



Water, equity and resilience in Southern Africa: future directions for research and practice

Lucy Rodina¹, Lawrence A Baker², Mary Galvin³,
Jaqueline Goldin⁴, Leila M Harris^{1,9,10}, Thomani Manungufala⁵,
Muchaparara Musemwa⁶, Catherine Sutherland⁷ and
Gina Ziervogel⁸

Drawing from the proceedings of an expert workshop with academics, researchers, government and NGO participants working in diverse countries in southern Africa and beyond, this paper reviews the discourse on resilience, both conceptually and in practice. We highlight opportunities to develop and apply a more situated, equity-sensitive and context-relevant understanding of resilience, particularly in the water sector. To pursue more just and resilient water futures in highly unequal and water stressed regions, we propose that researchers and practitioners (1) place greater emphasis on the transformative potential of resilience, (2) broaden the social dimensions of resilience to account more fully for intangible and other social factors, (3) engage critically with the decision-making processes and practices of building resilience, (4) contribute to the development of indicators and guidelines for building just and resilient water futures, (5) strengthen the role of situated knowledges, (6) critically engage with scale and boundaries in complex adaptive systems, and (7) strengthen the policy–science–civil society interface.

Addresses

¹ Institute for Resources Environment and Sustainability, The University of British Columbia, 2202 Main Mall, Vancouver, BC, Canada V6T 1Z4

² Department of Bioproducts and Biosystems Engineering, University of Minnesota, USA

³ Anthropology and Development Studies, University of Johannesburg, Johannesburg, South Africa

⁴ Extra-Ordinary Associate of Anthropology and Water Sciences, Centre of UNESCO Chair in Groundwater, Faculty of Natural Sciences, University of the Western Cape, Cape Town, South Africa

⁵ Parliament of the Republic of South Africa, Portfolio Committee on Water and Sanitation, Research Unit, Cape Town 8000, South Africa

⁶ History, University of Witwatersrand, Johannesburg 2050, South Africa

⁷ School of Built Environment and Development Studies, University of KwaZulu-Natal, Durban 4041, South Africa

⁸ Department of Environmental & Geographical Science and African Climate and Development Initiative, University of Cape Town, Cape Town 7700, South Africa

⁹ Stellenbosch Institute for Advanced Studies, Stellenbosch 7600, South Africa

¹⁰ Institute for Gender, Race, Sexuality and Social Justice, University of British Columbia, 1873 East Mall, Vancouver, BC, Canada V6T 1Z1

Corresponding author: Rodina, Lucy (l.rodina@alumni.ubc.ca)

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Introduction

Today, resilience thinking is prolific across a range of research fields and global policy domains, serving as a bridge between social and environmental sciences, and between science, policy, and practice. Resilience, in its broadest sense, refers to the ability of systems or societies to cope with shocks, stresses and change, whether by persisting or by adapting and transforming [1[•]]. Early work on resilience used the term to describe, or measure, of the ability of systems to absorb change [2] — a notion that has since evolved. Today, resilience thinking is widely used as an approach to deal with complex adaptive systems dynamics and their inherent uncertainty, promoting learning to live with change as an opportunity [1[•]]. The ability to adapt and transform in the face of change is often considered a key aspect of resilience thinking [1[•]] at the conceptual level, while in practice the question of what constitutes fundamental change and how to achieve it remains a topic of research and ongoing debates [3]. Another key dimension of resilience thinking is dealing with uncertain risks associated with climate change impacts or other complex system interactions in the Anthropocene and, as such, resilience thinking is often concerned with how societies and biophysical systems can not only persist, but also thrive in the face of disturbance, both anticipated and unknown [cf. 4].

Debates about the conceptual, normative and applied aspects of resilience are ongoing, particularly around how the term has been mainstreamed in development, planning and academic arenas. Despite numerous and

valid critiques [e.g., 5,6^{••},7–10], resilience thinking has been identified as a useful heuristic to guide integrative thinking [8] and as providing a valuable intellectual space in which to embrace complexity in human–environment relations across multiple disciplines [6^{••}]. Because of these ongoing debates, the growing use of the term necessitates that we critically reflect on and constructively engage with its various applications. As such, the aim of this paper is to address key concerns related to the diverse existing and future applications of resilience thinking in water governance in southern Africa. This includes crucial focus on social justice, power, and transformation. With this in mind, we suggest new pathways towards more grounded (or situated) and transformative notions of resilience in the context of highly unequal and water-stressed regions.

We engage with the main objectives of resilience thinking as a scientific, applied and political discourse by bringing voices and lessons from various spaces in southern Africa — a water-stressed region with persistently high levels of poverty, inequality, vulnerability, and governance challenges. Southern Africa is prone to increased frequency of extreme climatic events, particularly El Niño-related droughts, exacting a heavy toll on the inhabitants and economies of the region. The water security challenges for this region involve climate change impacts, more frequent droughts, inadequate water infrastructure, rapidly growing population, and water pollution [11–13]. These water-related risks have profound implications for social justice, health, and food and livelihood security as they affect disproportionately poor and marginalized communities.

Building on a 2.5-day expert workshop¹¹ held in Stellenbosch, South Africa in August 2016, we offer insights about how to move towards an equity-sensitive approach to building water resilience, drawing from the diverse perspectives of experts on water, vulnerability and climate change adaptation, with particular focus on southern Africa. In so doing, we engage with the often highly technical, western-centric and positivist claims behind

resilience and propose a more situated and grounded approach. Together with Eakin *et al.* [14^{••}] and Cutter [15[•]], we understand resilience building primarily as a socio-political process. Achieving resilience in a meaningful way hinges on making socio-political processes transparent and legible [16]. We further argue that in managing risks, we need to move away from relying exclusively on risk assessments, to include a deeper engagement with the socio-political influences behind decision-making itself, including culture, knowledges, politics, and power dynamics [cf. 14^{••}]. In this vein, we propose that researchers and practitioners (1) place greater emphasis on the transformative potential of resilience, (2) broaden the social dimensions of resilience to account more fully for intangible and other social factors, (3) engage critically with the decision making processes and practices of building resilience, (4) contribute to the development of indicators and guidelines for building just and resilient water futures, (5) strengthen the role of situated knowledges, (6) critically engage with scale and boundaries in complex adaptive systems, and (7) strengthen the policy–science–civil society interface.

Water, resilience and equity in southern Africa

With a growing social science literature on resilience [10,17,69], and the emergence of more specific scholarship on urban resilience [18^{••}] and water resilience [19], resilience has become an influential concept in resource planning and governance. Resilience has also become a strategic agenda in the southern African region through major funders, donor agencies and foundations, including the Rockefeller Foundation's 100 Resilient Cities, the UNISDR Resilient Cities preparedness programs, various climate resilience funding schemes, and others. Embedded in complex adaptive systems thinking, the resilience discourse tends to promote diversity, flexibility, inclusion, participation, and recognition of social values as important or desirable for building resilience. However, the links between these principles and resilience outcomes remain less understood. In addition, resilience thinking promotes acceptance of, and coping with, uncertainty and change [20–22,73]. As such, resilience, we believe, holds tremendous potential to promote new forms of adaptive governance — flexible, more inclusive and open to change. However, we find there is a gap in understanding precisely how these diverse resilience objectives are linked. As we see in southern Africa and other contexts, resilience building efforts are further shaped by the interests of different donor agencies or transnational organizations, for example, the Rockefeller Foundation and others, that tend to promote expert-driven top-down approaches.

In the water sector, resilience thinking manifests in various ways — from resilience to specific water-related risks, such as droughts or floods, to resilience of socio-ecological systems to various chronic and emerging

¹¹ This paper synthesizes the work of member of the International WaTERS research consortium (www.international-waters.org), and partners, who hosted a 2.5 day expert workshop in August 2016 in Stellenbosch, South Africa, to collaborate and share research on water governance and various dimensions of resilience and vulnerability in diverse contexts across southern Africa. Participants included researchers, NGOs collaborators, and government officials, representing 7 countries (Canada, US, South Africa, Malawi, Botswana, Netherlands, India) and a range of disciplines: geography, anthropology, history, engineering, social work, environmental studies, biology, ecology and others. This paper summarizes the main themes raised at this workshop and identifies pathways for future research and practice. To identify these pathways, detailed notes from the workshop were compiled, analyzed by themes, which were then sent around to all participants for further feedback. Further information, participant list and reports available at <http://waterequity.pwias.ubc.ca/>.

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