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Understanding climate adaptation and transformation challenges in African cities

David Simon [1,2] and Hayley Leck[3]

This critical assessment of climate adaptation and transformation challenges, agendas and actions across Africa draws on the principal findings and analyses of the papers in this special issue of COSUST. Situated in the context of the broader conceptual and comparative literature, we structure our analysis around three themes, namely conceptual and analytical approaches; the research environment; and challenges of implementation. African climate change research reflects diverse mixtures of local priorities and international trends, often with some time lag. The research reviewed and represented in this special issue reveals clear gaps and weaknesses in relation to gendered understandings, approaches to environmental valuation, and climate and environmental justice. Implementational challenges range from resource constraints and perceived conflicts between meeting immediate development needs and longer term climate change action to lack of policy integration and effective governance. The potential importance of socio-ecological and technological transformations remains very largely unexplored and a sea change in attitudes and attention is required if the adaptation challenges are to be met.

Addresses
[1] Royal Holloway, University of London, EGHAM, Surrey TW20 0EX, UK
[2] Mistra Urban Futures, Chalmers University, SE-412 96, Gothenburg, Sweden
[3] Grantham Research Institute on Climate Change and the Environment, Centre for Climate Change Economics and Policy, London School of Economics, London WC2 2AE, UK

Corresponding author: Simon, David (d.simon@rhul.ac.uk, david.simon@chalmers.se)

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Introduction

As noted in our Introduction to this Special Issue [1], one of the limiting features of urban research and publication to date on climate change (CC) challenges in Africa has been its fragmentary nature, being overwhelmingly unilocal, often addressing narrow topics or particular areas or communities within a single city, utilizing diverse conceptual approaches or none, and concentrated within the major publishing linguistic ghettos. In this context, the central objectives of this Special Issue have been to synthesize the current state of research, knowledge, policy and practice in relation to climate change adaptation (CCA) across the continent; to reflect critically on the strengths and weaknesses of this coverage; and to identify key gaps, priorities; challenges and opportunities. Accordingly, this concluding paper seeks to identify and develop the principal themes, gaps, commonalities, distinctions and implications for future research emerging from the *Bearing the Brunt of Environmental Change* workshop[1] and the papers subsequently produced for this Special Issue.

Whereas the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN) has undertaken a comparative and focused programme in Asian cities and CC adaptation [2–4] and UN-HABITAT's Cities and Climate Change Initiative (CCCI) [5••,6] covers cities across the global South, there has been no equivalent in Africa, thus exemplifying further the innovation underpinning this special issue. The UN-HABITAT *State of African Cities Report 2014* [7•] also provides a broader, comprehensive and up-to-date assessment, with mitigation and adaptation featuring prominently (see also Ref [8]).

Conceptually, we emphasise the potential of alternative and innovative approaches (including urban political ecology and socio-ecological systems, urban human security and livelihoods, and teleconnections/telecoupling) [9–11]. At the same time, however, we underscore the importance of empirical rigour, and appropriate policy responses across the full range of urban activities and livelihood strategies (including urban and peri-urban agriculture (UPA)), particularly for the most vulnerable social groups in the most vulnerable locations, in order to distil comparative insights and lessons. Furthermore, in policy and implementation terms, we highlight the importance of considering these against the backdrop of diverse multi-level governance contexts within which environmental

[1] This was held at Royal Holloway, University of London in April 2013 and from which this Special Issue is the major academic output. The paper by Adu-Boateng [39] was recruited subsequently to fill a gap in coverage.

or climate action is emerging in African urban areas, and which either hinder or support progress. These three elements provide the structure for this paper, which addresses them in successive sections.

Conceptual frameworks and analytical approaches

The research reported in this Special Issue is signally diverse in the conceptual or theoretical framings deployed. Not unexpectedly, the academic participants tend to have more theoretically honed perspectives, which generally inform research assessing existing situations or interventions already undertaken, with perhaps some recommendations derived from those analyses. Conversely, practitioners vary in the extent to which they assess the evolution of the current situations and implications of historical legacies, and in the degree of holistic perspective, tending to take the present more or less as a given and focusing on forward-looking policy, programmatic or project-based interventions. The most explicit example of this last approach is the architectural design project on African Water Cities [12] but which is at the same time refreshing for its originality, potential appropriateness and practical impact in terms of low-cost floating buildings made from readily available materials.

Unsurprisingly, the most widely utilized conceptual framework derives from international CC discourses and policy initiatives (e.g. [13]) focusing on mitigation, adaptation, vulnerability and resilience in various combinations. The precise modes of deployment range from rather superficial and instrumental invocations to a central feature. To some extent this also reflects particular contexts: until the recent increasingly close integration between disaster risk reduction (DRR) and CC approaches, they were often associated with distinct vocabularies, with resilience (previously recoverability) more characteristic of the former and vulnerability with the latter. However, these emphases have shifted and urban CC analysts now tend to regard vulnerability assessments as problem diagnoses — which have become very numerous — and adaptation and resilience promotion as seeking to address the problems. Since the workshop and Special Issue address adaptation, mitigation is most often mentioned contextually in relation to cities such as Durban, where both mitigation and adaptation interventions are being undertaken. Although not a central focus of Leck and Roberts' paper [14], Durban — along with Cape Town [15••] — is one of the few African cities to have adopted a holistic approach to CC that integrates mitigation, adaptation, vulnerability reduction and resilience promotion actions [16–21]. More common are fairly superficial and uncritical utilizations of the concepts that do not attempt to examine them deeply or to challenge or transcend the now outdated dichotomous treatment of mitigation and adaptation that fails to recognize or exploit the overlaps and potential synergies between them.

This point is clearly exemplified by the recent Carbon Disclosure Project (CDP) survey of 207 cities worldwide in relation to their CC actions [22]. Focusing on the synergies between city governments and business in promoting a safe business environment and creating business opportunities in mitigation and adaptation, it adopts an emissions inventory approach but does not distinguish mitigation, adaptation and resilience programme elements clearly. Its principal conclusions are that cities do recognize CC threats to business (76% of the reporting cities mentioned this), that city governments and businesses both recognize the risks posed by CC, and that local authority adaptation actions contribute to the resilience of businesses [22]. It is noteworthy, however, that only ten of the 207 reporting cities are African, five of them in South Africa. The reasons for this are not explored but may relate to aspects of the research environment referred to below and especially issues of CC-related capacity in African local authorities. In terms of business-led approaches to greenhouse gas mitigation, Silver [23] offers a critical perspective on emissions trading schemes and related forms of carbon financing, which, because still in their infancy in Africa, should avoid the overoptimistic and unrealistic, often inappropriate, assumptions made with such schemes elsewhere.

Lwasa *et al.* [24] examine the evidence for urban and peri-urban agriculture and forestry (UPAF) to address both mitigation and adaptation as well as to enhance resilience in tropical African cities. Resilience — sometimes glossed as 'ability to bounce back' — features in several of these papers but often normatively rather than being addressed substantively. The now-common juxtaposition with vulnerability is mentioned but the relationship between adaptation and resilience is not explored in depth. The terminology is used in relation to research or policy recommendations on CC mainstreaming but with only a few exceptions (e.g. [25]) in apolitical terms that fail to engage with the distributional aspects of asymmetrical (uneven) power relations and hence the winners and losers from different processes and interventions.

The papers in this collection affirm that the approach comprising ecosystem services (i.e. all the benefits which people derive from ecosystems), often linked explicitly to the conservation and propagation of green infrastructure, is becoming more widely utilized. Again, however, the depth and coherence of engagement with the underlying concepts vary but, whether in response to donor encouragement or through conviction, its use reflects attempts to attach inherent as well as more quantifiable values to elements of the natural environment and to their effective functioning in order to mitigate greenhouse gas emissions, conserve biodiversity and support adaptive