbook 8: Capacitating cities: Creating spaces for reflection and effective dialogue in sub-Saharan Africa, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-8/

ICLEI CBC 2019f. Handbook 9: Prioritising processes: Bridging the divide between different sectors and disciplines in sub-Saharan Africa, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-9/

ICLEI CBC 2019g. Handbook 11: Multi-level engagement: Improving national and local working relationships through dialogues in Uganda, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-11/

ICLEI CBC 2019h. Introductory Handbook, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/wp-content/uploads/2019/12/WEB_ICLEI-UNA-Handbook-Series_INTRODUCTION.pdf

ICLEI CBC 2019i. Handbook 10: Creating change through on-the-ground implementation, in *The value of urban natural assets when planning for resilient Africa cities: consideration and decision-making processes*. Cape Town, South Africa: ICLEI CBC. Available online: https://cbc.iclei.org/web_iclei-una-handbook-series_handbook-10/

ICLEI Africa 2019. Spilling the Beans, interactive game. Available online: https://cbc.iclei.org/wp-content/uploads/2019/09/1.-Innovative-Games_Spilling-the-beans_2019_Digital.pdf

IPCC (2012) In: Field CB, Barros V, Stocker TF, Qin D, Dokken DJ, Ebi KL, Mastrandrea MD, Mach KJ, Plattner G-K, Allen SK, Tignor M, Midgley PM (eds) Managing the risks of extreme events and disasters to advance climate change adaptation (SREX Report): a special report of working groups I and II of the intergovernmental panel on climate change. Cambridge Univ. Press, Cambridge

Hare, D., Forstchen, A.B., Smith, C.A. & Decker, D.J. (2018) Developing Governance Principles for Public Natural Resources, *Society & Natural Resources*, 31:3, 382-388.

Hölscher, K. et al. (2019) Tales of transforming cities: Transformative climate governance capacities in New York City, U.S. and Rotterdam, Netherlands, Journal of Environmental Management 231: 843–857.

Hölscher, K. et al. (2018), Transition versus transformation: What's the difference? Environmental Innovation and Societal Transitions 27: 1–3.

29

McCormick, K., S. Anderberg, L. Coenen, L. Neij. 2013. Advancing Sustainable Urban Transformation. Journal of Cleaner Production 50: 1-11.

Mckinsey & Company. 2021. Why investing in nature is key to climate mitigation. Available online: https://www.mckinsey.com/capabilities/sustainability/our-insights/why-investing-in-nature-is-key-to-climate-mitigation

Nevens, F., N. Frantzeskaki, L. Gorissen, D. Loorbach. 2013. Urban Transition Labs: co-creating transformative action for sustainable cities. Journal of Cleaner Production 50: 111-122.

Olujimi, J. & E., Gbenga. 2015. The Influence of the Colonial Planning Education on Urban and Regional Planning Administration in Nigeria'. *Journal of the Nigerian Institute of Town Planners. Journal of the Nigerian Institute of Town Planners* (JNITP). PP 33-43.

Patterson J, Schulz K, Vervoort J, Van Der Hel S, Sethi M, Barau A. (2017) Exploring the governance and politics of transformations towards sustainability, Environmental Innovations & Societal Transitions 24:1-16.

Pelling, M. and D. Manuel-Navarrete. 2011. From Resilience to Transformation: the Adaptive Cycle in Two Mexican Urban Centres. Ecology & Society 16(2): 11.

Revi, A., D. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B. Kiunsi, NM. Pelling, D. Roberts, W. Solecki, S.P. Gajjar, and A. Sverdiik. Towards transformative adaptation in cities: the IPCC's Fifth Assessment. Environment & Urbanization 26(1): 11-28.

Romero-Lankao, P., H. Bulkeley, M. Pelling, S. Burch, D.J. Gordon, J. Gupta, C. Johnson, et al. 2018. Urban Transformative Potential in a Changing Climate. Nature Climate Change 8: 754–61.

Samman, E. et al. (2018) SDG progress: Fragility, crisis and leaving no one behind, ODI Report, Overseas Development Institute (ODI), London.

Scoones, I., Stirling, A., Abrol, D., Atela, J., Charli-Joseph, L., Eakin, H., Ely, A., Olsson, P., Pereira, L., Priya, R. Pvan Zwanenberg, P. and Yang, L. (2020) Transformations to sustainability: combining structural, systemic and enabling approaches, *Current Opinion in Environmental Sustainability* 42: 65–75

Shapira, H., Ketchie, A. and Nehe, M. (2017) The integration of Design Thinking and Strategic Sustainable Development, *Journal of Cleaner Production* 140 (1): 277-287

Turnhout, E., T. Metze, C. Wyborn, N. Klenk, E. Louder (2020). The politics of co-production: participation, power, and transformation. Current Opinion in Environmental Sustainability 2020, 42:15–21

Werbeloff, L., Brown, R., and Loorbach, D. (2016) Pathways of system transformation: Strategic agency to support regime change, *Environmental Science & Policy* 66: 119-128

Westley, F., Olsson, P., Folke, C., Homer-Dixon, T., Vredenburg, H., Loorbach, D., Thompson, J., Nilsson, M., Lambin, E., Sendzimer, J., Banerjee, B., Galaz, V. and van der Leeuw, S. (2011). Tipping toward sustainability: Emerging pathways of transformation. Ambio 40: 762–780.

Wibeck, V., Linnér, B-O., Alves, M., Asplund, T., Bohman, A., Boyko, M. T., Feetham, P. M., Huang, Y. Nascimento, J., Rich, J., Rocha, C. Y., Vaccarino, F. and Xian, S. (2019). Stories of Transformation: A Cross-Country Focus Group Study on Sustainable Development and Societal Change *Sustainability*, 11, 2427

Wolfram, M. 2016. Conceptualizing urban transformative capacity: A framework for research and policy. *Cities* 51: 121–130.

Ziervogel, G., Cowen, A., and Ziniades, J. (2016). Moving from adaptive to transformative capacity: Building foundations for inclusive, thriving, and regenerative urban settlements. Sustainability 8 (9): 955

Ziervogel, G. 2019. Building transformative capacity for adaptation planning and implementation that works for the urban poor: Insights from South Africa. Ambio 48: 494-506