Working towards climate-resilient cities in southern Africa through an Embedded Researcher approach

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Abstract

Transdisciplinarity is a well-documented approach to finding solutions to complex problems. The research project Future Resilience for African CiTies and Lands (FRACTAL) uses an experimental 'Embedded Researcher' (ER) approach to facilitate the co-production of climate information with researchers and city decision-makers. This paper introduces the concept of the ER; describes the model; and shares the benefits and limitations of the process.

Keywords: *Transdisciplinary, African cities, Embedded researchers, Urban decision making*

Introduction

The gap between scientific knowledge and the development and implementation of policies and actions are well described, especially with regards to so-called 'wicked problems', such as sustainability, environmental management, and climate change adaptation (Moser and Dilling, 2011; Lang et al., 2012; Swilling, 2014). According to Reyers et al. (2010), transdisciplinary approaches can bridge the gap between science and action, by not only bridging disciplines, but also through making research a more inclusive social process of resolving problems involving the participation and mutual learning of stakeholders in various sectors.

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The Future Resilience for African CiTies and Lands (FRACTAL) is a four-year project led by the Climate System Analysis Group (CSAG) at the University of Cape Town (UCT). FRACTAL aims to provide accessible, defensible and actionable climate information to decision-makers at the city-regional scale in southern Africa. This transdisciplinary project uses an experimental 'Embedded Researcher' (ER) approach to facilitate a variety of stakeholders working together to co-produce relevant knowledge needed to navigate climate resilient development pathways in five cities, namely Durban (South Africa), Lusaka (Zambia), Harare (Zimbabwe), Maputo (Mozambique), and Windhoek (Namibia).

According to Jenkins et al. (2012), an embedded researcher can increase research impact by spending an intensive period enmeshed in the culture and operations of other work communities. The embedded experience creates the opportunity to build relationships, facilitate the spread of ideas, reframe research questions, and learn the constraints and initiatives specific to a particular organisation – all of which may improve the impact of research on policy and practice, as well as shape the research agenda based on knowledge needs within the policy and practitioner communities. Embedded researchers are 'knowledge brokers and boundary spanners' (Vindrola-Padros et al., 2016).

The aim of this paper is to introduce the concept of the ER approach in FRACTAL; illustrate the operational model; comment on the expertise required, and share the benefits, and limitations that the team experienced through the process.

The approach and purpose of the ERs in FRACTAL

African cities are considered important fast-growing, partially regulated, and climate-vulnerable centers of decision making and action. In response to this, FRACTAL placed seven early career researchers in the six partner-municipalities on the project to act as ERs. Each ER is employed by a local university and is deployed to work within the local municipality. They are directly supervised/managed by two FRACTAL Principal Investigators (one at the local university and one at the local municipality), who are also team members of FRACTAL.

The objectives of the FRACTAL ERs are to facilitate and contribute to:

- Co-exploring existing knowledge and co-producing new knowledge on urban climate sensitivities and processes of building climate resilience in southern African cities between scientists and decision-makers;
- Advancing the integration of contextual climate information by creating and sustaining learning forums and mechanisms, with the long term goal of shifting the way urban development, resource management and infrastructure investment decisions are made in southern African cities;

- Strengthening urban governance networks across different sectors, within and between southern African cities, and building a culture of learning within these networks;
- Sharing lessons about adapting to a variable and changing climate across southern African cities in and beyond the FRACTAL network.

The activities of the ERs include: acting as link between university and municipal partners; mapping relevant stakeholders and knowledge-holders and building and maintaining relationships with them; investigating entry points of climate information into policy-making; organising and documenting FRACTAL Learning Labs; conducting interviews, site- and exchange visits; facilitate interactions and communication between the decision makers, practitioners, the climate scientists and other researchers; reporting FRACTAL activities to City officials, university colleagues and other partners; conducting research into decision-making processes; and documenting learning. These cannot be achieved by the ERs alone - strong support and commitment is required from all individuals, partner organisations and stakeholders involved.

Operational model

The ERs operate within a set space between the local university, local government, and the FRACTAL project lead partner (**Figure 1**). This negotiated space is governed by formal agreements between the three institutions. Within the 'embedded space' between the local university and local government, the ERs carry out their work; which involves trust- and relationship building, and facilitating co-exploration and co-production of knowledge.

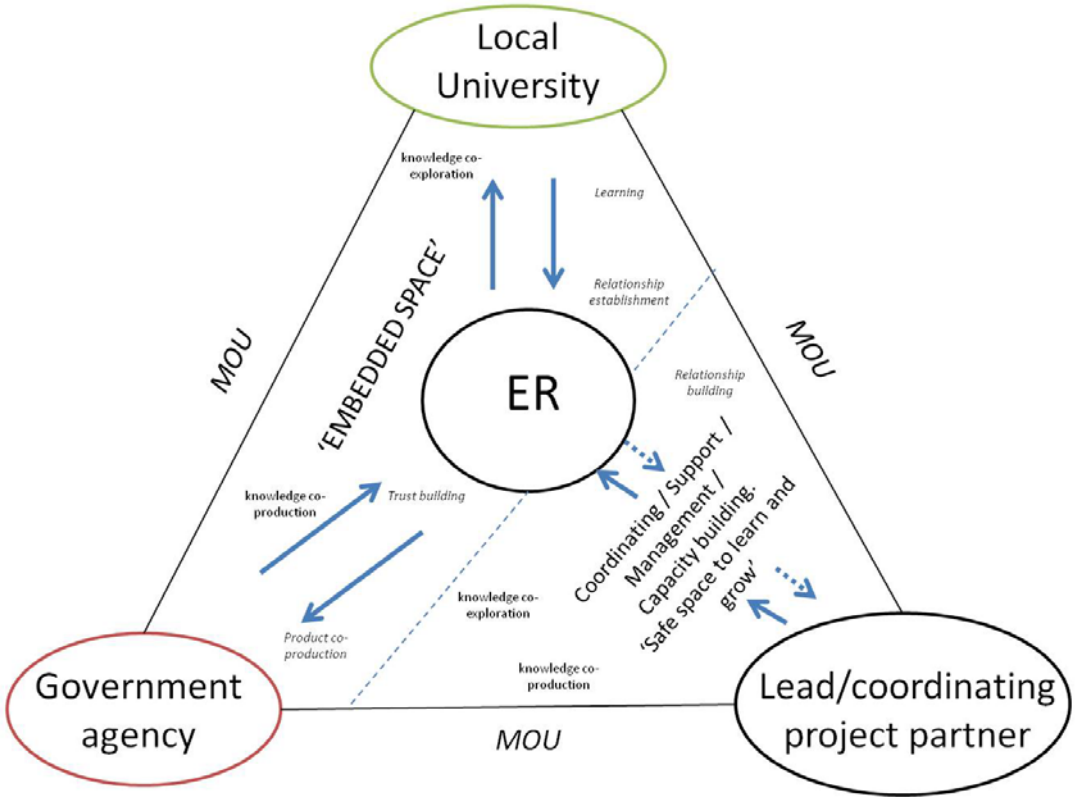

Figure 1. Operational model of the trilateral partnership creating the space within which the ERs function (Source: Authors own).

The ERs are supported in their engagements in the embedded space through being connected via the lead FRACTAL partner with a network of ERs and various project teams or clusters in other cities. This trilateral partnership is key to the success of the FRACTAL ER approach, because the two city-based Principal Investigators ensure the contextual and conceptual relevance of the ERs' work; while the coordinating partner - through an employed ER coordinator - provides structure, guidance, support and learning opportunities relating to the ER approach and the broader themes of the FRACTAL project. Although the ER approach can be implemented through a bilateral partnership, it has become clear that the trilateral approach, as well as having more than one ER to support and learn from/with each other, enhances the efficacy of the approach.

Findings

Aligning city contexts with individual expertise

Despite the established operational approach, the various cities with their unique contexts had flexibility in the defining of the specific roles, responsibilities and organisational positioning of the ERs. These were negotiated and re-negotiated on a case by case basis between the university and city government in each city, together with the FRACTAL lead partner throughout the

project. The ERs are drawn from a variety of professional and disciplinary backgrounds - their success depends as much on the willingness of the ER to work across boundaries, be proactive and open to learning, as it does on a specific list of experiential requirements and professional qualifications.

Successes and challenges

The main benefit of the approach thus far has been the availability of an interdisciplinary person who facilitates opportunities to connect a diversity of people, projects, information and knowledge across organisations, cities, sectors and scales. There are challenges, however, which concern the ERs getting embedded in two very different organisations, balancing diverse demands, adhering to different reporting requirements, coming to terms with new technical content, and dealing with continuously changing institutional capacities.

Conclusion

The FRACTAL project is still in process; however, it is evident from feedback obtained thus far that the approach is potentially a successful method to bridge the gap between scientific information and the formulation and implementation of policy. The approach has been shown to efficiently build relationships and trust between researchers and local authorities, improve receptivity towards the uptake of climate information, and build capacity among young African leaders. We argue that this is a critical component of enabling transformative climate action in cities, because it serves to bridge communities who all have a stake in dealing with climate change despite having different mandates, knowledge, values, expertise and resources.

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