SOUTH AFRICA'S CONTESTED TRANSITION TO ENERGY DEMOCRACY?

A collection of insights emerging from the national large-scale renewable energy programme

Edited by Megan Davies, Holle Wlokas, Nina Callaghan, Mark Swilling

Centre for Sustainability Transitions

CONTENTS

PART ONE

PART TWO

PART THREE

PART FOUR

PART FIVE

PART SIX

PART ONE 1

FRAMING THEORY AND CONCEPTS

1.1 Introduction

Authors: Mark Swilling, Megan Davies, Holle Wlokas

1.1.1 FROM 'ENERGY TRANSITION' TO 'ENERGY DEMOCRACY'

South Africa is faced with myriad changes to its economy, landscape and social fabric as the shift away from fossil fuels calls into question the century-long reign of coal, as the most prominent feature of the country's electricity system. These changes are imminent, incremental, drastic, existential, and urgent all at once. Driven by climate change, the changing economics of energy, and a growing awareness of the socio-ecological externalities of fossil fuels, countries across the world, are tasked by international policy agreements to decarbonise and advance low-carbon development pathways. To this end, renewable energy was formally introduced into South Africa's energy policy landscape in 2011, under the banner of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). Since then, the last decade has allowed the country to catch a glimpse of what the future energy landscape might entail, where renewable energy infrastructures form the basis of our electricity system and power a low-carbon economic development trajectory that meets the countries triple challenge of poverty, inequality and unemployment. In this collection of essays, we take a closer look at the lessons and insights emerging from the last decade, with the hope that this reflection allows us to shape the direction of South Africa's inevitable energy transition.

The South African transition from a coal-based economy to one powered by renewable energy (RE) is well underway, albeit highly contested. Utility-scale solar and wind farms are mushrooming around remote towns in the Northern Cape, Western Cape and Eastern Cape. Place names like Poffadder, Upington, De Aar, Hopefield, Loeriesfontein, Cookhouse, Humansdorp, Caledon, Kathu, Kakamas, Sutherland and Alice need no longer be associated with images of dusty rural backwaters with little hope of providing their respective citizens with viable livelihoods. On the contrary, these towns and surrounding communities are now the sites of South Africa's major renewable energy projects.

Of course, some of the local towns have historically benefitted from 'economic anchors', such as the University of Fort Hare in Alice, iron ore mining in Kathu, and the astronomical observatory in Sutherland. However, none have hitherto experienced the kind of sustained investment that has accompanied the commencement of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in 2011.

This edited collection of essays by a diverse group of South Africans, aims to critically engage and discuss the REIPPPP, with a view to informing policy and practice in the governance of South Africa's changing electricity system. The collection is primarily an output of the CST Energy team, a group of researchers based at the Centre for Sustainability Transitions at Stellenbosch University. In one way or another, all the contributors are connected to research collaborations linked to the CST. Many of the authors are students that have graduated from the MPhil in Sustainable Development programme, during which time they formed part of the CST Energy team. Contributions were written during 2019 and 2020, and the collection assembled during the course of 2021. Even in this time, the energy sector has changed rapidly and at the time of publication, the latest round of the REIPPPP (bid window five) has just been announced by the Minster of Mineral Resources and Energy. Nonetheless, while the procurement programme may be evolving, and the electricity sector faces continual pressures to transform, the lessons from the research presented in the collection have considerable value for the way in which policies and regulatory changes to expand the reach and penetration of renewable energy are designed and implemented.

The REIPPPP provided the enabling framework for mobilising the direct and indirect investments that kickstarted the South African energy transition, that is, the shift away from the dominance of fossil fuels towards the integration of renewable energy (RE) into the electricity system. South Africa faced an electricity supply-side crisis in the late 2000s and was under pressure to respond to global climate change commitments. In light of this, the South African government initiated a process to design a policy instrument for the procurement of utility-scale RE, which culminated in the launch of the REIPPPP in 2011. The design of the REIPPPP took place within the regulatory framework governed by the Department of Energy (DoE) (which later became the Department of Mineral Resources and Energy (DMRE) in 2019), in accordance with the Integrated Resource Plan (IRP) 2011.

The resulting policy instrument and the 'rules of the game' it stipulated were configured in response to the electricity sector's challenges at the time, and in the prevailing context of established and stable policy and regulatory frameworks. Additionally, the programme was conceptualised as the country's flagship emissions reductions strategy following the South African Renewables Initiative which was touted at the 17th Conference of Parties (COP 17) hosted in Durban, by the South African government (Rennkamp, 2019). The Independent Power Producer (IPP) Office was set up as something of a 'custodian' of the REIPPPP, mandated to mobilise investment to finance the provision of electricity from RE sources and to oversee the implementation of this carefully designed set of policy rules.

This background is helpful in understanding why and how the REIPPPP was designed and implemented. However, a decade later, it is important to interrogate whether the programme remains fit for purpose to address the ever-worsening crisis faced by South Africa's electricity system.

The details of the REIPPPP's design are significant in terms of the place-based investments they have triggered. In addition to the South African Broad Based Black Economic Empowerment (BBBEE) rules, every wind and solar farm must spend a proportion of turnover within a 50km radius, or the district municipal boundary, on socio-economic development (SED) and enterprise development (EnD) and at least 2.5% of the project must be locally- and black-owned. The projects also bring with them job opportunities during the construction phases.

In total, the combined SED and EnD expenditures are estimated to be ZAR30.3 billion over the period 2013 to 2033 (IPP Office, 2019). 92 such projects have been approved, and by 2019, 62 were complete and operational. By March 2018, total investment was ZAR209 billion, of which only 20% (ZAR41.8 billion) was from foreign direct investment (FDI). According to the rules of the REIPPPP, 40% of the shares of all independent power producers (IPPs) must be owned by broad-based black economic empowerment (B-BBEE) entities, thus significantly increasing black ownership of South Africa's energy assets. Fifty-two percent of the shares in IPPs were owned by South Africans in 2018, of whom 33% are black South Africans (including the 9% owned by local communities, usually via community trusts). Black South Africans, therefore, have a larger stake than white South Africans, but are overall in a minority relative to total shareholding (33% of the total). South Africans provided 91.7% of the total debt and 80% of equity (IPP Office, 2019).

In this edited collection of essays, researchers and practitioners, occupying varying positionalities in the energy sector, reflect on their experiences in grappling with the REIPPPP's implementation in the communities in which IPPs have rooted themselves. The significance of these insights must be located within an understanding of South Africa's unfolding energy transition and in clear view of the electricity outlook spelled out by the Integrated Resource Plan (IRP) 2019.

1.1.2 SOUTH AFRICA'S ELECTRICITY OUTLOOK

The publication of an updated electricity roadmap for South Africa, namely the Integrated Resource Plan (IRP) of 2019 marked a decisive turning point because, for the first time, the South African government has linked the decommissioning of the country's fleet of coal-fired power stations to massive investments in renewable energy over the next two decades. The significance of South Africa's approved IRP 2019 must not be underestimated, as it determines the policy framework within which the transformation of the total installed capacity will take place. In essence, it is the key policy framework that will drive the energy transition.

The IRP maps out various future scenarios, one of which, the 'least cost' option, envisages meeting all future energy needs using a combination of renewables, plus gas. This is not, however, the preferred option, from the perspective of a least-cost electricity system. The preferred and selected option provides for 1 500MW of coal-fired energy in addition to approximately 20 000MW of wind and solar power. Yet, in light of the withdrawal of most of the largest financial institutions from the coal sector, it is safe to assume that funding for new coal-fired power stations in South Africa will not, in fact, materialise. We are also assuming that, as hinted in the IRP 2019, the failure to fund new coal-fired power stations will result in restrictions being lifted on further investment in renewables beyond the 20 000MW provided for in the preferred and selected scenario. Between these two assertions, the place of renewable energy in South Africa's future electricity sector, is sure to rise in prominence. Thus, it is a timely opportunity to consider the lessons and insights from a decade of implementing utility-scale renewable energy projects made possible by the country's flagship emissions-reductions programme.

As the future of coal remains integral to South Africa's electricity sector, the management of coal mine closures, and the socio-economic implications thereof is a subject of considerable research (Burton, Caetano & McCall, 2018). The IRP 2019 stipulates a clear decommissioning timeframe and a reduced place for coal in the future energy mix. However, taking into account the age of the fleet of current power stations, most future projections estimate that all power stations (excepting Medupi & Kusile) will have to be decommissioned by 2041 (Steyn, Burton & Steenkamp, 2017).

The significance of the IRP 2019 cannot be underestimated; it is the key policy framework that will drive the energy transition.

Since the first IRP in 2010, there has been little doubt that RE will remain a permanent part of the energy mix in South Africa. However, between 2014 and 2019, there has been policy uncertainty about the extent of renewables in that mix (Wright et al., 2016, Steyn et al., 2017). Thanks largely to the drastic drop in the price of renewables (rather than to a commitment to responding to climate change), the IRP 2019 brought this period of policy uncertainty to an end by providing for a significant – albeit capped – role for renewable technologies in the country's energy future. In total, an allocation of 20 000MW for RE sets the stage for a rapid expansion of the sector.

South Africa is the most coal-dependent industrial economy in the world (Parr, Swilling & Henry, 2018). The mineral-energy complex has always been at the heart of South Africa's modern economy (Fine & Rustumjee, 1996). However, as demonstrated in some of the statistics above, and elsewhere throughout this collection, the energy world is changing rapidly. South Africa has the unique opportunity to become the world's first developing country to implement an ambitious just transition to a sustainable decarbonised economy over the next 20 years. This is because South Africa has three unique characteristics:

1. South Africa has an old fleet of coal-fired power stations that must be decommissioned over the next 20 years (following the logic rather than the letter of the 2019 IRP).
2. South Africa has exceptional solar radiation and wind resources spread out over a vast geographical territory.
3. South Africa has one of the fastest growing renewable energy sectors in the world, complete with a mature regulatory framework and domestic financial support system (involving both development finance institutions (DFIs) and private banks).

South Africa also has severe socio-economic and environmental challenges. It is well known that South Africa is the most unequal society in the world. The so-called 'state capture' years (2008 to 2017), during the presidency of Jacob Zuma, brought to an end a sustained period of economic growth since the 1960s that resulted in the creation of over two million new jobs (Bhorat et al., 2017). The primary symptom of the 'state capture years' (with deeper roots in the pre- and post-1994 democratic transition) was the hollowing out of the state-owned enterprises (SOEs) (Bhorat et al., 2017). Economic growth rates since the state capture years have remained low, due in large part to the financial crisis of the SOEs and in particular of Eskom, South Africa's power utility. It is also a well-known fact that South Africa is one of the most carbon-intensive economies in the world, contributing disproportionately high amounts of carbon relative to the size of its population and economy (Parr et al., 2018). South Africa's Nationally Determined Contributions (NDC) commitment as per the Paris Agreement does, however, commit South Africa to decarbonisation. We maintain that the energy transition provides the best possible opportunity for addressing many of these challenges and argue that the energy democracy perspective ensures that this energy transition will amount to more than the decarbonisation of the South African economy.

The energy transition could trigger the largest industrialisation programme since 1994, stimulate economic growth by lowering energy costs and catalysing total investment, and mitigate the job losses caused by the inevitable closure of the coal-fired power stations. A well-managed energy transition could shift South Africa from being a laggard in the global energy transition, to one of the readiest coal-based developing nations. This process of coupled 'decarbonisation plus reduced inequalities' would amount to a *just* transition to energy democracy.

1.1.3 PROBLEMATISING THE REIPPPP

There are two diametrically opposed interpretations of the REIPPPP. The first belongs to those who regard the success of the REIPPPP as confirmation that private-sector delivery of energy is more efficient and effective than public-sector delivery. According to this view, the REIPPPP is the appropriate framework for managing the energy transition. The second interpretation regards the REIPPPP as a framework that has allowed profit-seeking investors into the energy delivery sector in a way that compromises the nature of energy as a public good. According to this view, the REIPPPP must be scrapped and replaced with a framework that empowers Eskom, municipalities and communities to become the primary delivery mechanisms for the energy transition.

In our view, both of these interpretations of the REIPPPP have merit. The lessons from the implementation of the REIPPPP suggest that, going forward, we need a policy and regulatory framework that enables all three delivery modes: private sector (in line with the current design of the REIPPPP), public utility and community-based. These delivery modes need not be mutually exclusive. For example, the public-utility mode can work in combination with the community-based mode. Similarly, there is nothing stopping a private sector-led delivery vehicle partnering with a municipality as a major shareholder. Yet the REIPPPP in its current form only provides for private-sector delivery. Indeed, there are provisions in the REIPPPP that explicitly prohibit a range of public-sector institutions from preparing bids for RE contracts.

Whereas the goal of an energy transition is to decarbonise the South African economy to align with global trends, the goal of energy democracy goes further: a just transition to a decarbonised economy that is more inclusive, socially just and environmentally sustainable. Advocates of energy democracy take seriously the urgent global requirement to accelerate the energy transition, but do not believe the shift will be possible if it is driven by for-profit investors operating under traditional market conditions. Entrusting the energy transition to the market – and the price wars, hyper-financialisation and mergers and acquisitions this would inevitably involve – would create a few gigantic renewable energy companies, with little benefit for anyone else. Mirroring the dynamic that transformed the internet into a market dominated by a few global corporate behemoths, the outcome of entrusting the energy transition solely to private companies would not be an inclusive just transition.

Whereas the goal of an energy transition is to decarbonise to align with global trends, the goal of energy democracy goes further: a just transition to a more inclusive, socially just and environmentally sustainable society.

1.1.4 KEY ARGUMENT IN THIS COLLECTION

In light of this context, the argument presented with this collection of essays is detailed below.

- **The first part of our core argument is this:** while the REIPPPP has enabled the initial investments in RE, it was not designed as an enabling framework for the much more ambitious energy transition envisaged in the IRP 2019 (or what we anticipate will follow in subsequent updates of the IRP). Indeed, it is our view that relying on the REIPPPP to deliver all future renewable energy infrastructures will ultimately obstruct the energy transition. The main reason for this claim is that the REIPPPP enables private companies to be the only entities authorised to invest in and generate utility-scale RE. It is our view that this is far too limited. That said, we think there is much to be learnt from the implementation of the REIPPPP during the period 2011 to 2020. Our aim in this collection of essays, then, is to document lessons from the implementation of the REIPPPP, with an eye on the future trajectories and potentials of the just energy transition. Indeed, by providing for investment in privately-owned renewable energy infrastructures, the REIPPPP in its current form may have a role to play going forward. However, either via modifications of the REIPPPP or via separate frameworks, it will be essential to also make provision for the delivery of renewables via public utilities at national and local level, and via community-owned and/or social enterprise vehicles. All three – private, public and community – have a role to play in ensuring the effective implementation of the energy transition over the next two to three decades.

- **The second part of our core argument is this:** the energy transition is a necessary, but not a sufficient, condition for realising what we refer to as 'energy democracy'. The energy transition is primarily about decarbonising the South African economy using the cheapest available energy technologies in order to revive economic growth and respond to climate change. As discussed below, the end result will be a national economy that is aligned with the direction of the global economy. For many, this is a noble goal in and of itself. In our view, though, it is not ambitious enough. There is a greater opportunity here for radical and beneficial change, contained in the nature of renewable energy infrastructure. In other words, following the logic of the energy democracy literature (Burke & Stephens, 2018), the decentralised and distributed nature of renewable energy infrastructures provides the basis for fundamentally re-thinking the social, political and economic potential and implications of renewable energy for society. We shall elaborate on this exciting prospect further below, and elsewhere throughout this collection.

1.1.5. ENERGY DEMOCRACY IN BROAD STROKES

The empirical reality framing our analysis is that the global transition to renewable energy is already underway. This is demonstrated by extensive public and private investments in RE, which hit USD 272.9 billion in 2018 and USD 282.2 billion in 2019, far outstripping investments in new fossil fuel generation (Frankfurt School-UNEP Centre/BNEF, 2020). In fact, the 2018 capacity investment in RE was triple that in new fossil fuel generation. According to REN21 (2019), RE had another record-breaking year in 2019, as installed power capacity grew more than 200 gigawatts (GW) – its largest increase ever (REN21, 2020). Investment in 2018 in RE power technologies accounted for 65% of all new generating capacity (excluding large hydropower) (REN21, 2019). In 2019 these figures rose with nearly 78% of the generating capacity that was added globally is accounted for by wind, solar, biomass, waste, geothermal and small hydro (Frankfurt School-UNEP Centre/BNEF, 2020). Extensive investment has corresponded with precipitous price reductions, in particular, for solar photovoltaic (solar PV) and wind energy (Frankfurt School-UNEP Centre/BNEF, 2020).

It is now clear that the rapid growth of RE infrastructures across all world regions has inspired the imaginaries starting to emerge from the energy democracy movement. What unites the energy democracy movement is the vision of a decentralised and distributed RE system and mode of governance. This is counterposed to a centralised RE, a vision which is propagated by energy corporates (Strachan, Cowell, Ellis, Sherry-Brennan and Toke, 2015), many energy utilities, large-scale investors, development finance institutions (DFIs), policy elites and the technical professions building RE infrastructures around the world.

Conceptually, we proceed from a strategic approach best described as 'energy democracy'. Energy democracy is essentially a developmental perspective on the energy transition, but with a strong emphasis on place-based institution-building. To achieve this, a just transition is required that can only be achieved if the state sets 'rules of the game' that provide for all three delivery modes (private, public and community-based) within a framework that strongly favours local economies.

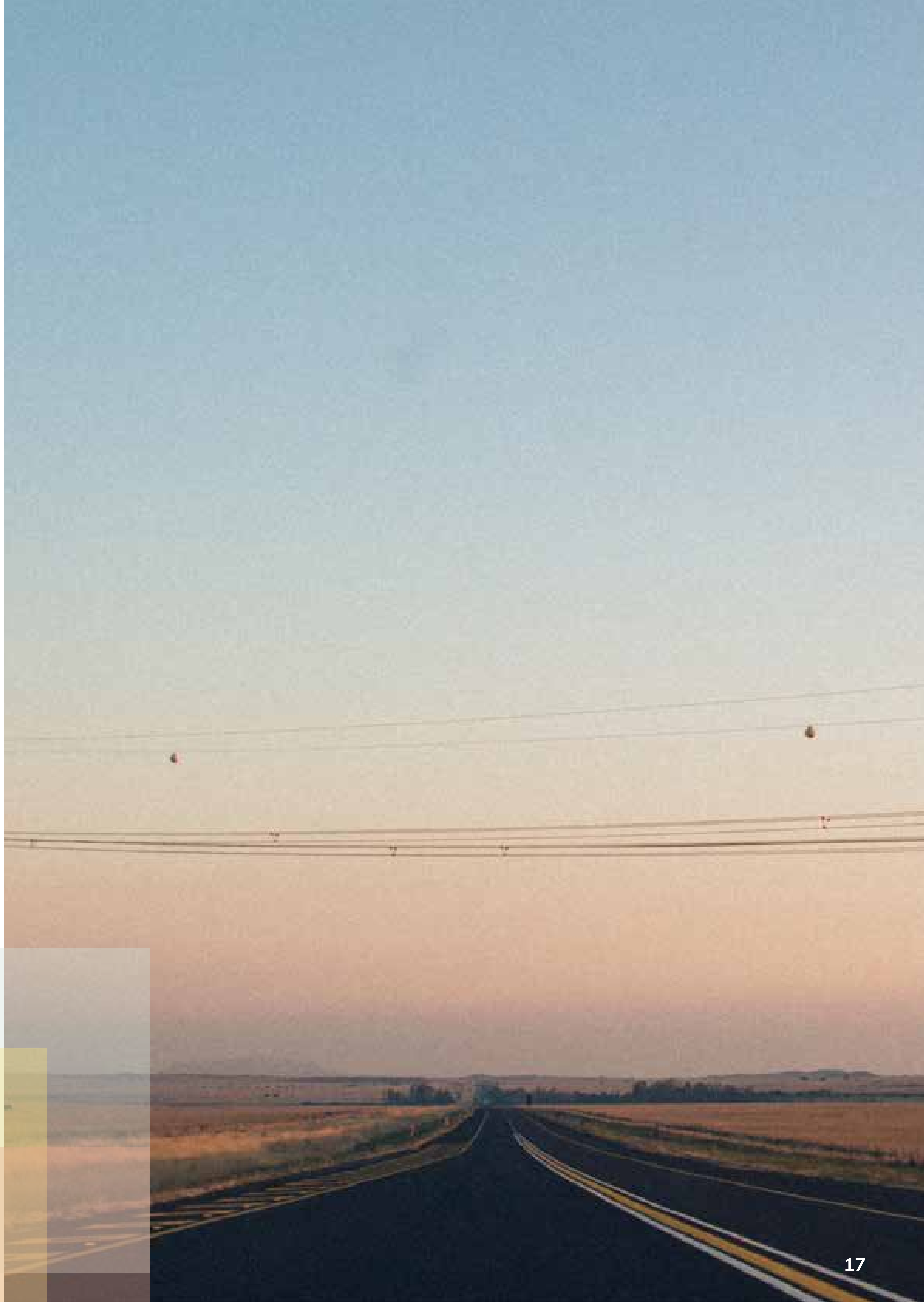
The energy democracy literature engages with the role of civil society, community organisations, labour unions, and grassroots social movements, and demonstrates that these diverse constellations of actors are vital in shaping transition processes (Walker & Devine-Wright, 2008; Hargreaves, Hielscher, Seyfang & Smith, 2013; Wirth, 2014; Hicks & Ison, 2018; Creamer, Taylor, Veelen, Walker & Devine-Wright, 2019). This has led to recent investigations into the democratic possibilities of RE infrastructures and the increasing diversity of stakeholder participation in contesting their formation and directionality (Becker & Naumann, 2017; Burke & Stephens, 2017; Hess, 2018).

As a movement and concept, energy democracy foregrounds the divergent materiality of RE infrastructures in our efforts to cultivate generative and sustainable imaginaries of the future. Here, the divergent materiality of RE infrastructures refers specifically to the perceptible, material characteristics of the array of socio-technical RE configurations that exist in space, across diverse physical locations. Pointing out the opportunities opened up by the shifting spatiality of RE infrastructures, energy democracy advocates claim that dispersed and decentralised infrastructures might also enhance transformative and democratic outcomes in the energy transition.

While being supportive of 'community ownership' of RE infrastructures (especially important in the early stages of pushback against the centralised corporate system), the energy democracy movement realises that, in order to get to scale with the necessary speed demanded by climate change, public utilities of one kind or another will have to play a major role in creating a new, de-commodified, RE infrastructure which supports the proliferation of locally-controlled RE generators. These locally-controlled RE generators can take the form of municipal entities, or non-state collective structures like cooperatives (predominant in Denmark and Germany) and/or social enterprises (Strachan et al., 2015).

While the energy democracy literature embraces a wide range of emergent forms that the decentralised approach can take, it is important to point out that not all actors and analysts use the label 'energy democracy' to self-identify their practices. These emergent forms include re-municipalisation (Becker, Beveridge & Naumann, 2015; Moss, Becker & Naumann, 2015; Becker & Naumann, 2017; Routledge, Cumbers and Derickson, 2018), cooperatives (Bolinger, 2005; Nolden, 2013; Yildiz, 2014; Bauwens, Gotchev & Holstenkamp, 2016; Kalkbrenner & Roosen, 2016; Van Der Schoor, Van Lente, Scholtens &

Peine, 2016; Debor, 2018; Mey & Diesendorf, 2018), community energy (Seyfang, Park & Smith, 2013; Strachan, Cowell, Ellis, Sherry-Brennan & Toke, 2015; Magnani & Osti, 2016; MacArthur & Matthewman, 2018; Madriz-Vargas, Bruce & Watt, 2018) and partnerships of various kinds (Bolinger, 2005; Davies, Swilling & Wlokas, 2017; Wlokas, Westoby & Soal, 2017). **Table 1** below contrasts the vision of advocates of energy democracy with 'others'; in other words, the decentralised alternative to the current widespread centralised approach.



	'OTHERS'	ENERGY DEMOCRACY
Topic	Centralised model	Decentralised model
Analysis of the crisis	The climate crisis is separate from the economic crisis. This implies that the climate crisis can be resolved without addressing the economic crisis, and vice versa.	The economic and climate crises are inextricably linked – an integrated crisis reflecting the collision of globalised capitalism with the Earth's ecological limits.
Solution to the crisis	The solution to the climate crisis is to replace fossil fuel energy with renewable energy in order to transition to a decarbonised capitalism. The solution to the economic crisis is seen as a separate matter.	Replace the globalised capitalist system and its inherent growth dynamic with sustainable economic development based on renewable energy to meet the needs of human beings, rather than the needs of capital accumulation.
Structural aim	Decarbonise the current economic system without fundamentally changing it.	Transition to a new, decarbonised, ecologically sound, life-sustaining economic system that can serve the needs of the world's peoples.
Programmatic approach	Reduce greenhouse gas emissions, mainly through market mechanisms and new technology, but within the current structure of corporate economic and political power.	Create an alternative, equitable social and economic order based on democratic principles and an energy platform that seeks to replace the corporate energy establishment with alternative institutions.
Socio-economic change agents	Those who have benefited most from the current globalised capitalist system: corporations and supporting states.	Those most impacted by globalised capitalism: workers, low-income communities, and communities of colour.
View of energy	Energy is a commodity, the basic enabler of capital accumulation and an expanding growth economy, all of which increase the contradictions of the existing economic and political system.	Energy is a resource, a basic enabler of economic life – to be democratised and harnessed to meet human needs and transition to an ecologically sustainable economic future.

TABLE **ONE** *Two strategic frameworks for advancing RE futures (Source: Burke and Stephens, 2018:84)*

The specific nature of the material configurations of RE infrastructures helps explain the emergence of the energy democracy movement. The three most obvious features are their modular nature (from 1KW to 30MW), their geographical dispersal across a large number of locales, and how rapidly they can be installed (Burke & Stephens, 2018: 83). Together, this means that specific citizens/groups can, by drawing on the unique relational character and cultural capabilities of their context (for example, a history of cooperatives in Denmark and Germany), activate installations ranging from a small solar home system, to multi-million dollar investments in utility-scale renewables.

Having broadly explored the energy transitions literature and the energy democracy movement, we aim to clarify these various concepts, which are integral to the argument put forward in this collection.

- **Energy democracy** is a developmental approach to the energy transition. At its core, the concept of energy democracy concerns the transformative potential of moving away from a reliance on fossil fuels, towards a multiplicity of socio-technical configurations of renewable energy.

- The **energy transition** refers to the move from a global economy based on fossil fuel to one based on renewable energy. Achieving decarbonisation also entails providing affordable, renewable energy. As such, an energy transition cannot just be an increase in RE, but also the strategic dismantling of the fossil fuel industry.

- A **developmental perspective** on the energy transition is what distinguishes energy democracy from the narrower goals of decarbonisation. Development is understood as the self-defined social process that advances social-ecological wellbeing, while creating the structural conditions for the process of development itself (Castells & Himanen, 2014). Another dimension of development is about facilitating resourcefulness (Westoby & Kaplan, 2013) in the form of individual and collective capabilities (Evans, 2002).

- We conceptualise energy democracy as a strategic and normative orientation towards a desirable future and a transformed world. In this way, we approach energy democracy as a developmental approach to the energy transition that emphasises the dimensions of **relatedness, embeddedness-in-place and resourcefulness**.
  - Relatedness refers to the complex interactions that constitute social-ecological systems
  - Embeddedness-in-place refers to the connection to context and location
  - Resourcefulness refers to the development and cultivation of individual and collective capabilities

- In order to realise a transformed world characterised by relatedness, embeddedness-in-place and resourcefulness, just transition processes need to be activated and animated.

Just transition process are framed as intensely political process of socio-technical reconfiguration that has the potential to shape the allocation of power, distribution of resources, and structure of the political economy.

- We view **procurement design** as a key mechanism through which energy democracy can be advanced, and just transitions can be negotiated.

1.1.6 WHAT FOLLOWS IN THE BOOK

We have assembled this collection of essays across five sections. The intention with this publication is to present a series of insights from practitioners and researchers about the role of renewable energy in South Africa's ambitions to achieve decarbonisation and development. The reader is invited to meander through these different offerings, dipping into each of these sections depending on their interest and positionality in the energy sector.

Part One: Framing theory and concepts
As well as the introduction, **Part One** is intended as a framing of the theories and concepts employed in this collection of essays. In Chapter 1.2., *Holle Wlokas* reflects on a decade of academic research and the sustained inquiry into the developmental potential of the REIPPPP. This chapter demonstrates the importance of such sustained academic support for the growing sector, as an important input into its growth and evolution.

Part Two: Explorations of current policy and practice
In **Part Two** of the collection, we present a number of essays that explore dynamics of current policy and practice in South Africa's energy transition. Each of these make use of different conceptual vantage points, take a national level perspective, and explore distinct elements of the REIPPPP.

The starting point for this section is *Chapter 2.1. A Guidebook to the REIPPPP*, which is an offering from *Megan Davies and Holle Wlokas* that provides the basis for understanding the utility-scale procurement programme explored through the rest of this collection. The chapter reflects on the place of energy in South Africa's political economy, thus reinforcing this critical investigation of the nature of the country's unfolding energy transition, and spells out various phases in the emergence of the utility-scale procurement programme. This chapter is helpful in setting in place an understanding of the various dimensions of the REIPPPP's design and establishes a high-level understanding of exactly how this procurement programme works. It also provides the rationale for the remainder of the essays in Part Two with their various vantage points intended to make sense of the socio-economic and developmental implications of the design and implementation of the REIPPPP. In the second chapter in Part Two of the collection, *Chapter 2.2. Towards a social license to operate through benefit-sharing based upon good development practices*, *Holle Wlokas* and *James Simpson* further consider the role of the private sector in the energy transition, through the notion of a social license to operate. This is followed by *Holle Wlokas'* exploration of the strategies of economic development practitioners to deliver community benefits in the REIPPPP. In *Chapter 2.3. Institutional practices in community benefit delivery in the REIPPPP*, particular focus is given to the 'institutional work' that diverse actors undertake to create, maintain and disrupt institutions in the course of developing project proposals and delivering the associated community benefits. *Fezeka Stuurman's* exploration in *Chapter 2.4. The participation of black woman-owned businesses in the REIPPPP*, investigates the extent of the exclusion of black woman-owned businesses in the REIPPPP and explores possible strategies to improve these levels of participation. Part Two is concluded with *Chapter 2.5. Socio-economic impacts of renewable energy deployment on marginalised communities in South Africa*, which is a mixed methods analysis by *Anthony Dane* and *Mbali Mbaso* that investigates the co-benefits of decarbonising the power sector.

Each of the chapters in Part Two employ different conceptual orientations (from co-benefits, institutional work, social performance and intersectionality amongst others) to make sense of national-level dynamics of the REIPPPP. In Part Three we invite readers to consider insights and lessons from a series of place-based case studies in the REIPPPP. Each of these locate the national-level dynamics explored in Part Two within specific places where the implementation of the REIPPPP is experienced by local communities

Kyle Swartz begins with reflections from the Western Cape in *Chapter 3.1. Empowering local communities through utility-scale renewable energy: A case study of Hopefield Wind Farm*. *Megan Davies* follows with another case study from the Northern Cape in *Chapter 3.2. Experimenting with regional collaborative governance: the ZF Mgcawu District Development Coordinating Forum*. Finally, *Lochner Marias* and *Peter Westoby* present insights from a local municipality in the Northern Cape, in *Chapter 3.3. A Corolla or a Porsche?* The case of renewables in local economic development in De Aar. The case studies in Part Three shed some light on the place-based developmental implications of the REIPPPP and what the particular design of the procurement programme has meant for diverse actors implicated in bringing the programme to life.

In Part Four we begin to consider insights for future policy and practice, presenting readers with tentative ideas about the ways in which renewable energy might be imagined, governed

and implemented in ways that advance decarbonisation and development priorities.
Part Four begins with a reflection by Megan Davies on the multiplicity of ways that the just transition is interpreted in South Africa, in *Chapter 4.1.Towards just transitions? Emerging insights from the REIPPPP.*

Michelle Cruywagen, Megan Davies and Mark Swilling, in *Chapter 4.2. Jobs and the just transition*, consider a hotly contested dimension of South Africa's changing energy landscape. In this chapter, they present an application of a quantitative model that assists in making sense of the job losses implied by the decommissioning of coal-fired power stations. A closer interrogation of the employment dimensions of the energy transition will be critical as the country navigates the tensions of the shifting energy landscape and wider political economy.

Letsiwe Dlamini then considers one unique aspect of the REIPPPP's design, namely the requirement for community ownership. *Chapter 4.3. Exploring alternative funding sources for community equity ownership in renewable energy projects* problematises the current approach to enabling community ownership with a view to considering how this laudable commitment might be reconfigured in future procurement programmes. in *Chapter 4.4. At the CORE of the (democratic)(energy) transitions: A Township-based renewable energy project*, Janet Cherry reflects on the possibilitites and challenges for community-based renewable energy in the Kwazakhele Transition Township. This chapter is followed by a reflection from Megan Davies about the prospects of remunicipalisation in support of an energy democracy agenda. Like the preceding chapter of jobs, *Chapter 4.5. Realising energy democracy through re-municipalisation in South Africa* emphasises the significance of municipalities as an important dimension in the negotiation of the unfolding energy transition. *Chapter 4.6. Building relational capacity for the energy transition: Lessons from REIPPPP experiments*, reflects on the strategies to more meaningfully support the practitioners involved in operationalising the REIPPPP. Written by Holle Wlokas and Tasneem Jhetam, this chapter introduces the concept of 'social performance' as a way of understanding how corporates grapple with their mission and place in society.

Chapter 4.7. Industry associations and South Africa's energy offers Brenda Martin's reflections on the role of renewable energy industry bodies in responding to this phase of national contestation about the future of the renewable energy programme, and in supporting the energy transitions more broadly. Building on this, Fumani Mthembi follows in *Chapter 4.8. It is the grass that suffers: Knowledge injustices in the energy transition*, with a strong call for critical reflection about the REIPPPP's contribution towards the wider project of structural transformation in South Africa. Concluding part 4 this chapter emphasises the extent to which the project of decarbonising the national electricity system is indeed about a much wider project of social, political and economic change.

This chapter also sheds light on a critical phase of impasse between 2015 and 2019, when the REIPPPP was effectively stalled.

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The final section of the book, Part Five, looks beyond utility-scale renewable energy, to consider novel ideas and practices to support an energy transition that meets South Africa's development and decarbonisation agendas. In *Chapter 5.1. Blockchain: an enabling technology for a transition to a decentralised and decarbonised energy system in South Africa*, Andrew Murray asks whether niche blockchain technologies might offer new ways to organise and manage the electricity system. Sharné Bloem writes about a novel mini-grid in *Chapter 5.2. Experimenting with mini-grids at the neighbourhood level: a case study of Lynedoch Ecovillage* Also based in the Stellenbosch region, Damien Conway in *Chapter 5.3. Re-imagining*

progressive realisation of service-delivery rights: the iShack Project, presents the pioneering practices of this novel social enterprise in an informal settlement in Stellenbosch. Sharné Bloem presents lessons from the application of renewable energy technologies to the building sector in *Chapter 5.4. The shift to decarbonised energy sources in buildings: Promising insights from Solar Decathlon Africa*. And finally, in Chapter 5.5. Phumeza Mgxashe (deceased February 2021) reflects on the role of actors beyond the private sector in advancing the energy transition, in *Chapter 4.7. Blowing wind, scorching sun and energising marginalised communities: the role of intermediaries in empowering bottom-up socio-economic development.*

Together, the offerings in Part Five illuminate a vibrant set of emerging niche innovations that could more strongly be considered as South Africa's energy transition unfolds.

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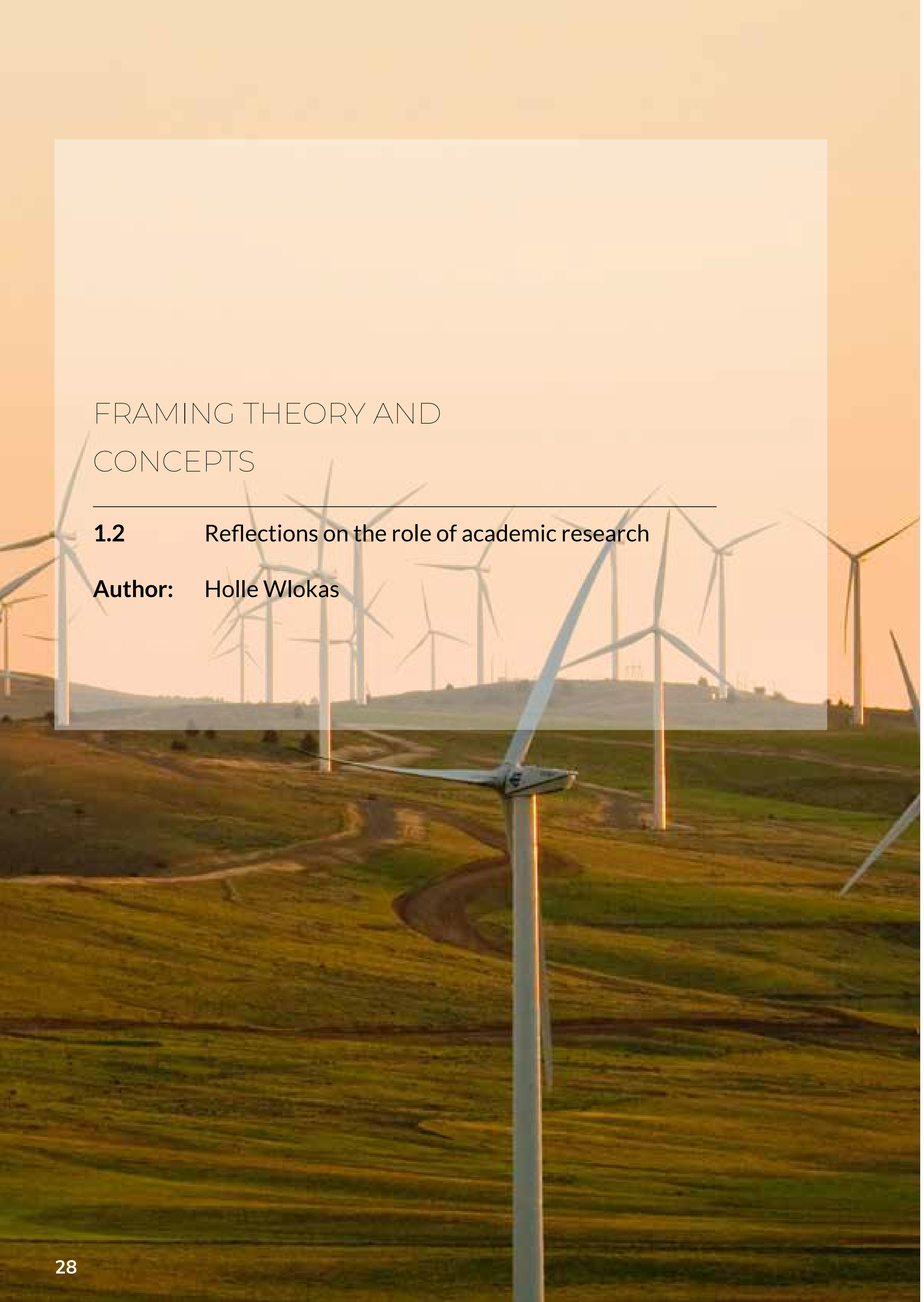

FRAMING THEORY AND CONCEPTS

1.2 Reflections on the role of academic research

Author: Holle Wlokas

1.2.1 BACKGROUND

The advent of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) brought about a new field of research. At least that is how it was for me, as well as for my colleagues from the University of Cape Town's Energy Research Centre. It drove renewable energy (RE) project developers to knock on the doors of our offices to ask for assistance on various matters, including the community development component. A fruitful collaboration followed and, for about a dozen early bids in the REIPPPP, we ventured into conversations with communities and municipalities to gather relevant information about socio-economic needs, assets and social dynamics. Soon though, it became clear to the university team that the nature and scale of the unfolding activities – particularly the monetary amounts committed to community development – would bring about significant practice questions for all stakeholders affected and involved, including the government.

The decision to stop consulting to individual RE project developers was straightforward, but led to the larger challenge of sourcing other funding to allow for the more systematic programme we had envisaged developing in support of the REIPPPP ecosystem. Even so, we were able to convene two multi-stakeholder workshops in 2013 on the topic of community investments, during which it was found that the emerging experiences of the REIPPPP's implementation carried a number of risks to the achievement of its developmental mandate. The perspectives gained from such direct and multilateral interactions – which have continued in many different fora and with many different stakeholders particularly in the years during which my PhD research was conducted – continue to inform my approach, and the approach of the Centre for Sustainability Transitions (CST) where I am now based, and which is responsible for the production of this publication.

It remains my position that the work to support the REIPPPP's community development ambition needs to increase reflexivity of the ecosystem; in other words, it needs to enhance its own ability to learn from experience for greater transformation and impact. Academic research can support this in various ways, all of which require a commitment to people and a place of work, or 'embeddedness-in-place'. This can include growing the quantum of publicly-available information about the REIPPPP and its implications, enhancing social networks among and between stakeholder groups and fostering an academic network to accompany and observe the REIPPPP over the years. Important practice-policy translation work can also be supported through such an engaged research approach. In the remainder of this chapter, I share some of the insights from my own institutional research, reflecting especially on the role of academic research in moments of potential socio-economic change such as this.

1.2.2 EARLY INSIGHTS

It is worth beginning with some of the insights from the two multi-stakeholder workshops in 2013, still relatively early days in the REIPPPP. The first workshop brought to the surface, among the group at least, a number of issues:

- **The timing and staged approach required by the procurement process is ill-suited to implementing the local economic development requirements.** The implementation process for the community benefit criteria is currently very disjointed, with time lags of up to several years between socio-economic (SED) development strategy formulation, engagement, trust registration and monetary benefits being generated from revenues and dividends.

- **Unequal distribution of development spending.** Projects tend to cluster in specific regions, based on energy resources; it was discussed whether it might therefore be more efficient to administer and allocate development spending at a higher (regional) level than at individual project level.

- **The bidding process hinders opportunities for collaboration.** There was widespread agreement that many challenges would be alleviated through a collaborative approach. There is much potential to explore greater collaboration in the post-preferred bidder stage and it was agreed that this needed to be actively encouraged and facilitated.

- **How to align development spending in areas with more than one RE project.** Alignment and collaboration within overlapping boundary areas can enhance the impact of spending, reduce unnecessary duplication of administrative structures, and mitigate against potential confusion and conflict. While industry players themselves suggested opportunities for self-organising and collaborating, the need for policy to facilitate this was also recognised.

- **A lack of feedback from the Department of Energy (DoE) to developers.** Developers unanimously decried the shortage of clear communication regarding the community benefit aspects of their projects, including guidance on their SED plans, how implementation will be monitored, whether more ambitious development aspects are evaluated more favourably, and so on.

- **Clarifying requirements, definitions, terms and stakeholders.** Stakeholders have various and diverging interpretations of 'what needs to be done when', of which benefits go to whom, and of the roles of different local stakeholders. The industry is currently responding with uncertainty to many of the requirements while defining what long-term structures look like.

- **Collaboration with municipalities.** It was unclear what role local municipalities should play in the development process; for example, in the formation of community trust structures or the appropriate level of alignment with Integrated Development Plans (IDPs) and local economic development (LED) strategies. These roles and relationships with municipalities become even more complicated when beneficiary areas cover more than one municipal area and multiple stakeholders must be coordinated.

- **Appropriate governance structures for development funds.** Community trusts, the predominant governance structure chosen by developers, were found by many to be problematic, and there was criticism of their ability to guarantee successful community development. There arose a clear need to better understand the key operational difficulties with trusts but also to explore alternative governance options.

- **Financing community ownership shares and the timing of funding flows to communities.** It was thought there might be innovative ways to overcome the considerable time-lag between when a project is selected and when it starts to generate revenue and dividends to the benefit of host communities.

- **Managing expectations and relations over the longer term.** This is seen as one of the biggest challenges that developers face. Effective development processes require good facilitation in the short term, and a strong focus on management, leadership and institutional support for the longer term. Independent power producers (IPPs) do not necessarily have the training and expertise to facilitate these processes.

- **Bringing community voices into the discussion.** A clear need was identified for truly community-owned and -developed projects, ones that are not top-down. An alternative policy space is needed to allow this to happen. One initiative proposed was a collective body (known as 'Communities for Wind') to act as a representative body for communities. It was felt that both the industry and government could facilitate greater community representation and involvement.

- **Monitoring and evaluation.** There were concerns that monitoring and evaluating these requirements on the basis of expenditure only is inadequate. There were also suggestions of an independent watchdog to oversee implementation and governance, to guard against corruption and mismanagement of funds.

A second workshop was convened four months later, to allow for further capacity development among stakeholders, and to again explore the magnitude of challenges experienced in meeting the community development requirements of the REIPPPP. The workshop also aimed to start developing ideas for good practice with regard to implementation and to articulate questions for policy-makers. Some of these themes were echoes of those from the first workshop, and are summarised in **Table 2** below.

SURFACED EXPERIENCES AND QUESTIONS

- How to make the most of contract and employment opportunities locally and how to develop new businesses and entrepreneurship opportunities.
- There is a lack of consensus about the most appropriate model of socio-economic development.
- The REIPPPP's top-down approach raises the importance of deliberate community development activities.
- Who is held responsible if a locally-embedded and community-run decision-making structure is established and targets are not met.
- There is a lack of a coherent framework or theory of change that defines and articulates community development objectives and allows for clear monitoring of impacts.

GOOD PRACTICE IDEAS

- There is no rigid or blueprint method for how to go about this community engagement – we should aim for a medium of learning and planning, discovering where mistakes have been made, documenting them and improving as we move forward.
- Community engagement requires time on the side of the developer – it is not appropriate to hand over community engagement to a consultant.
- Conceptualisation of engagement process – defining a shared vision for transformation should be the start of conversations between developers and communities.
- Monitoring – 'success' and 'failure' of community development through the REIPPPP should be defined as the ability of a community to make decisions responsibly and the IPP's contribution to that end.
- Invest in skills development for LED – jobs can be created through carefully designed skills development programmes funded through the community investments.
- Using the opportunity for real transformation around sustainable living – interventions should be climate-compatible and contribute towards low-carbon development.
- Be prepared for conflict and disagreement – important to note that national politics has impacts on the ground.
- Make use of the flexibility offered in the REIPPPP – it allows for roles and responsibilities to be defined according to the local context, including those of local government.
- Understand and work with existing decision-making processes in communities – attention should be paid to (organisational) structures that already exist locally/in the community.

OPEN QUESTIONS FOR POLICY-MAKERS

- How will the actual impact of SED spending be monitored and reported?
- Would the DoE consider adjusting the requirement to submit an SED plan at bid stage for coming rounds?
- Would the DoE consider loosening compliance expectations for bids on community-owned land?
- What is the DoE's theory of change underlying the community benefit requirements in the REIPPPP?
- What role does the DoE see themselves and the Industrial Development Corporation (IDC) playing in terms of SED implementation?
- Does the quarterly financial reporting requirement force spending from trust accounts every three months?

TABLE **TWO** *Two strategic frameworks for advancing RE futures (Source: Burke and Stephens, 2018:84)*

1.2.3 AN ACTION RESEARCH AGENDA

The concept 'institutional work' describes "the purposive action of individuals and organisations aiming at creating, maintaining and disrupting institutions" (Lawrence and Suddaby, 2006). In other words, it explore

"The efforts of individuals and collective actors to cope with, keep up with, shore up, tear down, tinker with, transform, or create anew the institutional structures within which they live, work, and play, and which give them their roles, relationships, resources, and routines (Lawrence et al., 2011: 53)."

The proclaimed agenda of institutional work research includes three key elements. Firstly, it should "highlight the awareness, skill and reflexivity of individual and collective actors"; secondly, it should generate "an understanding of institutions as constituted in the more and less conscious action of individual and collective actors"; and thirdly, it should grow understanding that "we cannot step outside of action as practice – even action which is aimed at changing the institutional order of an organisational field occurs within sets of institutionalised rules" (Lawrence, Suddaby and Leca, 2009:7).

Current institutional theory research ends at the point of 'understanding', without going any further. Action, or in other words agency, is missing. Dover and Lawrence argue, on this point, that institutional researchers generally prefer the academic ivory tower instead of getting their hands dirty with real-world issues (Dover & Lawrence, 2010). Consequently, they propose a strong action research agenda in efforts going forward (Dover & Lawrence, 2010). I agree with Anderson and Herr (2010: 313), who state that:

> **"Practitioner action researchers define their work differently [to conventional social science] in that their research is all about delving deeply into areas and sites in which they are already involved with the intention to disturb the setting they are investigating. Although objectivity is not the goal, practitioner action researchers undertake deliberate, systematic enquiry to generate understanding based on evidence."**

At the core of an action research undertaking lies a specific intention and motivation to effect change through research. The research in focus in this chapter had the primary intention of increasing the level of information available about institutions; specifically, information that resulted from the institutions' efforts to implement community benefits associated with the REIPPPP. Good action research practice involves drawing up an action research plan. Such a plan helps to raise consciousness within the researcher about the action agenda and spells out underlying assumptions and values. The following is a brief demonstration of the plan that accompanied the research in focus in this chapter:

What is my concern? I am a doctoral student with a broad mandate which I have given myself. I have been working in a professional academic capacity on the developmental spending that renewable energy projects are bound to do. I am concerned to help maximise the developmental benefits from this spending and to minimise any unintended negative consequences. A scholarship allows me to spend 100% of my time on doctoral work. My intention is to (a) produce a thesis which can be used as an academic baseline report against which subsequent research can assess and explain impacts, and (b) contribute to capacitating the various stakeholders to identify challenges, seek appropriate support and share experiences.

Why am I concerned? I am concerned because these investments going into local communities over the next 20 years are significant. I believe that careful consideration of the country's development goals and corporate practice is required to ensure that the funds are governed and spent in a beneficial way. The current situation in the sector is characterised by a lack of guidance and collaboration among stakeholders. I see a real risk for conflict over, and mismanagement of, these funds. At the same time, the funds provide a great opportunity to alleviate poverty and inequality if invested strategically and with a long-term vision.

1.2.4 INTENTIONS AND PRACTICE

The core intention of the research was to share all emerging insights widely to create greater awareness about the stakeholder experiences associated with the implementation of the community benefits of the REIPPPP. This connects to my wider ambition to conduct experiential research that explicitly surfaces lessons for actors, making the information known and accessible to them – an approach that Nilsson (2015) calls 'experiential surfacing' – and ultimately enhancing reflexivity. Experiential surfacing and reflexivity are vital for building sustainable social institutions and thus have the potential to support positive social performance in the implementation of RE technologies as part of a just energy transition.

This intention translated, in practical terms, into workshops, presentations at meetings and conferences organised by others and in written contributions. It also entailed various connections and introductions among individuals and organisations, all involved or affected by the topic (i.e. the community benefits component of the REIPPPP).

The research agenda progressed, once I joined the CST and Synergy Global Consulting, both at the same time and part-time. The consulting work aligned well and supported the academic inquiry, as the relevance of research questions was immediately obvious, based on practical challenges experienced in the consulting work. At the same time, initial funding became available to study the REIPPPP's economic development efforts and, over the course of three years, our small research team engaged in a number of research undertakings. True to the ethos of the CST, these interactions were always driven by engaged conversations with stakeholders of the ecosystem. As such, our conversation partners included renewable energy industry associations, civil society organisations, development finance institutions, policy-makers on national level as well as provincial, district and local government representatives.

Funded staff research projects during this time consisted of three distinct efforts, including the COBENEFITS study (see Chapter 2.5), TENTRANS (see Chapter 4.6) and a socio-economic baseline study (still in progress). Further, student research was funded partially by the National Research Foundation (and other sources) for Master and PhD thesis research. Findings from many of these projects are included in this publication.

1.2.5 REFLECTIONS: WHAT HAVE WE LEARNT?

We have deepened our understanding that trust, between and among the stakeholders involved in any research endeavour, is the key element to having impact. Trust is a prerequisite to positive relational work, which is the key to building social capital in the research field. It is my belief that any transdisciplinary research endeavour, especially in a context with high inequality and poverty, needs to ultimately enhance social capital in the respective ecosystem if it is to have a chance of advancing a sustainability agenda.

We have deepened our understanding that trust, between and among the stakeholders involved in any research endeavour, is the key element to having impact.

In this context, the geopolitics of knowledge-creation and the funding thereof need to be carefully negotiated. While international funding can be incredibly research-enabling, the associated conditions can constrain deep engagement with the intricacies and dynamic modes of relating that make up an ecosystem. Oftentimes these modes of relating, especially between stakeholder (groups) which straddle opposing ends of systemic injustices of the past and present, are highly sensitive. They require careful attention in order to progress towards a more sustainable future for South Africa, and in the global South more generally.

In the REIPPPP, where international and local equity and debt work together, in various dynamics and with differing outcomes, engaged research needs to make progressive knowledge contributions. This requires that research design and methods be non-extractive, but rather reciprocal. Research relationships are sometimes closer with certain actors, but ultimately the researchers themselves have to stand the test of time and opinion of all stakeholders in the entire ecosystem. The impact of their work hangs in the balance. Do the researchers' ways of working foster justice and transformation? This is a profoundly important question for practitioners and academics alike.

Attention gaps in the REIPPPP ecosystem remain large. To date, little (if any) significant effort has been made to educate, mobilise or organise communities and other local stakeholders (including local government across the REIPPPP landscape) for collective sense-making or response to the opportunities and challenges associated with the programme. Unfortunately, past research projects, scarcely resourced and with short timelines, did not lend themselves to building the type of complex webs of relationships among and between actors, such as IPP hosting communities, national government and industry players.

Further, the transaction costs for this work were deemed too high for the budgeting and funding allocation discussions taking place in corporate boardrooms or international research funding committees. These role-players are not sufficiently alert, or perhaps not sufficiently courageous, to make resources available in support of the radical shift that is needed for a just transition. Despite this, my work and that of many of my colleagues, has given the matter priority, highlighting the practice and policy dilemmas of the powerful (industry and government), with the expectation (and hope) that working to deepen the community development impacts of IPPs will ultimately strengthen the REIPPPP ecosystem. This objective also lies at the heart of a recent Learning Event, hosted in February 2020, which is touched on below.

1.2.6 LEARNING EVENT: AN ENCOURAGING EXAMPLE OF THE POTENTIAL AHEAD

The two-day event, hosted in Johannesburg and funded by USAID, attracted the interest of over 300 renewable energy and development professionals, and was attended by 150 people. The goal of the Learning Event was to bring the REIPPPP ecosystem together for a facilitated reflection on the current state of community development practice and impact. The DoE's IPP Office functioned as co-convenor, and a consortium of South African consulting firms (Synergy Global Consulting, Forethought, JadeSky) were organisers.

The event programme was co-designed. The organisers surveyed the views of industry and consulted policy-makers, investors and industry associations about pressing learning needs. Service providers to IPPs workshopped their own questions, learnings and worries with regard to the social and economic impact on communities by the sector.

The working premise driving the collective convening of the event was that the cutting edge of this particular corporate-led community development practice is innovated on a daily basis in the dispersed places and towns where IPPs are located. The core innovation takes place in the relationships between communities, ED managers and teams and their service providers. USAID supported the intention to co-convene with the system, bring others along and showcase collaboration.

The event tackled, head on, the widespread experience of being overwhelmed. Among several other key focus areas, participants were educated on: the impact of individual and collective trauma and compassion fatigue on communities' ability to take up opportunities; sustainably achieving local institutional capacity-building; and working with community trusts. Participants were also trained in peer-to-peer learning formats like coaching circles.

The event is a milestone on the journey towards creating a progressive community of practice. It allows for the further broadening of the conversation, the deepening of practice and impact, as well as for relevant learnings to be translated into corporate and government policy.

1.2.7 CONCLUSION

In 2011, when the REIPPPP was launched, the programme's mandated community development requirements became the focus of much public attention and debate. Soon it was acknowledged in industry circles that not only participating companies, but also government and communities, were increasingly overwhelmed by the collective responsibility that the programme brought with it. Research commitment was eventually followed by funding to enable academic resources to accompany and accelerate the programme's learning curve.

The REIPPPP policy framework, unique and ambitious on paper, in practice creates significant challenges for practitioners to translate IPP community investments into meaningful social and economic transformation. Fortunately, stakeholders now have the benefit of over nine years' experience, and they are not short of ideas.

Since 2011, different partnerships have started fundraising for a programme of support for the sector. Meanwhile momentary conversations, of both an academic and commercial nature, are adding to the REIPPPP's learning journey and, in the process, are encouraging the sort of practice and policy development required for the country's energy transition.

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PART **TWO** 2

EXPLORATIONS OF POLICY AND PRACTICE

2.1 A guidebook to the REIPPPP

Authors: Megan Davies and Holle Wlokas

PART TWO 2.1 EXPLORATIONS OF POLICY AND PRACTICE

2.1.1 INTRODUCTION

The introduction of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in August 2011 took place within the regulatory framework governed by the Department of Energy (DoE)[1] , in accordance with the Integrated Resource Plan (IRP) 2011. In part, the REIPPPP can be understood as a policy mechanism to address the twin challenges of achieving climate change targets and responding to the electricity supply crisis of the late 2000s (Montmasson-Clair & Ryan, 2014). Equally significant, however, is the way in which the procurement framework has taken into consideration a developmental agenda as well, by including a number of economic development (ED) targets within the price-competitive auction scheme (Eberhard & Naude, 2016). Furthermore, the participation of independent power producers (IPPs) in the generation of utility-scale, grid-connected electricity has taken place without displacing the regime of historically centralised energy governance, including the continued dominant role of Eskom (Bischof-Niemz & Creamer, 2018). At the same time, the implementation of the REIPPPP has resulted in the dispersion of IPPs across the country, breaking with the conventional concentrated geographic location of South Africa's coal-fired power plants, predominantly in the Mpumalanga Province (Dubresson & Jaglin, 2016).

This chapter provides an overview of the foundation, evolution and implementation of the REIPPPP, as South Africa's first experiment in the procurement of utility-scale renewable energy (RE). This description of the REIPPPP in practice is the culmination of an extensive review of the expanding body of literature elucidating various aspects of South Africa's RE sector. To name a few, these aspects include emerging community benefit practices (Tait, Wlokas & Garside, 2013), the design and execution of procurement frameworks (Kruger & Eberhard, 2018), the exploration of job creation in the green economy (Tyler & Steyn, 2018), and market intelligence of commercial opportunities in the energy sector (GreenCape, 2020). The intention is to locate the REIPPPP within an understanding of the 'political economy of energy' in South Africa.

To better understand the REIPPPP in practice, this chapter begins with a historical perspective on South Africa's electricity sector. Thereafter, it unpacks the origins and evolution of RE policies in order to situate the REIPPPP within a broader context. Following this, the dimensions of the procurement framework are described, and an overview provided of the various outcomes and implementation challenges experienced since the programme's launch in 2011. Finally, the chapter concludes with a reflection on the implications of the REIPPPP for electricity policy planning and governance into the future.

1 *In June 2019, the DoE was merged with the Department of Mineral Resources (DMR) and is now known as the Department of Mineral Resources and Energy (DMRE).*

2.1.2 A HISTORICAL PERSPECTIVE ON SOUTH AFRICA'S ELECTRICITY SECTOR

South Africa has witnessed profound and unprecedented transitions in the decades since the historic democratic elections in 1994 (Swilling & Annecke, 2012; Parr, Swilling & Henry, 2018). While the democratic dispensation has brought about some vital changes in the structure of the national economy, the Apartheid legacy of a deeply entrenched system of capital accumulation, namely the mineral-energy complex, has not been displaced (Fine & Rustomjee, 1996). The mineral-energy complex is reflective of a socio-technical regime that has evolved over a number of decades and is inextricably connected with, and co-constitutive of, a particular form of economic and political power. "At the heart of the MEC [mineral-energy complex] is an evolving relationship and set of linkages between highly concentrated ownership structures between the state, corporate capital and a powerful financial system" (Baker, 2015a: 148). This complex and intractable dynamic is most evident in the electricity sector, which lies at the heart of South Africa's political economy and continues to create strong path dependencies for the country's economic development trajectory.

The electricity sector, understood as a 'socio-technical regime', is comprised of a set of resources, institutions, market practices and regulatory frameworks that sustain the dominance of its carbon-intensive and coal-dependent features (van der Merwe, 2017). The historic structuring of the electricity sector was a mechanism through which the Apartheid government could centralise governance and concentrate political and economic power. Industrial development and economic growth during Apartheid was enabled by the abundance of cheap coal and cheap labour, and the strategic leveraging of interdependencies between industries, state-owned enterprises and the state (Fine & Rustomjee, 1996). It is important to note that, while this capital accumulation strategy (which made possible racist political and economic policies) was concretised by the Apartheid government, the foundations of the mineral-energy complex date much further back. Indeed they can be tracked to the boom in the gold mining industry in the early 1900s (Fine & Rustomjee, 1996).

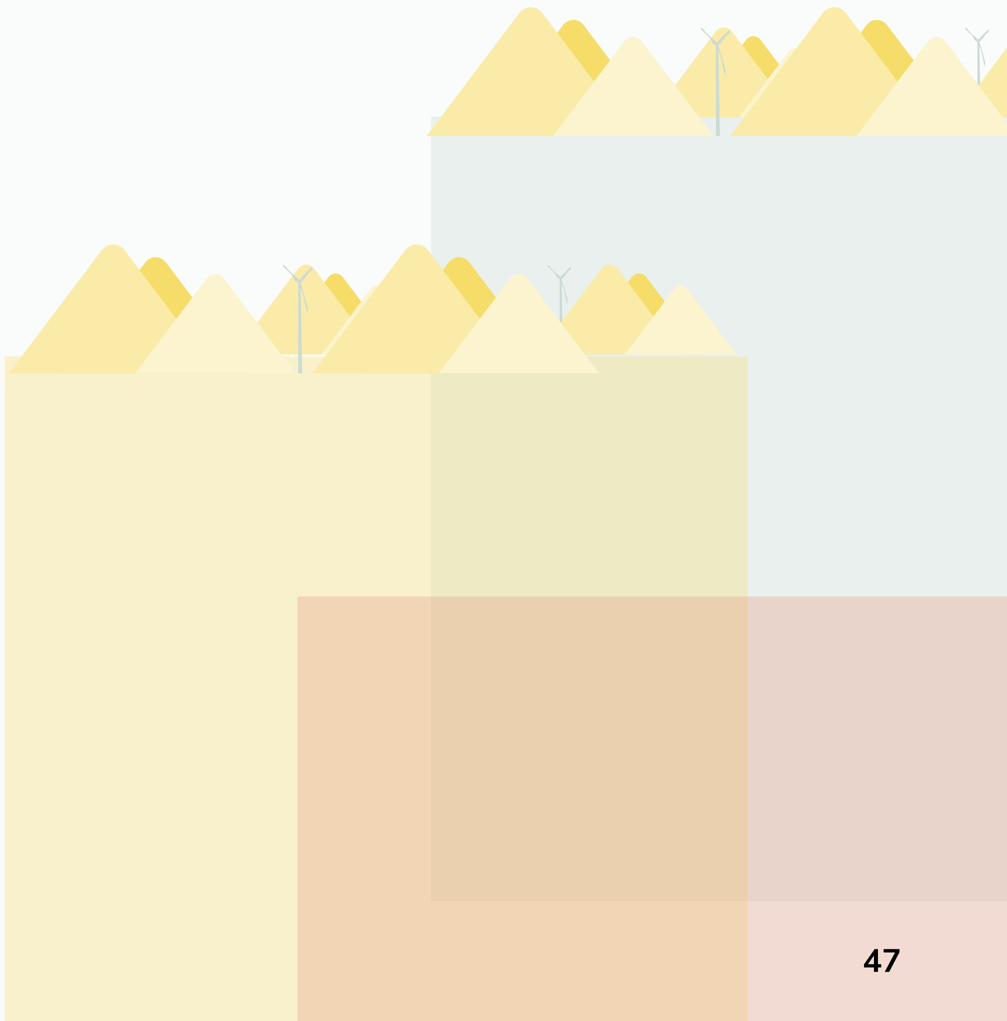
The historic structuring of the electricity sector was a mechanism through which the Apartheid government could centralise governance and concentrate political and economic power.

The dismantling of Apartheid was the outcome of a number of intersecting and multi-scalar dynamics, including the international sanctions and domestic opposition which resulted in the disruption of the dominant socio-political regime, and the construction of a democratic

PART TWO 2.1 EXPLORATIONS OF POLICY AND PRACTICE

alternative. The democratic transition had implications for South Africa's electricity sector. 'Landscape' pressures at the end of Apartheid – in other words, those forces beyond the country's immediate control – resulted in the internationalisation and liberalisation of South Africa's economy. This bolstered many of South Africa's energy-intensive industries and perpetuated the interdependence among private capital, the financial sector and public utilities, and by extension the continued ability of the state to benefit from the mineral-energy complex (van der Merwe, 2017).

The legacy of the Apartheid capital accumulation strategy is pervasive and has hindered any significant restructuring of the economy, despite efforts to drive broad-based economic transformation. This is generally evident in the continued central role of Eskom (the country's vertically integrated and monopolistic state-owned utility), the sustained dependence on a coal-based electricity system, and exacerbated levels of structural socio-economic inequality, poverty and unemployment (Baker, 2015b). However, a distinctive feature of the post-Apartheid mineral-energy complex is the dramatic increase in 'financialisation'; that is, the proliferation of liberalised financial markets such that the financial sector now contributes more than any other economic sector to gross domestic product (GDP) (Baker, 2015a).



2.1.3 CONTESTED ELECTRICITY POLICY IN SOUTH AFRICA

South Africa's energy sector is shaped by a number of nested and interconnected policy frameworks (see Figure 2). The National Development Plan (NDP) is the country's overarching strategic framework, spelling out a roadmap for development to 2030 to address the triple crises of poverty, inequality and unemployment. The energy sector as a whole is guided by the Integrated Energy Plan (IEP) 2030. The IEP describes a roadmap of the future energy landscape of the country, whereas the IRP 2019 regulates the electricity sector specifically. The IRP does so by prescribing how electricity needs will be met through specific resource and technology allocations.

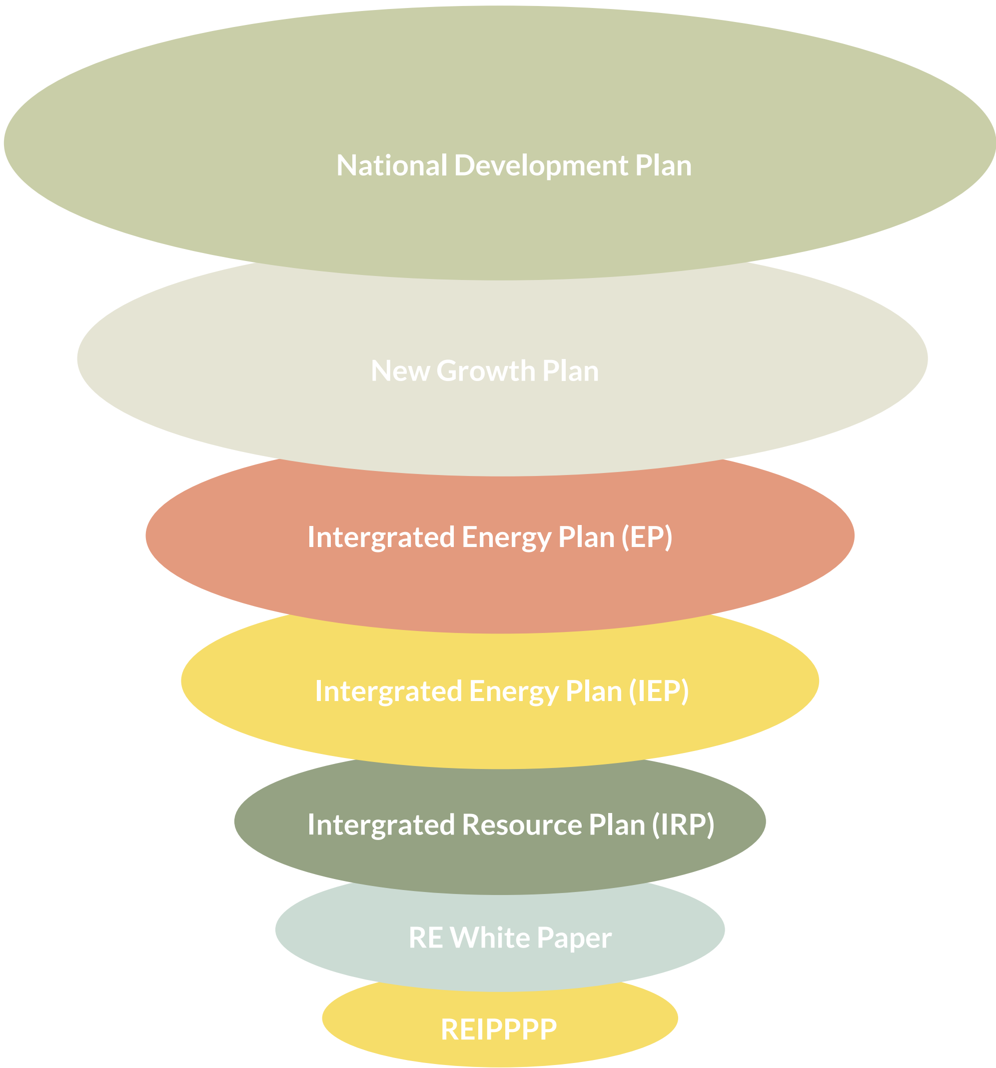


FIGURE TWO *Nested energy policy context relevant to the REIPPPP (Source: Adapted from GreenCape (2020))*

PART TWO 2.1 EXPLORATIONS OF POLICY AND PRACTICE

Egregious historic and current intersecting dynamics are calling into question the viability of the current structure of the electricity sector (Dubresson & Jaglin, 2016; Bischof-Niemz & Creamer, 2018). It is becoming increasingly apparent that this is a regime in crisis (Baker & Burton, 2018). Some of these dynamics include international trends towards electricity sector reform, the expansion and competitiveness of renewable energy technologies and changes in the national and international coal market (Bischof-Niemz & Creamer, 2018). On the domestic front, South Africa has witnessed a decline in economic growth and subsequent electricity demand over the last decade. Parallel to this, financial and technical supply-side crises have been mounting, including periods of rolling blackouts, where the problems within Eskom have been exacerbated by corruption, mismanagement and 'state capture' (Dubresson & Jaglin, 2016; Bhorat et al., 2017).

These intersecting trends have had far-reaching socio-economic and political implications, which are reflected in ideological struggles and political contestation around the future of electricity policy in South Africa. Bischof-Niemz and Creamer (2018) go as far as to refer to the political contamination of electricity planning processes. The glaring absence of a coherent and updated IRP, which resulted in widespread 'policy uncertainty' between 2011 and 2019, exemplifies this tension. The IRP functions as the primary guiding electricity policy and regulatory framework, and since the previous approval in 2011, a revised version was not formally adopted until late 2019. During this long period of policy uncertainty, various versions were released in 2013, 2016 and 2018 respectively, and outlined vastly different growth projections, electricity scenarios and technology allocations (WWF, 2017; Baker & Burton, 2018).

Suffice it to say that all of these different versions of the IRP show that the various possible futures of South Africa's electricity sector are highly contested and confused, particularly with reference to the role that coal, nuclear and RE will play in the energy mix (Bischof-Niemz & Creamer, 2018). The tensions involved are not insignificant (see Chapters 4.7 and 4.8 for vivid details). Indeed, they signify ideological positions within the policy-making landscape in South Africa which can appear incommensurable, and which pertain "as much to a struggle over which technology is selected as the model that determines who should procure, own and manage it" (Baker & Burton, 2018: 5). This is the heart of the 'politics of procurement' in South Africa's energy transition, the various competing perspectives on how the electricity sector should be governed and how energy infrastructure might be configured through policy to enable or sustain particular forms of the political economy (Baker & Burton, 2018). When we discuss 'energy dynamics' and the like, we should therefore be very clear that we are also discussing the bigger question of what sort of society South Africa should be.

2.1.4 THE ORIGINS OF RENEWABLE ENERGY IN ELECTRICITY POLICY

The REIPPPP was the first formally adopted policy instrument facilitating the participation of the private sector in the generation of electricity (Montmasson-Clair & Ryan, 2014). Prior to that, a number of policy frameworks provided for the inclusion of the private sector in the generation of electricity, most notably the 1998 White Paper on Energy Policy and the 2003 White Paper on Renewable Energy. While both referenced the role of IPPs in the electricity sector, a commitment to large-scale procurement for RE was only realised with the formalisation of the IRP 2011 (Montmasson-Clair & Ryan, 2014). Even though both these white papers noted the integration of IPPs into the electricity-generation market, there was a lack of clarity about who would buy the power from IPPs and no appropriate institutional framework to facilitate any private-sector investment (Baker, 2016). An additional challenge to realising this early vision for the role of the private sector was that they would likely have been unable to compete with the price of electricity produced by Eskom, which, at the time, was offering extremely low tariffs to consumers and industry (Baker, 2016).

2.1.5 THE EVOLUTION OF POLICY: FROM REFIT TO REIPPPP

The selection of a competitive auction scheme for renewable energy procurement in 2011, as opposed to a feed-in tariff, was the outcome of a lengthy and politically contested policy development process (Montmasson-Clair & Ryan, 2014; Baker, 2015b; Schmidt, Matsuo & Michaelowa, 2017).

A feed-in tariff determines a fixed price, which is paid to RE generators for a specified time period (Tait, 2012). This differs vastly from a competitive auction scheme, which has a different operating logic. In essence, a competitive auction scheme invites bids from prospective participants and the most cost-effective proposals are granted until the predetermined capacity for megawatts is filled. Auction schemes function as energy policy instruments that enable regulators and national policy-makers to proactively steer the expansion of utility-scale RE technologies within respective electricity markets (Bayer, Schäuble & Ferrari, 2018). They are a strategy through which states configure energy policy "to mobilise new institutions of finance" (Hall, Roelich, Davis & Holstenkamp, 2018: 772).

The National Energy Regulator of South Africa (NERSA) was first responsible for the formation of a policy instrument aimed at the introduction of electricity generated from renewable energy.

In 2007, NERSA announced its intention to investigate and develop a Renewable Energy Feed-In Tariff (REFIT); guidelines were approved in 2009 and, in 2010, NERSA released a draft REFIT document (Edkins, Marquard & Winkler, 2010; Tait, 2012). Despite interest from the market in the attractive tariffs, there was considerable uncertainty during this period due to delays in the further development of the policy (Edkins et al., 2010; Tait, 2012). It came to light that National Treasury had legal objections to the REFIT, refuting NERSA's mandate to run a procurement programme. The REFIT also faced objections on a constitutional basis regarding the country's preferential procurement policies (Edkins et al., 2010). As Tait (2012) explains, this policy development process was mired in political and legal challenges, and hindered by obvious misalignment and misunderstanding of the roles of various stakeholders (most critically the DoE, Treasury & NERSA). While NERSA was unsuccessful in its attempt to take the lead of a renewable energy policy programme, the DoE was able to launch an alternative competitive procurement programme, namely the REIPPPP.

Institutionally, the REIPPPP was made possible by a partnership between the DoE, National Treasury and the Development Bank of Southern Africa (DBSA), which mandated the IPP Office as a semi-autonomous institutional entity within the DoE, to procure and oversee ministerial determinations for utility-scale RE. Participation by the National Treasury, and specifically its Public-Private Partnership Unit, was instrumental in configuring the programme. The Treasury's provision of state guarantees for 20-year power purchase agreements (PPAs) is widely recognised as having increased the REIPPPP's investment attractiveness and sustained viability (Montmasson-Clair & Ryan, 2014; Eberhard & Naude, 2016).

Much of the success of the procurement framework has been attributed to its stringent and comprehensive design, together with ongoing adjustment and improvement, the details of which have been explored in various recent studies (Kruger & Eberhard, 2018). Another enabling factor was the institutional configuration assembled to launch the REIPPPP, namely the IPP Office. Morris and Martin (2015: 8) describe the innovative positioning. According to them,

> **"The institutional nature of the IPP Unit was crucial. It comprised a small group of individuals that did not bureaucratically fall under the watch of any single department. This contributed to its success in building a coalition of influence within government. Essentially operating as a proxy for the DoE but, with the tacit backing of the Treasury, not having to work within the DoE's internal procedures, it was able to operate unknown to any other stakeholders long enough to gain the momentum necessary to ensure that the process would not be stopped. This unit managed to create the joined-up government that was necessary to move beyond the normal state silos that act to constipate and stifle innovation."**

The IPP Office holds that the motivation for the REIPPPP is to demonstrate South Africa's progress on climate change commitments as part of the Paris Agreement, as well as to answer the need for adequate, reliable, flexible and affordable electricity-generation capacity (IPP Office, 2019). Montmasson-Clair and Ryan (2014) observe that another driver for the introduction of the REIPPPP was the government's recognition that Eskom was ill-equipped to meet the country's electricity demand, and therefore also incapable of guaranteeing the sort of energy security required for broad-based socio-economic development. The lack of financial and technical capacity within Eskom thus became a clear impetus for the inclusion of the private sector in meeting electricity needs and, by extension, achieving broader socio-economic development targets (Montmasson-Clair & Ryan, 2014).

The REIPPPP's procurement framework signifies a departure from South Africa's statutory procurement standards, guided by the Preferential Procurement Policy Framework Act 2000, with an increase in the consideration of non-price factors in the evaluation of bids (IPP Office, 2019b). This exemption, which was granted by the Minister of Finance in 2011, was motivated by a commitment (in line with the NDP) to ensure that socio-economic development accompanies the cultivation of a market for RE investment and a local RE industry in South Africa (Tait, 2012). These diverse policy goals were integrated in such a way that IPPs are required to structure their bids according to a 70:30 split, competing on price for 70 points, and for the remaining portion, on their ability to fulfil various economic development (ED) requirements.

2.1.6 THE REIPPPP BIDDING PROCESS

The REIPPPP is internationally recognised for its unique configuration, and the manner in which both price-competitiveness and a fulfilment of ED requirements are built into the framework (Eberhard & Naude, 2016; Schmidt et al., 2017). The programme was designed as a series of sealed-bid tenders that integrate multiple criteria, namely price and the various components of ED. These ED components include job creation, local content, ownership, management control, preferential procurement, enterprise development (EnD) and socio-economic development (SED). The ED scorecard is included in the request for proposals (RFP) compiled by the DoE and used by developers as a guide for their bid submissions.

Bids are submitted by prospective developers to the DoE in response to bid windows which specify megawatt allocations for each RE technology: solar photovoltaic (PV), concentrated solar power (CSP), biomass, hydro and wind. Within each of these technology categories, the bid that provides the lowest price is allocated the full 70 points and then this is adjusted down

for all the other bids. These scores according to price are then integrated with the scoring for the 30 ED points. The assessment of the ED component is done according to targets and thresholds. Once all bids have been scored, submissions are ranked from highest scores to lowest. Cut-offs are determined when all the volume allocations for each technology have been filled. Thereafter, preferred bidders are announced and the implementation of projects can be executed. Successful bidders enter a contractual arrangement with Eskom, which purchases electricity through a 20-year PPA at the tariff set out in their proposed bids.

The REIPPPP is internationally recognised for its unique configuration, and the manner in which both price-competitiveness and enterprise development requirements are built into the framework.

The REIPPPP has been largely over-subscribed and highly competitive. This is despite the fact that assembling a bid submission to the DoE is a complex and risky undertaking which requires extensive technical and financial capabilities. Compliance with the RFP entails a cumbersome, expensive and multifaceted bid development process. Interested parties, for example, RE developers and investors, come together to constitute a consortium of stakeholders which is formalised through the establishment of an IPP. These relationships, described in Figure 3 formalised through a series of contractual agreements.

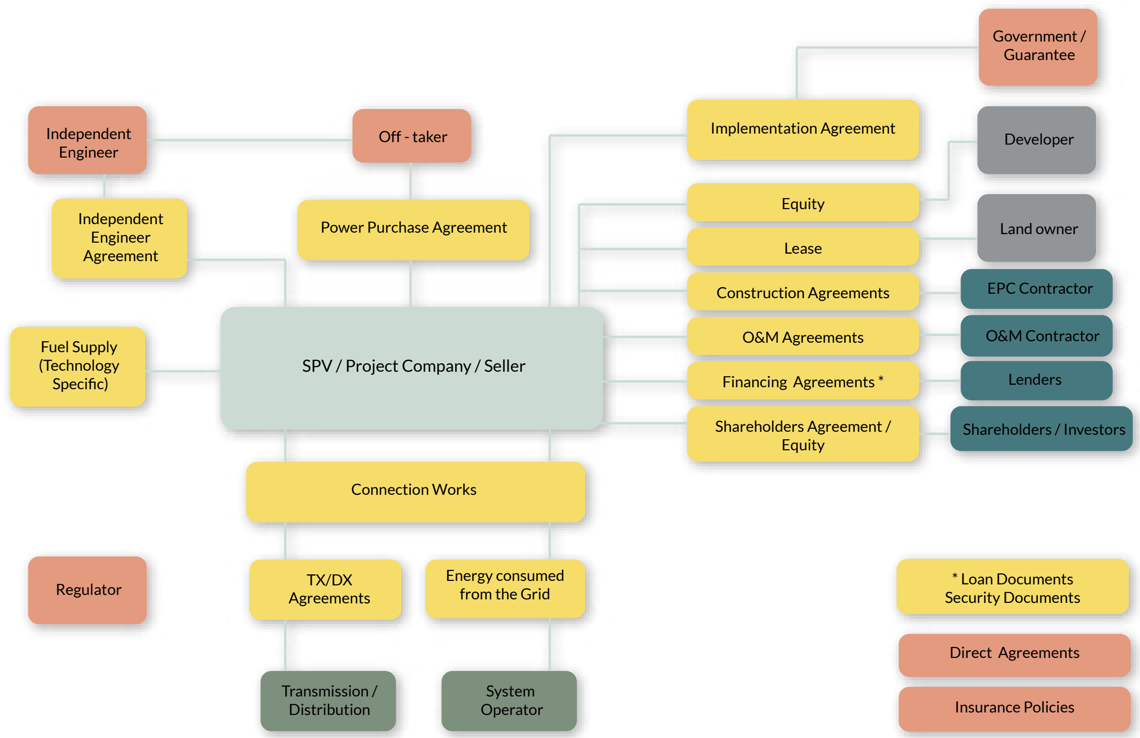


FIGURE THREE *Stakeholders constituting an IPP (Source: Jay Govender (2018))*

Figure 3 visualises the web of contractual agreements that make up a successful IPP project. These arrangements need to be in place in order for the bid to be assessed by the DoE; once preferred bidders are announced, these contractual agreements are operationalised and result in the construction of an RE project. **Figure 4** visualises the various stages of the IPP procurement process.

While these intersecting contractual frameworks and legally-binding agreements are what legitimise each IPP development, in practice, a whole host of stakeholders beyond just the initial consortium of 'interested parties' are implicated in their implementation. A number of reports have elaborated on these dynamics (Wlokas, 2015) and stress the importance of strong relational capacity in RE projects, as is echoed throughout this publication (and is the particular focus of Chapter 4.6).

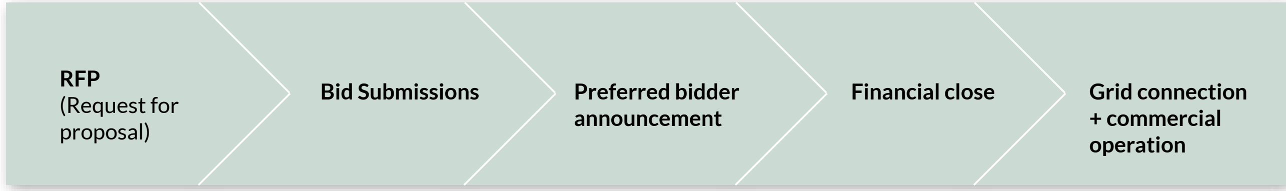


FIGURE FOUR *IPP procurement process (Source: Adapted from GreenCape (2020))*

2.1.7 IMPLEMENTATION AND ROLL OUT OF THE REIPPPP

In accordance with the IRP 2011, between 2011 and 2015, four ministerial determinations were announced by the DoE and overseen by the IPP Office (IPP Office, 2019). Through these four bid windows, the programme procured 6 323MW of RE from 92 utility-scale, grid-connected projects of various technologies, but predominantly wind and solar PV (GreenCape, 2020). Table 3 gives an overview of the MW procured across each technology, what is currently operational and what has been determined according to the IRP 2011.

TECHNOLOGY	PROCURED	OPERATIONAL	DETERMINED
Wind	3 357	1 980	6 360
Solar PV	2 292	1 474	6 225
Concentrated solar power	600	500	1 200
Landfill gas	13	22	540
Small hydro	19	-	-
Biomass	42	-	-
TOTAL	**6 323**	**3 976**	**14 325**

TABLE THREE *MW procured, operational and determined, from IRP 2011 (Source: Adapted from GreenCape (2020) and IPP Office (2019))*

As mentioned, the first three rounds were largely over-subscribed, and the programme has demonstrated continual learning and iteration (Montmasson-Clair & Ryan, 2014). There have been a number of adjustments over time; for example, in the first round, the disclosure of the ceiling price and the lack of capacity caps resulted in high prices. Thereafter, capacity caps for each technology were set per bidding round, and price caps were adjusted downwards and not disclosed, in order to ensure competition within the volume allocations across the various technologies.

By 2019, the REIPPPP had resulted in vast infrastructure developments across South Africa. Of 92 approved projects at the time, there were 67 in operation and a remaining 28 in construction phase. The map in Figure 5 below identifies IPPs across bid windows one to four and specifies each technology:

Notes:
1. The biomass project in kwaZulu-Natal has been halted
2. The landfill gas project in Gauteng is made up of 5 separate sites

FIGURE **FIVE** *Map of IPPs across South Africa (Source: Forder, 2020)*

2.1.8 FINANCE, COST AND INVESTMENT DYNAMICS

Despite the complexity of the bidding process and the stringent ED component, the REIPPPP has positioned South Africa as an attractive destination for private-sector investment in utility-scale RE (Baker, 2015b; Eberhard & Naude, 2016). During this time, the REIPPPP has demonstrated promising growth, attracting approximately ZAR209.7 billion investment though the 92 approved projects (IPP Office, 2019a). Of this, 20%, or ZAR41.8 billion, was foreign direct investment (IPP Office, 2019a).

A significant reduction in costs has also been witnessed, with a drop in prices evident across all technologies (Kruger & Eberhard, 2018; Bischof-Niemz & Creamer, 2018). According to the IPP Office (2019: 4), "the estimated, average portfolio cost for all technologies under the REIPPPP has dropped consistently in every bid window to a combined average of ZAR0.92/kwh in BW4 [bidding window 4]". The price for wind power dropped by 50% and solar PV dropped by 75% between BW1 and BW4 (IPP Office, 2019a). Significantly, these reduced prices now mean that RE is competitive when compared to the cost of new coal-fired power stations (Calitz & Wright, 2020).

Baker (2015a: 146) describes how "global dynamics of renewable energy, finance and investment are embedding themselves within South Africa's unique social, political, economic and technological context". Baker's analysis highlights a number of concerns regarding the evolving role of finance and ownership in the REIPPPP. These insights are located within the broader phenomenon of financialisation of the minerals resources complex and the extent to which financialisation has impacted the electricity sector in particular (Mohamed, 2016; Karwowski, Fine & Ashman, 2018). Baker (2015a) describes how ownership in the sector has become largely dominated by equity investors and foreign utilities, as well as how South African firms have struggled to enter and/or retain market share in the emerging utility-scale RE sector. "Despite attempts by the South African government to create an industry with national interests at its heart, increased competition by Round 4 has seen smaller national players priced out of the market and unable to compete with the low costs offered by foreign companies" (Baker, 2015a: 149).

Despite its considerable success, the roll out and expansion of the programme has not been straightforward. Indeed, the most recent bid window, announced in 2015, stalled until early 2018. Eskom, as the designated electricity off-taker, refused to sign PPAs, thus inhibiting the finalisation of the agreements for 27 announced preferred bidders. This occurred despite the stipulations in the Electricity Regulation Act 2006, which mandates the DoE to make procurement determinations (Baker & Burton, 2018). Eskom's opposition to the inclusion of further IPPs must be seen within the context of the deepening techno-economic crisis threatening the utility's current structure (Ting & Byrne, 2020). As Baker and Burton (2018:

10) describe, this refusal to comply "highlights the extent to which Eskom is able to subvert the policy process and the DoE's procurement programme and essentially block steps towards a low-carbon transition as they act to protect their own interest as a monopoly generator".

2.1.9 JOB CREATION AND SKILLS DEVELOPMENT

In a country faced with intractable challenges related to unemployment, poverty and inequality, it is an undisputed imperative that a major procurement programme, such as this, must contribute to national development (IPP Office, 2019b). Through the ED scorecard, the REIPPPP is explicit in its commitment to employment and industrial development. Specifically, targets pertaining to preferential procurement and local content are designed to support domestic industry and enable its further expansion in the RE sector. Management control targets are in line with the country's broad-based black economic empowerment (B-BBEE) commitments. Additionally, job creation emphasises the necessity to drive local employment. As such, there have been various attempts to explore the impact of the REIPPPP on job creation, and the development of a nascent industrial sector that might drive the RE sector (Stands, 2015; Tyler & Steyn, 2018).

Mirroring dynamics in other sectors and industries, grappling with employment and job creation in the REIPPPP has proved to be highly complex and politicised. Tyler and Steyn (2018) recently reviewed existing studies grappling with the employment implications of RE in the power sector. The review explains that the diverse claims and resulting misunderstandings about the RE sector's employment implications are, in part, due to three intersecting issues, namely, (1) the use of non-standard employment metrics and categorisation methodologies; (2) poor and inconsistent disclosure of study parameters; and (3) uncertainty about future energy sector development (Tyler & Steyn, 2018). It is critical to recognise these methodological inconsistencies, as they play a big role in (mis)informing public claims about the contribution of this fledging industry, in comparison to its well-established counterparts (see Chapter 2.5 for insights into the challenges of socio-economic impact measurement generally, and Chapter 4.2 for the first study of its kind to estimate the employment implications of the transition away from coal).

Any inquiry into the employment implications of RE must be located within this context and acknowledge that the stakes for accuracy are very high. That said, the IPP Office reports that, based on their employment metric which draws on quarterly reporting from the IPPs, the programme has created 40 134 job years[2] to date.

2 Job year: the equivalent of a full-time employment opportunity for one person for one year (IPP Office, 2019a).

2.1.10 ECONOMIC DEVELOPMENT AND COMMUNITY BENEFITS

To date, the REIPPPP's stipulated community benefit requirements have resulted in significant financial commitments towards local communities. Three of the ED requirements translate into substantial place-based investments; these include SED, EnD and local ownership. Seen together, these result in an array of community benefits in accordance with stipulations in the RFP. After four bid window rounds that approved a total of 92 wind, solar, hydro, landfill gas and biomass projects, the industry's collective commitments amount to in excess of ZAR50 billion. A total contribution of ZAR23.1 billion has been committed to SED, of which ZAR18.8 billion is specifically allocated for local communities where IPPs operate (IPP Office, 2019a). Commitments represented in community ownership structures, largely trusts, will receive a net income of ZAR26.9 billion over the life of the projects. EnD commitments total ZAR7.2 billion (IPP Office, 2019a).

2.1.11 IMPLICATIONS FOR ENERGY POLICY AND ENERGY TRANSITIONS

It is clear that the REIPPPP has significant implications for South Africa's energy transition. From a technological perspective, renewable energy (most notably wind and solar) have proved to be highly efficient and cost-effective. Moreover, their suitability to the South African environment has surpassed initial expectations and forecasts. South Africa's wind resources and levels of solar irradiation are irrefutable evidence of the applicability of RE technologies in the country. In short, the viability of the technology has been proven.

Linked to this, the REIPPPP has, to some extent, sparked the cultivation of a renewable energy industry in South Africa. While this has suffered from the stalling of the procurement framework, and is far from fully mature, the potential for the expansion of the green economy in South Africa's future economic development trajectory is tantalisingly clear.

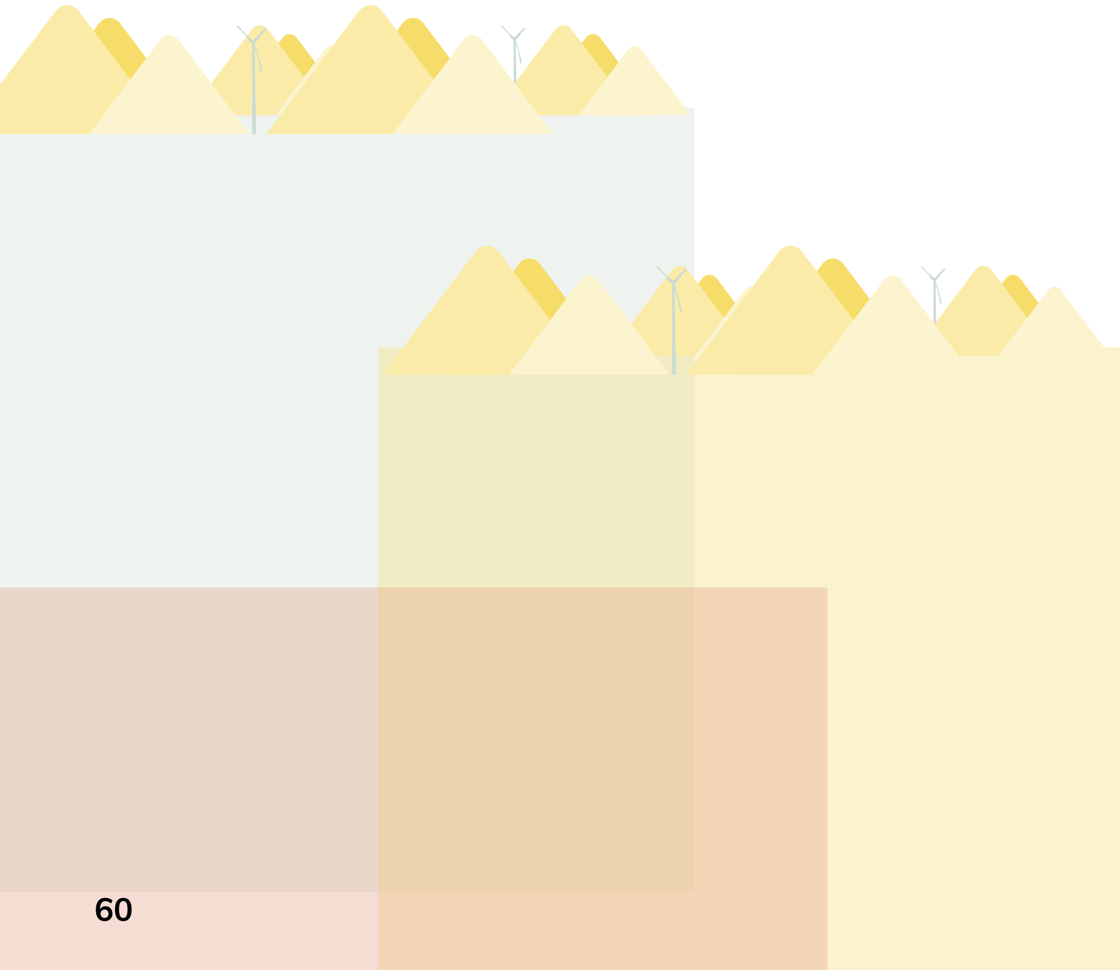
South Africa's wind resources and levels of solar irradiation are irrefutable evidence of the applicability of renewable energy technologies in the country.

From a procurement perspective, the REIPPPP has attracted international acclaim as a highly competitive, transparent and professionally executed initiate. The creation of appropriate institutional capacity, exemplified by the IPP Office, has served as a robust mechanism for timeous execution and comprehensive oversight. South Africa has shown that it is capable of designing and executing a complex procurement strategy that speaks to multiple objectives.

Through the participation of development finance institutions and financial institutions, the REIPPPP has cultivated widespread investor confidence and triggered the deployment of substantial capital and investment.

Through its unprecedented requirements, the programme has also resulted in an opportunity for the private sector, participating in its various activities, to learn about and reflect on the delivery of community benefits and the value of social performance.

As one of the first of its kind in Africa, the REIPPPP has also served to inform renewable energy policy processes across Sub-Saharan Africa. All in all, South Africa's REIPPPP has become a reference point for energy transition processes in the global South.



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PART TWO 2.2 EXPLORATIONS OF POLICY AND PRACTICE

EXPLORATIONS OF POLICY AND PRACTICE

2.2 Towards a social license to operate through benefit-sharing based upon good developmental practices

Authors: Holle Wlokas and James Simpson

2.2.1 INTRODUCTION

The renewable energy (RE) sector has generated much optimism about a green energy revolution, and the environmental benefits it could bring for climate change mitigation. However, as the conversation around RE benefits has matured, it has also begun to include what RE projects are doing to share socio-economic benefits with project host communities.

The potential for either positive or negative social impacts, whether direct or indirect, is part of any place-based investment at an industrial scale, and this does not preclude RE projects. However, the global energy transition away from fossil fuels has a taken on a further dimension, that of economic justice, as the sector has expanded into emerging markets. Who should own the new energy assets? Who should benefit from them? And who should participate in the decision-making around these questions?

This chapter is a preliminary exploration of these dynamics in the context of South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). It presents two drivers that legitimise the inclusion of economic development (ED) requirements in the delivery of utility-scale RE. These are both business case drivers, as they justify inclusion of ED on the basis of an expected commercial benefit for RE projects. The first driver is a 'social licence to operate', or the ongoing acceptance of a project within its social surroundings. The second is the legislative and regulatory framework spelled out by national government. These drivers interweave and place mounting pressure upon private RE projects to move beyond conventional practices, and to envisage their role not just as green energy providers, but also as active participants in a developmental state. This is an expansion of business's role in society.

Beyond outlining the two business case drivers for ED in utility-scale RE, this chapter also locates this discussion in the context of the many development practice perspectives that inform the South African context. The chapter argues that there is already a vast body of literature and practice regarding community development in South Africa, which has the potential to enrich the delivery of community benefits in the REIPPPP, and thereby to enhance the 'social performance' of independent power producers (IPPs)[3] .

3 Social performance is the outcome of a company's engagement, activities and commitments that can directly and indirectly impact stakeholders or affect the quality of its relationships with them. Achieving excellence in social performance requires strong leadership, integrated management systems, and the capability and culture to identify, address and report social risks and impacts. (Source: International Council on Mining & Metals (2021))

2.2.2 COMMUNITY BENEFITS AND A SOCIAL LICENSE TO OPERATE IN SOUTH AFRICA

The term 'social license to operate' refers to the ongoing acceptance of a project by local community members and other stakeholders. As **Figure 6** below illustrates, there are different levels of acceptance. The withdrawal of acceptance can affect a project's ability to function and to profit (Moffat & Zhang, 2014). When considering the social licence to operate, the perspective taken is primarily that of local communities: their needs, appetites and expectations, and how these are managed. Yet, social licence considerations sometimes need to be broadened to include other stakeholders, such as the general public, state, media, industry, and wider civil society, and their ability either to enable or constrain a project.

The fact that many RE project developers go beyond regulatory requirements to understand community needs and assets, and cater directly to them, implies that gaining a social licence to operate is enabling for a project, while failing to do so is constraining. To add to the challenge of gaining a social licence, levels of acceptance inevitably change over time, in response to shifting practices, key events, and changing local contexts. What is most crucial to a project is that there is social acceptance from those individuals and groups with specific rights and claims affected by the project, those most directly impacted by the project, and those who can most influence project success (IFC, 2019).

FIGURE SIX *Levels of social licence to operate (Source: IFC, 2019)*

Benefit-sharing is one way to enhance a project's social licence and mitigate the social risk that comes with raising community expectations. Yet, a social licence is not reducible to benefit-sharing, and there are many other aspects to consider. Chief among these are quality of engagement with communities, procedural fairness in dealing with locally-employed personnel, and mitigation of operational impacts (Moffat & Zhang, 2014).

Nevertheless, there is a powerful business case for benefit-sharing and the role it plays in cultivating a developer's social licence to operate. Firstly, a social licence, and particularly benefit-sharing, may bring a competitive advantage. Successfully delivering community benefits can differentiate one developer from another, creating greater favour among local communities and other stakeholders. This favourability may influence land access or community support needed for a successful project proposal.

Secondly, effective benefit-sharing not only improves a developer's reputation locally, but also further afield, not least of all in the eyes of investors (such as international financial institutions), who often stipulate positive community impacts as an investment criterion. Efforts towards attaining individual project social licence may occur near other RE projects, feeding into a collective social licence locally. Such efforts may also feed into a broader collective social licence, encompassing the sector on a national and even global scale.

In South Africa, the stakes are increasingly high. Growing community, civil society, and government attention is being directed toward the potential in RE projects for local socio-economic development. Raised expectations are particularly strong where communities are better networked and capacitated, and thus more cohesive and able to organise. These expectations combine with the prevailing poverty and inequality that challenge so many livelihoods, with further devastation wrought by the global Covid-19 crisis in 2020. Indeed, the pandemic is likely to damage local social fabrics in unprecedented ways, presenting novel challenges in maintaining social cohesion, order and trust.

Adding to this pressure in the South African context are growing questions around a 'just transition'. The 2020 Alternative Mining Indaba, which drew scores of community-based organisations, non-governmental organisations (NGOs), unions, activists, religious and community leaders, convened under the theme 'Environmentally and Economically Sustainable Mineral Economies in an Era of Climate Change Catastrophe'. A 'just transition' was a ubiquitous theme throughout, despite there being limited consensus on what it might mean in practice. Delegates were particularly concerned about whether the jobs lost as a result of the energy transition (for example, jobs in the coal value chain) will be replaced in a greener economy.

Utility-scale renewable energy IPPs are prominent implementation agents of the energy transition, and the need to secure their legitimacy through a broad-based, ongoing social licence to operate is acute. Sceptics of the importance of maintaining a social licence to operate need to ask themselves the question: Can it be that the transition to a more sustainable energy landscape might grind to a halt because local communities have not been meaningfully involved and do not meaningfully benefit? The short answer is 'yes!'. And in the present circumstances, increasingly so.

Can it be that the transition to a more sustainable energy landscape might grind to a halt because local communities have not been meaningfully involved? The short answer is 'yes!

There is a need, then, to stay closely connected with the question of how IPPs can best address economic power imbalances and realise national developmental ambitions (as outlined in the section below). As the costs of losing a social licence, including financial costs of company-community conflicts and project delays, become increasingly pressing topics in boardroom discussions, companies would do well to take seriously the importance of being on the right end of the community benefit spectrum (see **Figure 7**).

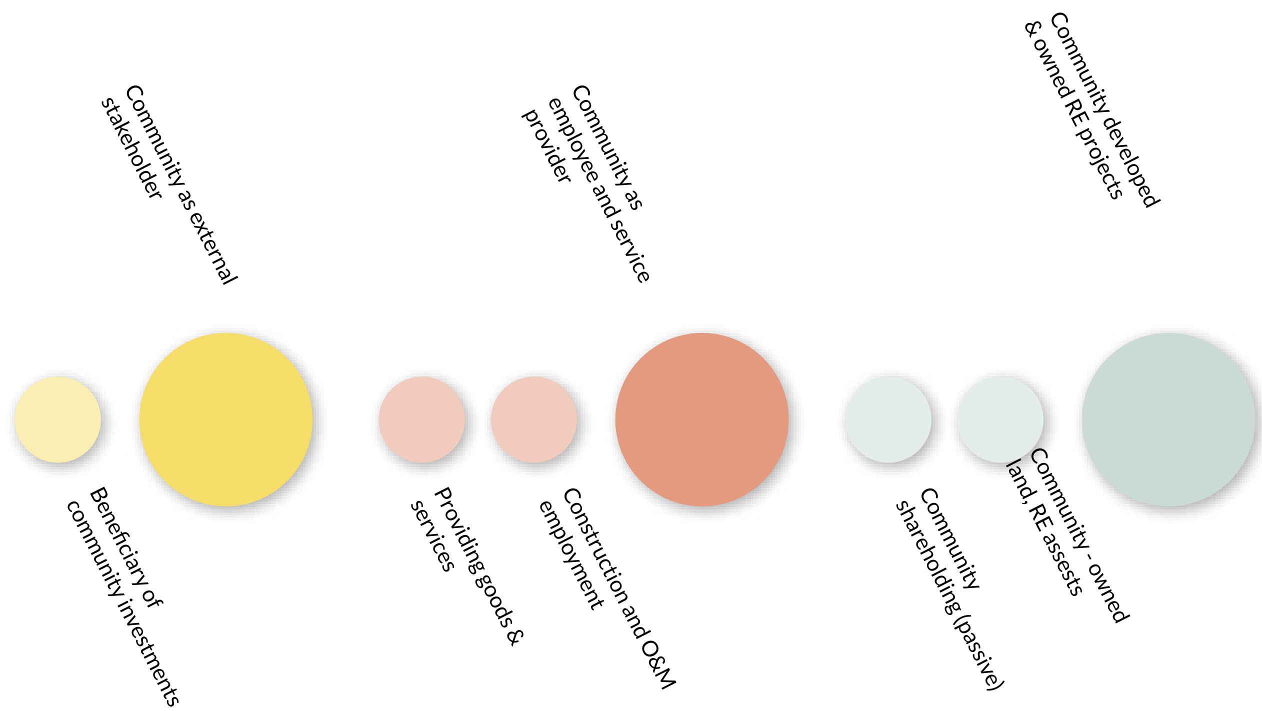

FIGURE **SEVEN** *Community benefit spectrum (Source: Adapted from GreenCape (2020)))*

The community benefit spectrum has community-developed and community-owned renewable energy projects on the 'mature' end, where a social licence to operate is most likely and most comprehensive. On the other, less optimal end, communities are mere beneficiaries of community investments. The other key difference between the two ends is the degree of communities' power and agency, which tend to increase in tandem with a social licence.

The following section begins by further unpacking what the mature end of the community benefit spectrum can look like in practice. It then explores how South Africa's renewable energy regulatory landscape corresponds with the spectrum, and the extent to which the REIPPPP regulations are a driver for projects to shift economic development and social performance practices towards the mature end. It is suggested that, while the regulations are a strong driver for benefit-sharing and a social licence to operate, these outcomes could be much improved with a clearer focus on good developmental practices.

2.2.3 COMMUNITY BENEFITS WITHIN SOUTH AFRICA'S RENEWABLE ENERGY REGULATORY LANDSCAPE

Regarding community ownership and control of RE projects, a range of ideas are currently in circulation, from 'community-driven' renewable energy projects to progressive notions of an 'energy democracy'. While mature markets have long been host to citizen-led energy interventions, such initiatives have only recently begun to show potential in emerging markets.

- **Community-driven renewable energy projects** are defined as formal or informal citizen- or community-led initiatives that propose collaborative local solutions to facilitate the development of sustainable energy technologies. The purpose goes beyond profit motivations, aiming to generate added value for regional development. This is particularly the case for projects led by indigenous peoples and communities that historically have been discriminated against (REN 21, 2017). The latter represents a vast majority of populations in emerging RE markets, particularly South Africa, which continue to grapple with colonial legacies.

- Even more progressive approaches exist. For example, a German-coined definition of **community power projects** requires that projects be majority-owned by local communities, that the bulk of benefits be distributed locally, and that community-based organisations that hold shares have voting rights (World Wind Energy Association, 2011).

- Internationally, 100% citizen-owned utility-scale RE projects have occasionally emerged (for example, in Australia and Denmark), with some also delivering local socio-economic benefits (for example, in Australia)[4] . These rare examples speak to a broader and more ambitious concept of **energy democracy**, which looks to bring energy resources and infrastructure under public or community ownership and/or control (REN 21, 2017).

Moving the focus to South Africa, none of the renewable energy projects in the REIPPPP qualify as a community power project. REIPPPP can provide examples, however, of all but the most mature (purple) point on the community benefit spectrum in **Figure 7**. This is despite the government's deliberate effort to include communities as mandatory beneficiaries and shareholders in the programme's design. The REIPPPP requires projects to share revenue and ownership with local communities in a 50km radius around project sites (DoE, 2011) (this boundary later change to district municipal boundaries after bid window Round 3). However, there is no focus on ownership per se, with the emphasis instead being on limited ownership and economic benefit opportunities, combined with local redistribution of profits to local communities.

Despite government's effort to include communities, none of the renewable energy projects in the REIPPPP qualifies as a community power project.

The policy and associated tender documents stipulate quantitative targets for investments into socio-economic development (1 to 1.5% of total project revenue) and enterprise development (up to 0.6% of total project revenue). They also identify a minimum community shareholding threshold of 2.5% of project shareholding.

Strategic guidance as to what these investments should ultimately achieve only became available four years into the programme, in the form reproduced in **Table 4** below, which the IPP Office published in 2015. The table outlines the expected alignment between the REIPPPP criteria and the National Development Plan (NDP), the South African government's long-term development plan for eliminating poverty and reducing inequality by 2030 (National Planning Commission, 2012).

4 For examples of community-owned RE projects see IFC 2019 discussion paper (in reference list of this section) and the Hepburn Wind farm in Australia.

NDP OUTCOMES	PRIMARY FOCUS	REIPPPP ADDRESSING SPECIFIC OUTCOMES
Outcome 4	Decent employment through inclusive economic growth.	• Job creation • Enterprise development • Ownership • Preferential procurement • Local content
Outcome 5	A skilled and capable workforce to support inclusive growth.	• Job creation • Management control
Outcome 7	Vibrant, equitable and sustainable rural communities contributing towards food security for all. • Reduction of rural unemployment rate. • Increased access to quality infrastructure and services, specifically education, healthcare and public transport.	• Job creation • Socio-economic development • Ownership • Enterprise development
Outcome 8	Sustainable human settlements and improved quality of household life.	• Socio-economic development
Outcome 10	Protect and enhance our environmental assets and natural resources. • Reduction of total emissions of CO2 by 34% from business-as-usual scenarios.	• Results from power generation from 'clean' energy sources
Outcome 11	Create a better South Africa, contribute to a better and safer Africa in a better world. • Increased FDI: ZAR230 billion by 2019 (from baseline of ZAR40 billion in 2013).	• Ownership
Outcome 14	Nation-building and social cohesion. • Disability and gender equality. • Equal opportunities and redress.	• Preferential procurement • Job creation • Ownership

TABLE FOUR *Alignment of NDP outcomes and REIPPPP bid obligations (Source: Adapted from IPP Office 2015a)*

To fully leverage the REIPPPP's requirements, as a means of best obtaining a social licence to operate, there are two key challenges worth noting here. The first is to ensure that the REIPPPP's technocratic language is more accessible in engagements with communities concerned. The second concerns its developmental approach. This is about unpacking the developmental paradigms implicit in the REIPPPP, interrogating whether they are contradictory or mutually-reinforcing, and broadening the discussion to include the wider body of developmental literature and practice that focuses on South Africa (some of which is outlined in the section below).

In terms of the first challenge, the REIPPPP's technocratic language refers to socio-economic development (SED), enterprise development (EnD) and local ownership, with companies also tending to adopt these terms. Commonly, local government understands them as feeding into, or at least relating to, their mandated 'local economic development' efforts. Social performance practitioners hired by energy companies therefore need to translate this REIPPPP terminology into language that is understood by ordinary citizens in local communities across the country. Thus, practitioners often refer to 'community benefits' or 'local community development', discussing these elements with communities under the general term 'community development'.

Regarding the second challenge of developmental paradigms, the four community benefit requirements on the ED scorecard for bid proposals in fact represent differing conceptual understandings of development. With SED, government expectations amount to a welfarist theory of change. Under this view, financial investments in education, health and infrastructure will lead to the improved wellbeing of previously-disadvantaged communities, whatever the conditions under which the SED investments are made. Moving to the EnD and job creation dimensions, there is a neoliberal leaning implicit therein, where employment and business development are expected to grow the economy and enhance wellbeing (Ncube, Shimeles and Verdier-Chouchane, 2012). This development paradigm associates strengthened free-market forces with poverty alleviation. Finally, a third paradigm, focused on reallocation of wealth and ownership, is linked to the local ownership requirement (Wlokas, Westoby and Soal, 2017). Here, the suggestion is that mandating a locally-owned proportion of shares in REIPPPP projects will lead to sustainable rural communities, inclusive growth, nation-building, social cohesion, and a safer country (IPP Office 2015).

It would be a useful exercise then to examine the REIPPPP's policies further, drawing out the different theories of development and change, but also asking if such a mixed composition creates unnecessary obstacles in practice, as projects seek to design and implement strategies in response to the scorecard requirements. This exercise becomes more pressing as the sector grows, and as it looks to establish a clearer vision for its national development contribution. However, the exercise should not stop at the developmental approaches implicit in the REIPPPP.

2.2.4 DEVELOPMENT PRACTICE PERSPECTIVES IN SOUTH AFRICA

The REIPPPP provides a unique opportunity for the renewable energy industry, such a prominent player in the green economy, to position itself as a significant contributor to development in South Africa, and thereby to solidify a sector-wide social licence to operate. While the actual REIPPPP policy offers some guidance on how industry can conduct itself in the challenging task of successfully implementing community development, there is a wealth of other guidance available in the field of development practice, and particularly as it has been applied to the South African context.

While social performance as an area of expertise is in its early stages, the field of development practice is older and has much to offer from decades of learning about company-community relations specifically, and community development generally. As Wlokas et al. (2017: 43) observe about the REIPPPP, "alignment of the community development requirements with the existing policy and development context is open for interpretation, at best", and, while RE projects do promote community development, they nevertheless ignore "established community development traditions and frameworks". This means that industry determines its own qualitative impact upon local communities, with little guidance.

Energy scholars, who are not often community development experts, tend to be unfamiliar with the community development body of knowledge. In South Africa, the prevailing community development approaches can be seen through either a policy-oriented lens or an organisationally-diffused lens (Westoby, 2014). Policy-oriented frameworks include income or basic needs-based frameworks, as well as sustainable livelihoods and social exclusion frameworks. Those can be found in existing (and historic) government policies (for example, social protection policy and welfare grants, the Reconstruction and Development Programme, the Community Development Policy Framework, the Bill of Rights, and the South African Human Rights Commission).

With organisationally-diffused lenses (unpacked in Table 5), practitioners draw upon the language of certain policies, but the organisations they work for have a stronger bearing upon the approaches taken in practice. These two overarching frameworks dominate the discursive field in South Africa.

	ORGANISATIONALLY-DIFFUSED FRAMEWORKS			
	Community-driven and community-led development	Rights-based community development	Asset-based community development	Sustainable livelihood approach
Focus	Self-help, community-driven approaches.	People-centred approach to development based on the norms and standards of international human rights law.	Builds on the assets that are found in the community and mobilises individuals, associations, and institutions to come together to realise and develop their strengths. This makes it different to a deficit-based approach that focuses on identifying and servicing needs.	Based on evolving thinking about the way the poor and vulnerable live their lives and the importance of policies and institutions. Applies method of analysing and changing the lives of people experiencing poverty and disadvantage.
International and local examples	World Bank, Khanya-acidd, People's Housing Process	Action Aid, UN programmes, IDASA	Coady Institute	UK DfiD, Robert Chambers, Community Development Practitioner Programme

TABLE **FIVE** *Organisationally diffused community development frameworks common in South Africa (Westoby, 2014)*

The logic of the REIPPPP does not reflect this body of knowledge, nor does it outline a broad vision or a set of overarching guiding principles for the implementation of the stipulated community benefits. Certainly, there is merit in drawing on the insights from the direct experiences of the REIPPPP to date; indeed, the insight that there is no silver bullet, no single method for community development that will work in all circumstances, is particularly cogent. However, there is also no need to learn by trial and error, or to re-invent the whole field of community development as a specialised terrain of practice. These knowledge resources already exist and ought to be used more, to the benefit of all involved parties.

2.2.5 CONCLUSION

Regarding the dialogues required, much has been achieved, but more is needed, and academia has a central role to play. Many more conversations must take place about how REIPPPP projects can better interface with national development plans, and what developmental paradigms and practices should be drawn on to ensure optimal benefit-sharing and a resilient social licence to operate. Intellectual and institutional resources must be mobilised to create the necessary communities of practice and dialogues; this will stimulate effective learning across the sector and cultivate strong social performance practices. Granted, different projects encounter very different contexts and challenges which must be navigated with tailored approaches, but these varied experiences present opportunities for deeper shared learning.

Communities of practice need to involve not just RE social performance practitioners, but a far broader range of stakeholders. The financial resources associated with the REIPPPP community requirements are significant, making it necessary for industry, local communities and government to build quality relationships to successfully convert this precious funding into sustainable developmental impacts. Industry, concerned and affected stakeholders in government, financial institutions and civil society are already avid participants in topical conversations and workshops; still, more dialogue can and must be had.

It is necessary for industry, local communities and government to build quality relationships to convert this precious funding into sustainable developmental impacts.

The research field is rich in examples of (social) innovation and collaborative multi-stakeholder learning. So-called 'just institutional work' (see Chapter 2.3 for a thorough look into institutional work), which lies at the core of a just transition, is emerging in small niches across the REIPPPP landscape. These niches will be accompanied by, and incorporated into, future research. Such niches so far include development coordinating efforts of multi-stakeholder initiatives in the Northern Cape Province (see Chapter 3.2 for details of one such initiative in the ZF Mgcawu District), and the RE industry's internal efforts through industry roundtables to make sense of their experiences in the implementation of community benefits to date (Davies, Swilling & Wlokas, 2017). Research efforts include the transfer of academic knowledge about governance and learning into practical support (for example, to community trusts), and helping to mature the RE industry's social performance practice through training and the further development of tools and methods.

Theoretically, we find that the power associated with voice needs to be consciously shifted to better represent relevant stakeholders. This applies throughout the academic knowledge-generation landscape, both vertically and horizontally. It includes, for example, funding sources and conditions, research team composition, methodological considerations and data collection methods, analysis and publication strategies. Such a shift will help to address historical injustices, which hamper the energy transitions agenda intellectually, and help to keep alive the pursuit of an energy democracy.

In conclusion, then, it is urged that the existing momentum and willingness to learn among REIPPPP stakeholders be recognised and actively fostered. Existing knowledge, grounded in South African practice and policy experience, can guide the sector's development understanding and vision. Academia's role and responsibility is to support this through engaged and transdisciplinary research.

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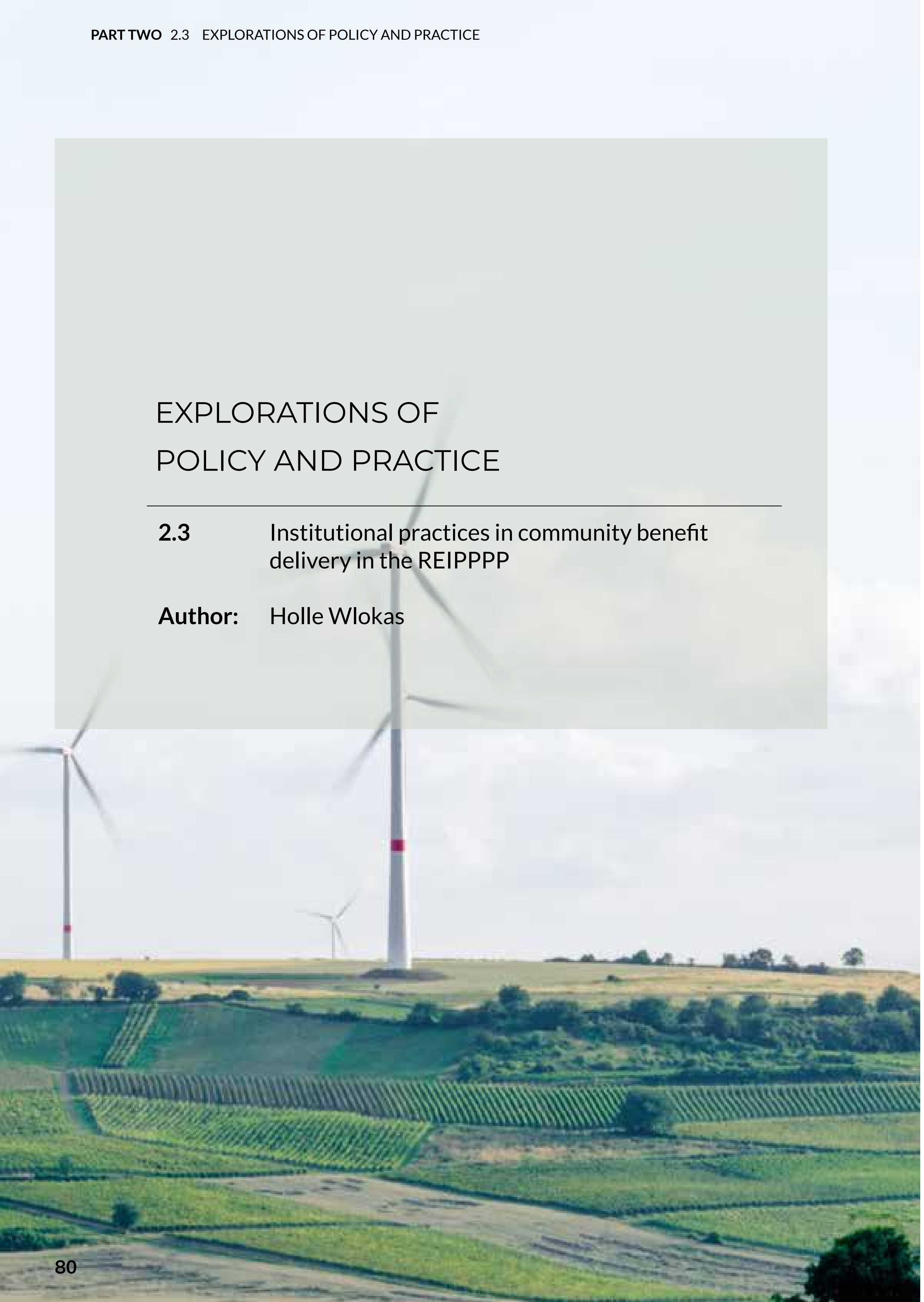

EXPLORATIONS OF POLICY AND PRACTICE

2.3 Institutional practices in community benefit delivery in the REIPPPP

Author: Holle Wlokas

2.3.1 INTRODUCTION

This chapter details the challenges related to the delivery of community benefits associated with place-based investments, especially as they pertain to the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) context. It begins with a brief summary of community benefit requirements in the REIPPPP and how the delivery of these led to the identification of three prevailing challenges. Thereafter, the analytical framework is presented and the concept of 'institutional work' detailed. With this in place, the chapter then presents a rich account of the institutional practices that have already been cultivated in the REIPPPP, from project development to implementation. This reflection on the emergent practices in the REIPPPP presents a rich learning opportunity for the industry.

2.3.2 COMMUNITY BENEFITS IN THE REIPPPP: A SUMMARY

As discussed earlier in this book, the REIPPPP's community benefit requirements consist of four elements; these are depicted and defined in **Figure 8 and Figure 9**. On paper, 'job creation', 'local ownership', 'socio-economic development (SED)' and 'enterprise development (EnD)' appear as distinct technical elements of a scorecard, or as contractual obligations in black and white. In practice, however, the implementation of these elements is complex and straddles various stakeholders and agendas. As such, it is critical to investigate the dynamics that unfold in company-community relations and the associated benefit delivery efforts of independent power producers (IPPs).

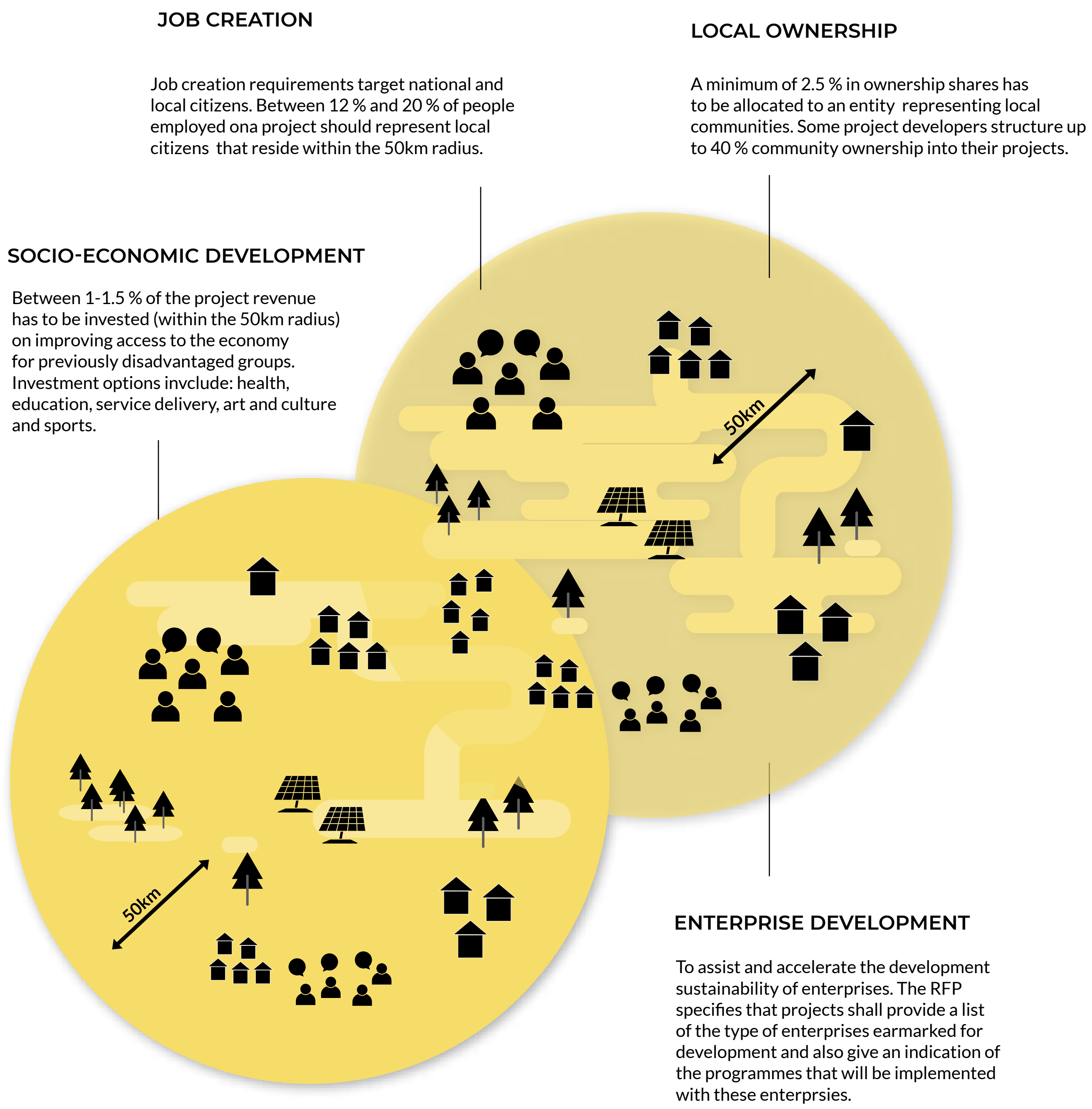

FIGURE **EIGHT** *REIPPPP's local community benefit requirements (Source: Wlokas, 2015)*

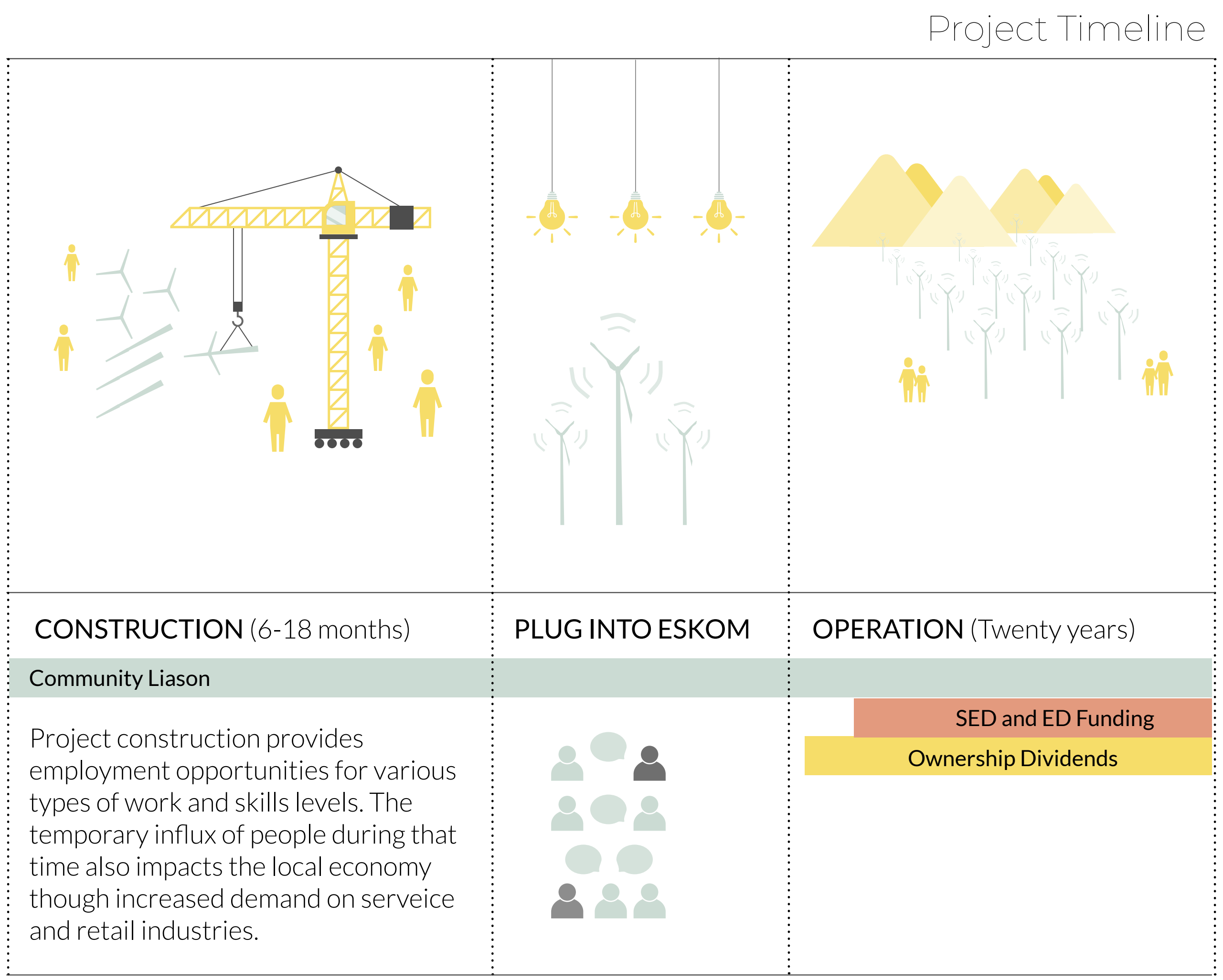

FIGURE **NINE** *REIPPPP's timeline of funding availability results from the community benefit requirements (Source: Wlokas, 2015)*

This environment is a complex, evolving and highly politicised one. Research can support the evolution of this ecosystem through sense-making and reflection. One example of such research is the following analysis, located within the literature on institutional norms and investigating the social norms and rules applied locally. Such knowledge could effectively shape practices that foster the most socially sustainable institutions possible in each particular context. Relevant academic reflections on company-community interactions are only starting to emerge from, for example, India (Yenneti & Day, 2016; Yenneti, Day & Golubchikov, 2016), Mexico (Baker, 2015) & South Africa (Wlokas, Boyd & Andolfi, 2012; Marais et al., 2017; Wlokas, Westoby & Soal, 2017).

2.3.3 THREE CHALLENGES FOR PLACE-BASED INVESTMENTS AND COMMUNITY BENEFITS

Recall that 'place-based investments' are the SED, EnD and local ownership components of the community benefit aspirations of the REIPPPP's economic development (ED) scorecard. These investments, carried out in fulfilment of the requirements by IPPs, have led to three broad pertinent challenges regarding (1) the alignment and coordination of development initiatives; (2) the procurement framework and implementation; and (3) reporting, monitoring and evaluation requirements. Together, these culminate in a complex set of spatially constituted dynamics. The first challenge pertains to how IPP activities are organised, the second is about grappling with the implications of these activities, and the final challenge concerns how the impact of these activities is measured and understood.

2.3.3.1 Alignment and coordination of development initiatives

A 50km-radius stipulation (which was later amended – see below) requires IPPs to focus their SED and EnD efforts in clearly delineated geographic areas surrounding their plants. Owing to the considerable uptake of the REIPPPP and the subsequent multiplication of IPPs in specific areas, issues of duplication of initiatives arise, leading to varying and at times conflicting interactions with beneficiary communities (Wlokas, 2015). The type of duplication referred to is not of funding for specific projects – this has not occurred thanks to the oversight of the IPP Office in approving and monitoring SED and EnD projects – but pertains more to duplicate efforts where, in some instances, IPPs 'have to fight over the same communities' (ZF Mgcawu District Development Coordinating Forum, 2017).

Insufficient coordination among IPPs is further compounded by unstructured and often limited interfaces with provincial and local government authorities. The annual economic development plans of IPPs are not required to align with local, district and provincial development strategies, let alone the activities of other IPPs operating in the same areas. Indeed, IPPs report to national government and are not required to demonstrate alignment with local development planning processes (Atkinson, 2016). This has surfaced tensions in the relationships between local municipalities and IPPs, where officials lament the fact that IPPs do not consider the municipality's integrated development plans (IDPs) in their place-based investments. For their part, IPPs bemoan the lack of capacity at local government level to outline clear development priorities, as opposed to merely providing lists of development needs and infrastructure backlogs, and fall back on their ultimate obligation of reporting to national government. The view of municipalities is largely that the centralised management of the REIPPPP tends to undermine the capacity and position of the very authority that is, in theory, best positioned, and constitutionally mandated, to support the socio-economic development

The annual economic development plans of IPPs are not required to align with local, district and provincial development strategies, let alone the activities of other IPPs operating in the same areas.

of local communities (Atkinson, 2016; Wlokas, Boyd & Andolfi, 2012; Marais et al., 2017; Nel & Rogerson, 2016).

Another stark indicator of ineffective alignment and coordination is the fact that there seems to be a lack of clarity and consistency regarding the payment of rates and taxes by IPPs to local authorities (Atkinson, 2016). Regulatory frameworks have had to play 'catch-up' with the rapid pace at which the REIPPPP has been rolled out, and the resulting complexities have played out in the lack of meaningful integration of IPPs into municipal economies, and in particular the fact that IPPs in different regions do not contribute uniformly to the local tax base (this situation is in stark contrast to the vision of 're-municipalisation' – see Chapter 4.5).

2.3.3.2 Procurement framework and implementation

Secondly, several elements of the procurement framework and implementation agreement have been found to be problematic, most notably the use of a 50km radius which is seen as an impediment to coordinated socio-economic development strategies (Wlokas et al., 2012; Tait, Wlokas and Garside, 2013; Wlokas, 2015; McEwan, 2017). The 50km-radius requirement has been widely debated. It brings to the surface a tension between 'responsiveness' and 'responsibility' to communities in close proximity to IPPs, as well as issues around equity, conflict and the determination of needs (Mthembi, 2015). Fortunately, the necessity to adjust the strict geographical demarcation was recognised, and from bid window Round 4 onwards, IPPs are advised to consider the district municipal boundaries relevant to the geographic location of the plant as the 'beneficiary boundary'. This change is anticipated to allow for greater collaboration and to better support the alignment of government and IPP development planning processes.

In fulfilling community ownership requirements, most IPPs have established community trusts which operate as independent legal entities that have a minimum shareholding of 2.5% in the project company (Mthembi, 2015; Wlokas, 2015). In practice, community trusts are challenging to establish and operate in a sound manner (Wlokas, 2015), and questions have been raised as to whether there might be more appropriate structures for enabling community ownership (Mthembi, 2015) (see Chapter 4.3 for some ideas). Further to the governance arrangements of community trusts, the structuring of financial flows — with a primary focus on debt repayment — means that communities only realise the extent of their investment late into the project lifecycle (IPP Office, 2017). Trustees' mandate to enable community development initiatives must take into account the disbursement of dividends, which is skewed predominantly towards the latter half of the project lifecycle (recall Figure 9). As an indication of the growing awareness of these limitations, a statement in an IPP Office Quarterly Report identifies a key learning as “opportunities for alternate vehicles to be investigated that will enable a more even distribution of community trust cash flow and realising community benefits sooner” (IPP Office, 2016: 32).

Finally, stipulations for SED and EnD expenditure speak to a developmental vision from the IPP Office that focuses on education and skills development, social welfare and local economic stimulation through measures supporting skills and small, medium and micro enterprises (SMMEs) (Wlokas et al., 2017). In practice, this demands careful deliberation on the side of the private sector on how to utilise these funds in a way that makes a meaningful contribution. Given that the context is characterised by an overwhelming demand for reliable service delivery and infrastructure provision, as well as the pressing need for jobs and sustainable livelihoods, this is no easy task.

2.3.3.3 Reporting, monitoring and evaluation requirements

The current stringent reporting framework, which is focused solely on SED and EnD expenditure, holds limited potential to generate learnings and reflections relevant from a developmental perspective. IPPs are required to report to the IPP Office and Department of Energy (DoE) on their expenditure on SED and EnD initiatives every quarter, according to their bidding commitments and annual development plans, without the actual results being relevant for compliance.

The unintended consequence of this is that expenditure tends to drive development, as opposed to development driving expenditure. This quantitative and largely ‘box-ticking’ approach to reporting disincentivises IPPs to invest in more meaningful and longer-term impact evaluation and learning, especially since scheduled quarterly reporting is misaligned with the kind of long-term and organic timeframes associated with successful developmental practices in communities (Mthembi, 2015; Wlokas, 2015; Wlokas et al., 2017). Moreover, the reporting framework limits the IPP Office’s capacity to properly interrogate the impact of SED and EnD spend. In short, the reporting framework tends to favour compliance, as opposed to impact.

2.3.4 ANALYTICAL FRAMEWORK: INSTITUTIONAL WORK

This analytical perspective builds on extensive research into institutional practices in the REIPPPP (Wlokas, 2017). A substantial review of the institutional theory literature led to the initial introduction of the concept and practice of ‘institutional work’ in 2006 by Lawrence and Suddaby. The review found that the majority of institutional sociological work is concerned with the creation of institutions, and it identified three types of institutional work.

The first type studies the creation of institutions, the second focuses on institutional maintenance efforts and the third analyses work that aims to disrupt institutions (Lawrence & Suddaby, 2006; Lawrence, Suddaby & Leca, 2009). Each of these types is employed through specific institutional work efforts, so-called ‘forms’. These are summarised in Table 6 and inform much of the proceeding discussion in the following section.

These types and forms of institutional work provide a lens through which the niche dynamics responsible for the ‘make or break’ of project implementation in the REIPPPP can be assessed. Institutional work, from an understanding of just transitions, can either perpetuate existing socio-economic dynamics of power or it can channel these towards decarbonisation and structural transformation.

TYPES OF INSTITUTIONAL WORK		FORMS OF INSTITUTIONAL WORK
Creation	Political work: Actions in which actors reconstruct rules, property rights and boundaries that define access to material resources	Advocacy Defining Vesting
	Belief work: Actions in which actors' belief systems are reconfigured	Constructing identities Changing normative associations Constructing normative networks
	Boundary work: Actions designed to alter abstract categorisations in which the boundaries of meaning systems are altered	Mimicry Theorising Educating
Maintenance	Ensuring adherence to rules systems	Enabling work Policing Deterring
	Reproducing existing systems	Valorising and demonising Mythologising Embedding and routinising
Disruption	Disconnecting sanctions	Working through state apparatus to disconnect rewards and sanctions from some set of practices, technologies or rules
	Disassociating moral foundations	Disassociating the practice, rule or technology from its moral foundation as appropriate within a specific cultural context
	Undermining assumptions and beliefs	Decreasing the perceived risks of innovation and differentiation by undermining core assumptions and beliefs
New forms (identified through this research)		• Destruction and vandalism • Questioning • Raising awareness and consciousness • Envisioning • Demanding amendment capacity • Objection and rejection

TABLE SIX *Institutional work efforts, types and forms, including new forms identified through the research (Source: (Adapted from Laurance, Suddaby and Leca, 2009)*

2.3.5 THREE STAKEHOLDERS SHAPING INSTITUTIONAL PRACTICE IN THE REIPPPP

The following discussion of institutional work must be viewed in conjunction with the preceding section that sheds light on the complex environment in which these diverse stakeholders are trying to make sense of and execute their mandates. Investigating the institutional work of **creation**, **maintenance** and **disruption** (as summarised in **Table 6**) involves reviewing the actual behaviours and strategies deployed by stakeholders in the REIPPPP, based on document reviews and semi-structured interviews. The findings in a nutshell: **government** makes the rules, **companies (IPPs)** develop projects and **communities** hold shares without voting rights and receive project benefits. The latters' experiences often lead them to disassociate with and object to the moral foundations of the companies' practices.

2.3.5.1 Government

Government dominates creation work through setting the REIPPPP rules.

- Government, represented through the IPP Office, acts in line with its authority. It thus creates institutions through ***defining rules***, as the procuring party of the programme.
- Government creates institutions through ***vesting***, by defining residents within a specific geography around IPP projects as 'local communities' that shall accrue benefits through the project.
- This ***constructs identities*** for these communities, as they are defined as 'beneficiaries' of specific IPP projects. Companies gain an identity as 'development actors' in their relationship to these communities. Meanwhile, local government is excluded as no role is assigned to them in the context of the local economic development ambitions of the programme.
- Government also conducts institutional creation work through ***mimicry***, which is generally used to ease the adoption of rules or technologies of, in this case, incoming renewables projects. It could be seen as mandating companies with the delivery of community benefits in order to foster social acceptance of IPP projects.
- Government ***theorises*** that SED, EnD and local ownership will enhance economic development.

Government also maintains and disrupts institutions through the formulation of the procurement rules.

- With regard to community benefits, for example, this is undertaken by ensuring adherence to rules systems through ***enabling, policing*** and ***deterring*** work and through ***embedding*** and ***routinising*** institutions, with the intent of reproducing existing norms and belief systems. All of this is categorised as institutional 'maintenance' work.
- The reallocation of revenue and shareholding to benefit local communities enables the continuation of the country's envisaged growth and development path. These rules are ***policed***, and ***deterred*** from changing, through contractual agreements. By ***enforcing*** the requirements, government compels companies to attend to their relationships with local communities.
- Government performs other ***routinising*** and ***embedding*** work as well, but whether this is deliberate is uncertain, as one might expect government to further define such practices, at least beyond the mere allocation of termination points in cases of deviances from the investment schedule. The latter is an effort of disruption, through ***disconnecting sanctions***, which ultimately can lead to the suspension of an IPP's contract to sell electricity.

Neither companies nor communities participate actively in institutional work at this stage.

2.3.5.2 Companies

Companies dominate institutional work efforts in the development (bidding) stage of projects and continue as active institutional workers in the construction and operation phases. Companies create institutions in their writing of bid proposals for projects. The procurement rules guiding the formulation of a compliant bid place acting power with project companies. Communities might have been more (pro-)active participants, had the rules been written more favourably towards engaging with them affordably (in other words, were the transaction costs lower). Under the given REIPPPP format, however, project development is a top-down affair and there is very little evidence of active community involvement (see Chapter 3.1 for an encouraging exception in Hopefield).

- Companies create institutions by ***defining*** hierarchies among local residents when appointing trustees to serve on the boards of community trusts (to comply with the local ownership requirement). Through this ***defining*** work, community trusts become, to varying degrees, extensions of project companies, rather than independent and autonomous representatives of communities.
- In the SED plans, which form part of project bids, companies also define certain organisations and projects as pre-identified beneficiaries of SED and EnD funding. These actions also ***construct identities***. The research found only one company which constructed an identity for the acting local government in the project area.
- Companies construct ***normative structures*** by establishing partnerships with organisations. Agreements govern these partnerships, which are commonly established to deliver community benefits.
- Companies also use ***mimicry*** when creating new institutions. For example, when associating a community trust with a guaranteed income through shareholding dividends over 20 years.
- Various companies outline ***policing*** ambitions in their SED plans that relate to compliance and expectations for community trusts. They further ***define*** rules by drawing up trust deed documents that determine a trust's governance.
- Companies disrupt existing institutions through ***sanctions***. The trust deeds spell out sanctions which apply in cases of misconduct, for example.

During project construction and operation, companies further create, but also maintain and disrupt institutions.

- Companies ***define*** their quantitative community benefit commitments (SED, EnD and local ownership), they define company-specific rules and policies for community benefits, and identify roles and responsibilities (including, in some projects, the role for local government in relation to the community benefits and the trust).
- Companies ***construct identities*** when discussing the identity of the community trust and their company's identity within the project area. They also do this in the consultation process locally by including (and excluding) certain people and organisations.
- Companies also change ***normative associations*** through collaborating, communicating and consulting with communities and local government, and appointing and training community liaison officers (CLOs).
- They ***construct new normative networks*** in the process of engaging with other IPPs and attempting to collaborate on the delivery of community benefits.
- Companies employ ***mimicry*** relating to their internal capacity for community engagement and development tasks, in their promises made during the Environmental Impact Assessment (EIA), and in the development of company- or project-specific policies that guide their funding allocation process.
- ***Theorising*** efforts relate to a company's rationale for creating institutions in the form of any rules regarding (for example) media communication, funding allocation decisions and governance of trusts.
- Companies also ***deter*** institutions by making the same commitments for each of their projects.

- They *valorise* and *demonise* through the examples of collaboration and non-collaboration, successful and non-successful communication, positive and negative examples of funding allocation and the timing of the community trust establishment.
- Companies *embed* and *routinise* institutions through prioritising expectation management, creating a physical presence in their project areas, and implementing measures to prevent attention by the public.
- Companies disrupt institutions through *disconnecting sanctions* by criticising the community benefit requirements, as well as the requirements for trustee selection determined by financial institutions.
- They also *disassociate* the *moral foundations* of the community benefit rules by criticising their developmental value. Further, the REIPPPP does not require companies to coordinate or collaborate with local government in the delivery of community benefits. Thus, companies also disassociate the moral foundation of the relationship between companies and local government.

New institutional work forms, used by companies, include *questioning* of the availability of funding over time; of the absence of meaningful impact in the monitoring process; of the importance of strategic planning; and of the appropriateness of utilising community trusts as vehicles for local ownership. Companies *raise consciousness* about insincere corporate promises and expectations associated with the community trusts. Companies *envision* themselves fulfilling their commitments. Companies also *demand amendment capacity* from government to react to challenges, but also from the industry itself to grow its adaptive capacity to respond to the community benefit requirements. Finally, they *object* to experiences with non-responsive IPPs when attempting to collaborate on issues related to community benefits.

2.3.5.3 Communities

Communities are not involved, whatsoever, in the development stage and feature mainly at the implementation stage of IPP projects (see Chapter 4.8 for a reflection on the epistemic exclusion of communities). They are active in creation, maintenance, disruption and the various new forms of institutional work that have been revealed.

- In terms of creating institutions, communities *advocate* for multi-stakeholder collaboration.
- They also *construct identities* in a number of ways, when explaining the motivation of community members to lead and take part in activities, when discussing the identity of community trusts, and when attempting to identify the personnel of the various companies active in their area. Other important components of communities and identity work include the company-community relationship through funding allocation, the role of local government in development, and the process of selecting trustees.
- Communities *create normative* associations around their consultation and communication with companies, the appointment and training of CLOs, and their own experiences with corporate promises.
- Communities engage in *mimicry* work when discussing capacity within communities, and they work through *education* to criticise current communication practices both in the REIPPPP generally, and in the specific training in which they have participated.
- Communities also maintain institutions, mainly through *valorising and demonising*, by pointing out positive and negative examples of collaboration, communication and funding allocation processes, and also by *embedding and routinising*, which relates to the availability of companies for meetings at times convenient for community members.
- Communities disrupt institutions through *disassociating the moral foundations* of practices, following their experiences of communication approaches, of development capacity within IPPs, of failed corporate efforts in communities, of unacceptable funding allocation practices, of wider consultation required by IPPs, and of the non-transparent method of establishing community trusts.

Further work, captured in the new forms of work, finds communities destructing through *vandalism*. Communities work on *raising consciousness* around the challenging task of meaningfully serving the community in the context of unemployment, insincere corporate promises and, again, lack of transparency, this time in the process of funding allocation. Communities also *demand amendment capacity* so that they may engage more effectively and so that companies may adapt their tasks to align with the demands of meaningful community development. Finally, communities *object* to dishonesty from companies.

2.3.6 CONCLUSION

This chapter focused on the institutional practices that have emerged as a consequence of the policy requirements for community benefits in the REIPPPP, and that have been actualised in the bid preparation and implementation work by government, companies (IPPs) and communities.

The research finds, firstly, that the government acts alone as institutional worker, driven by its own logics, in the formulation of the policy and its rules. Private companies, then, motivated by corporate logics and steered by the policy, create, maintain and disrupt institutions in the course of developing project proposals and their associated community benefit commitments.

In the implementation and operation phases thereafter, all actors, including communities and academia, participate in such work. The research also identifies new work forms that have emerged, including *violence, vandalism, questioning, raising consciousness, envisioning, demanding amendment capacity, and objection and rejection.*

INSTITUTIONAL WORK UNDERTAKEN AT RESEARCH STEPS BY DIFFERENT ACTORS		POLICY REQUIREMENTS			BID DOCUMENTS			IMPLEMENTATION		
Type	Form	Gov	IPPs	Com	Gov	IPPs	Com	Gov	IPPs	Com
Creation	Advocacy									
	Defining									
	Vesting									
	Construction									
	Changing normative association									
	Constructing normative networks									
	Mimicry									
	Theorizing									
	Educating									
Maintenance	Enabling work									
	Policing									
	Deterring									
	Valourizing and demonizing									
	Mythologizing									
	Embedding and routinizing									
Disruption	Disconnecting sanctions									
	Disassociating moral foundations									
	Undermining assumptions and beliefs									
New forms	Destruction									
	Questioning									
	Raising awareness and consciousness									
	Envisioning									
	Demanding amendment capacity									
	Objection and rejection									

TABLE **SEVEN**

Institutional work undertaken at research steps by stakeholder group (Source: author creation)

Further reflections reveal the importance of dialogue, which should include all stakeholder groups, in order to surface experiences rather than let them escalate unchecked. This will maximise the potential for transformative and developmental impacts that will benefit local communities through the policy. The action research agenda associated with the research explored in this chapter already mitigated some of the current shortcomings, including lack of dialogue, a paucity of information about the policy, and lacklustre collaboration among stakeholders.

Much work remains for future academic research and practice support. Since it is required that public monitoring of the longer-term impacts of community renewables in South Africa and elsewhere continues, and as these are implemented in contexts of poverty and inequality, the attention of academics, government officials and, importantly, funders, will grow. For if renewable energy is indeed the technological present and future, our understanding and practice of its effective social implementation needs also to grow and keep apace.

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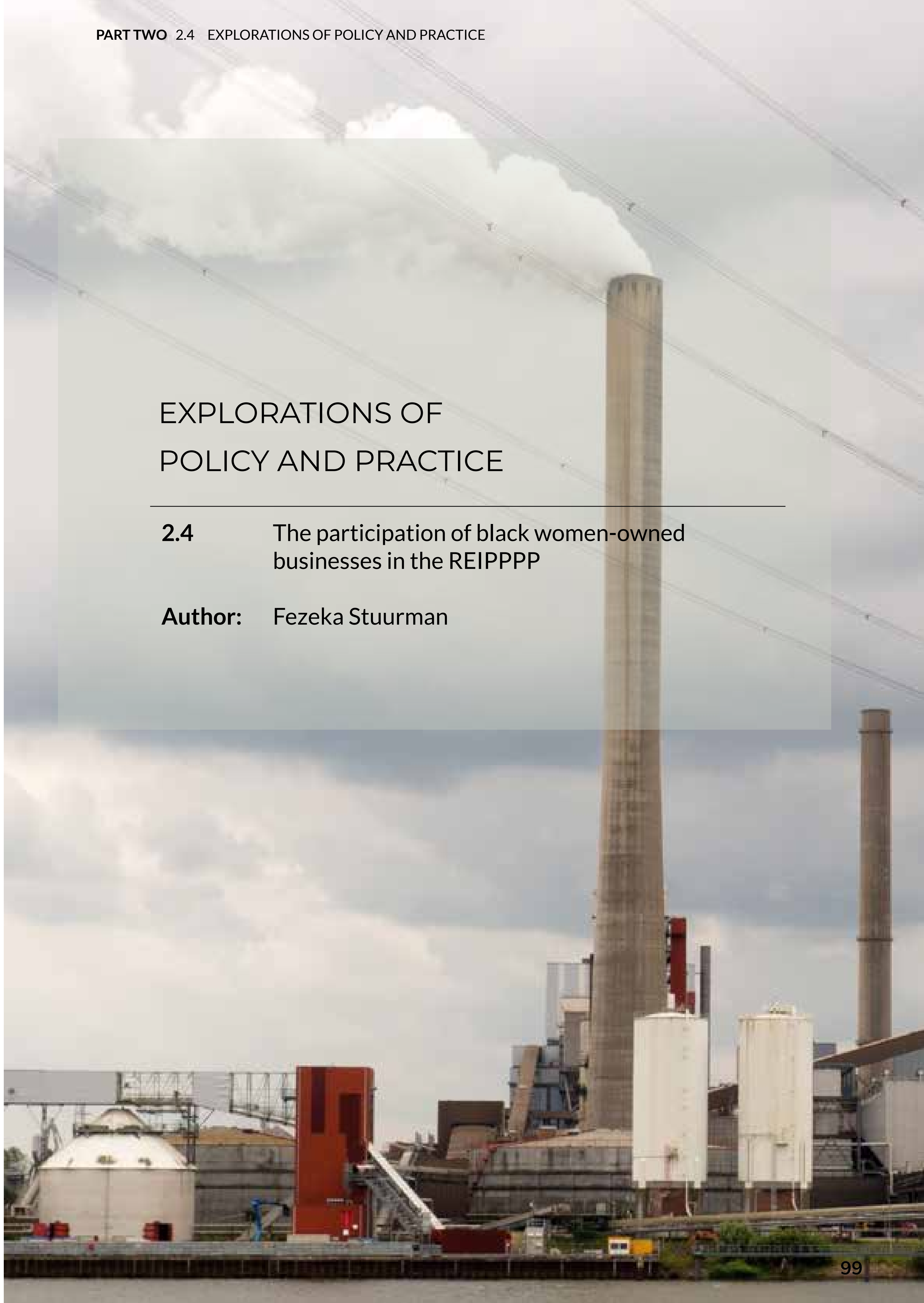

EXPLORATIONS OF POLICY AND PRACTICE

2.4 The participation of black women-owned businesses in the REIPPPP

Author: Fezeka Stuurman

2.4.1 INTRODUCTION

When the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) was launched, the South African government expressed its intention to use the programme to address both power generation and broader development goals, including the participation of women-owned vendors (WOV) in the value chain. To encourage independent power producers (IPPs) to take this seriously, the programme was designed such that bids must include an economic development (ED) component, which counts for 30% overall. The remaining 70% of the adjudication score would be based on price.

Under the 30% portion, as part of the preferential procurement sub-element of the ED scorecard, the government set a 5% procurement target from WOVs. This is 5% of procurement spend during construction and operations; to be clear, 5% of procurement spend at the construction phase of a project and 5% of procurement spend during operations. Yet, based on a review of the relevant literature in 2016, only 3% had in fact been procured from WOVs during the construction phase and only 4% during the operations phase (DoE, 2016). The situation remains unchanged. It was reported in the IPP Office's 2018 report that only 3% had been procured from WOVs; in Rand value, this equates to an underspending of roughly ZAR2.858 billion thus far.

A question worth asking: how much of this reported 3% spend was on black women-owned businesses (BWOBs)? My research, which I describe in summary in this chapter, investigates the extent of the exclusion of BWOBs from the REIPPPP programme. I also set out to understand the reasons for this exclusion and what measures could be taken to try and improve the level of participation.

2.4.2 RESEARCH LENS: INTERSECTIONALITY AND SOCIAL CAPITAL THEORY

In an attempt to understand the exclusion of BWOB, I draw on the frameworks of intersectionality and social capital theory, while simultaneously looking at potential ways of altering the ***status quo***. With its intellectual roots in the feminist movement, the term 'intersectionality' was coined in 1989 by Kimberlé Crenshaw, a black feminist legal scholar (Crenshaw, 1989). Crenshaw proposed intersectionality as a critique of the 'sisterhood' claims made by the predominantly white women's liberation movement of the 1970s (Gordon, 2016). Gordon (2016) contends that intersectionality theory arose from black feminist thought as an incisive critique of mainstream feminism. In essence, intersectionality aims to deconstruct the idea of 'sisterhood/sameness' and point out that black, minority and migrant women have been largely invisible within the feminist movement and within the literature on women's or feminist studies (Anthias & Yuval-Davis, 1983). At its core, intersectionality emphatically rejects the homogenisation of women, stating that assuming sameness is superficial because women's struggles are shaped by different political and social conditions in different countries (Levine-Rasky, 2011).

Intersectionality as an analytical tool addresses three key themes that are central to understanding exclusion: (1) a sophisticated and detailed description of the identity of a black woman; (2) how this identity then shapes how black women experience the world; and (3) the power dynamics inherent in these experiences. In this chapter, the intersectional focus is particularly on gender, race and class, perceived to be the three major social inscriptions on our lives (Davis, 2008). Intersectionality sheds light on how structures of power emerge and interact (Kaijser & Kronsell, 2014), how all encounters in deeply racialised societies are always already racialised (Gouws, 2017). South Africa is such a society. In such a highly divided country, power is unequally distributed and skewed across gender and racial lines.

Social capital theory emerges from a conservative economic discourse that reduces social phenomena to 'capital'. Woolcock and Narayan (1999) argue that there are essentially four perspectives on social capital, namely, the communitarian view, the institutional view, the networks view and the synergy view. For the purpose of this chapter, conjoining the networks and synergy views provides a fruitful framing for an analysis of the role of social capital in stakeholder dynamics. Social capital theory is useful because it provides a framework for understanding the way particular social groups either possess, or do not possess, certain social and institutional capabilities – forms of 'capital' – that are perceived to be necessary to make progress in developmental terms.

2.4.3 RESEARCH ACTIVITIES

A variety of empirical and non-empirical data collection methods were employed in the research process – a literature review, document reviews, semi-structured interviews and a focus group – the main findings of which are presented below. It was important to gain a multidimensional view to generate more representative findings and conclusions. I also employed a technique known as auto-ethnography, which is an approach to research and writing that seeks to describe and systematically analyse personal experience in order to understand cultural experience (Ellis, 2004). It is a reflective process which enables the writer to bring in their own perspective and experiences of the cultural situation into the analysis. I felt it useful to include my perspective and voice in the investigation by telling my own story and those of other black women who run businesses.

2.4.4 FINDINGS AND REFLECTIONS

The problem of the exclusion of BWOBs in the REIPPPP is multifaceted, so assigning responsibility to one party would inappropriately reflect the reality of the situation. I argue that, while each stakeholder needs to assume some responsibility, there are varying degrees of responsibility involved; further, how this responsibility is assumed should be informed by the power dynamics in the industry and ultimately by the position of each affected party on the power continuum.

To capture the multidimensional nature of the investigation, the analysis takes into account dynamics in the macro, meso and micro environments – descriptions of which are provided in **Figure 10** below. What became apparent over the course of the research is that there are also particular attitudes that permeate and transcend all levels of analysis. **Figure 10** demonstrates how these transcendent factors appear and manifest per level.

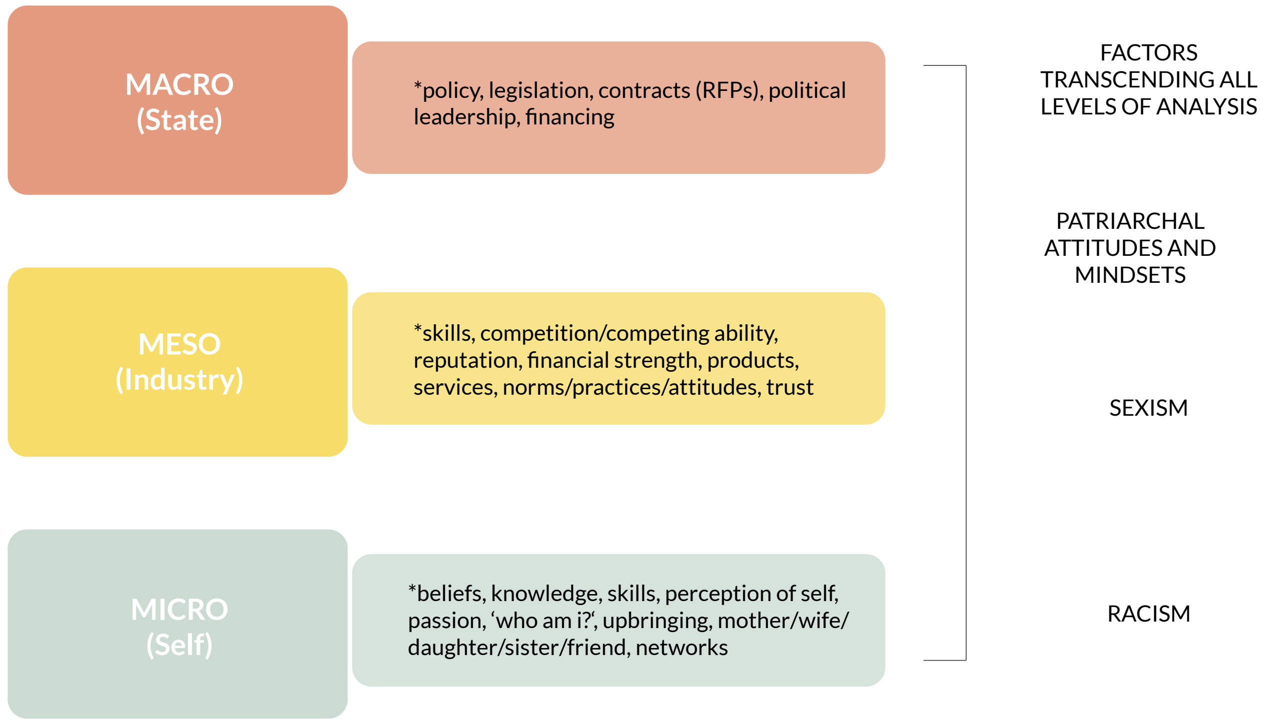

FIGURE TEN *Multidimensional analysis in the investigation of exclusion drivers*

Dynamics in the macro, meso and micro environments, permeated by the transcendent factors, together normalise the exclusion of BWOBs. As Anthias and Yuval-Davis (1983) argue, social positions are characterised by hierarchical differences and unequal access to economic, political, symbolic and cultural resources that are naturalised via continuous social reinforcement; in other words, these hierarchies are made to appear invisible by means of apparent normalcy (Dy et. Al., 2014).

Ultimately the research revealed five key drivers of exclusion:

2.4.4.1 Historical constructs, beliefs and perceptions of the social identity of a black woman

Age-old perceptions, socially reinforced over time, have made it appear normal for black women to be excluded in business and historically in government structures, although this is changing. As a result, black women are not recognised as a group on their own. They are either defined as black (gender neutral) or as women. This is what intersectionality opposes (Crenshaw, 2016). Black women have been homogenised and thus are not yet fully recognised as a standalone group. As Crenshaw (2016) asks, if we cannot conceptualise and articulate the problem, how will it be dealt with?

Over 80% of the research respondents made statements such as 'not just black women – women', or 'not just women-owned businesses – SMMEs' (small, medium and micro enterprises). This was particularly interesting, as it came more from representatives of the state and business than from black women. Further, the black businesswomen interviewed were very clear on this and saw their plight in business, especially within the renewable energy (RE) industry, as different from their white female counterparts'. Statements such as 'we are different, we do not have the same social capital and resources that they have available to them' were regular utterances. The following sort of sentiment was widely held: 'Remember, the 'big boys' are their brothers, husbands, fathers, uncles and brothers-in-law, so we definitely fight different battles, as our landing (if it eventually happens) is always a harder one than theirs.'

Davis defines intersectionality as "the interaction between gender, race and other categories of difference in individual lives, social practices, institutional arrangements, and cultural ideologies and the outcomes of these interactions in terms of power" (Davis in Kaijser & Kronsell, 2014). Implicit in this definition is that, at some point, these intersections collide in a way that results in an unequal distribution of power. In the case of the REIPPPP, it is argued that the intersection of these categories results in the marginalisation and exclusion of black women, via the use and misuse of power over BWOBs. The situation is particularly pronounced in South Africa due to its colonial and Apartheid history, which, at its ideological core, was instituted with the intention of systematically excluding black people from the economy (MacDonald, 2006).

2.4.4.2 Abilities and capabilities

The Department of Energy (DoE) state, in their Independent Power Producers Procurement Programme (IPPPP) Overview (DoE, 2016), that capacity-building has been identified as an inhibitor to the participation of women-owned businesses in the REIPPP. Moreover, black businesswomen, as well as IPPs and various other key players in the REIPPPP space, cited skills, training and experience as a key concern and contributor to the exclusion of BWOBs. The research participants concurred that there were no targeted programmes to upskill them to be able to participate meaningfully.

2.4.4.3 Macro and meso environment factors

The collision of various macro and meso factors – such as a lack of government and business commitment to the inclusion of BWOBs, indecisive and weak political leadership, policies and legislation not promoting the participation of BWOBs adequately and a lack of trust – are key contributors to the ***status quo***.

At a macro level, decisive political leadership and commitment can be seen to yield positive outcomes. As Karen Breytenbach noted when she reflected on the launch of REIPPPP in the Business Day Renewable Energy Report (2016), "It is a story of commitment and belief in what we were trying to do and everybody was behind us – the whole government, it was an amazing experience."

While the state set in motion a competitive bidding programme that had commendable effects on tariffs from Round 1 to Round 3, this programme has not had the desired impacts on the participation of BWOBs (DoE, 2016). Arguably, there ought to have been clear targets specifically for the inclusion of ***black*** women-owned businesses, as opposed to just women-owned business. Intersectionality theory and Gouws' (2017) observation that black women are usually always found at the bottom of a social hierarchy add further credence to this position.

An intense individualistic form of competition is in full force in the REIPPPP, which has had a negative impact on the inclusion of black women-owned businesses.

The high capital expenditure required of participants also makes it challenging for BWOBs to play a part in the REIPPPP. The tender process is highly competitive, and a 'survivalist' approach therefore likely prevails among bidders. In other words, the motivating factor for participants is winning at the expense of other participants, due to the limited allocation of megawatts to RE technologies. Deutsch's (1949, 1962) theory of how the source of motivation of different people may be interrelated is useful in making sense of the reinforcing manner in which the REIPPPP programme functions. In an individualistic structure, according to Deutsch, there is no correlation among the goal attainments of the participants, and so 'your success does not impact my chances of success in any way'. This intense individualistic form of competition is in full force in the REIPPPP, and has had a negative impact on the inclusion of BWOBs, who, as empirical work and reports have shown, do not possess the human capital (skills and experience), financial or social capital to compete. Feminist scholar Amanda Gouws (2017) suggests that the 'penalty-privilege nexus' works against BWOBs: the rules, as set out by the state, ***penalise*** BWOBs, while the ***privilege*** of experience, financial and social capital works in favour of large, white male-owned businesses.

2.4.4.4 Social positioning in business

The issue of social capital and networks was raised repeatedly in the research, particularly among BWOB respondents. In other words, black businesswomen perceive such networks as giving 'them' an added advantage in terms of knowledge, information and opportunity-sharing. Because 'they' know the 'right' people, they are able to access opportunities in time to prepare for any financial or human capital gaps that may prevent participation in the REIPPPP. This cycle continues and trust is built among these closed groups over time which, in turn, results in it being more difficult for 'new' or 'unknown' players to break in. Put another way, the bonding capital within these groups is strengthened over time, which makes it more difficult to build bridging capital.

The positive effects of social capital are highlighted in my own story as well. My employment opportunities have come via my networks; however, this was supported by my formal education and drive. In my case, it was through social capital that I was able to unlock the next opportunity I embarked on after my time working for a company in the RE industry. As Adler & Kwon (2002) highlight, social capital can help one unlock various other forms of capital, for example, human and financial.

It is worth dwelling for a moment on one respondent's story, in which social capital played a profound role and had a significant impact on her business, especially financially. Her husband and father in-law were instrumental in unlocking a major business opportunity, and she benefitted from having strong ties with the 'in-crowd'. Although not highly educated in the formal sense, her experience, drive and ambition, coupled with her networks, have seen her achieve a level of success as a businesswoman. Looking at this particular case, it seems that education is not a prerequisite, provided it is substituted with experience, drive and ambition. It shows that, on the entrepreneurial path, social capital can carry more weight and translate into greater benefits than education.

2.4.4.5 Self-beliefs and perceptions

Although many of the BWOBs that participated in the research were led by women who had achieved some level of success in their professional lives, remnants of internalised oppression were apparent. It became evident that the exclusion experienced in the REIPPPP and other industries had bred an inferiority complex leading these black women to question their own abilities. Additionally, the RE sector was painted as a highly complex industry requiring a great deal of technical knowledge – this also fed into their insecurities and made them believe that participating was impossible. So much so that, when women were given a door of opportunity to participate in the programme, they engaged in self-sabotaging activities that were detrimental to their own long-term wellbeing.

Women can indeed be one another's worst enemies. In my professional experience, a woman will oppress another woman and be the instrument that a man uses to put another woman down. I experienced a woman colleague in this way, understanding her to be the lead instigator in what transpired between myself and the male senior. In my experience, she chaired meetings in a biased manner and was determined to get her way and to put me down. This is, to me, a sign of internalised and normalised oppression. Instead of building another young, black woman up, there is a tendency to break one another down.

2.4.5. RECOMMENDATIONS

Although a multi-stakeholder approach is deemed the best way to improve levels of participation of BWOBs in the REIPPPP, it is government that should assume primary responsibility. As the procurer, government is strategically positioned to leverage its spending power to realise meaningful gender participation. A model based on the four pillars of inquiry, commitment, action and tracking (ICAT) is recommended:

Inquiry: Despite it being overt, the extent and nature of the problem is currently not articulated in the public domain in the way that it would need to be in order to implement the necessary solutions. An in-depth inquiry is therefore necessary to understand the problem in better detail. Examples of approaches could include:

- Multi-stakeholder discussion platforms (including white males)
- Quantitative analysis/audit of material involvement of BWOBs (in Rand value)

Commitment: For any meaningful changes to occur, the various stakeholders involved will need to commit to the envisioned changes through various instruments and support mechanisms. Government, as the procurer of goods, holds inherent power in this process. It will need to set the tone by committing to changing the ***status quo*** in the private sector by supporting and involving women in these value chains. Some steps to demonstrate commitment could include:

- Legislated specific targets for the inclusion of BWOBs in the ED scorecard
- Involvement of a range of practitioners in the process of writing up tender bids and requirements

Action (implementation): It has become evident in this research that issues pertaining to generationally founded problems – such as exclusion – will not be changed in the short term. Rather, only sustained and incremental steps over the immediate, medium term and long term are likely to lead to the desired change. Actions steps could include:

- Capacity-building programmes
- Legislated punitive measures for non-compliance

Track (continuous impact monitoring and evaluation): Continuous monitoring and evaluation is imperative, especially in new industries. It helps inform strategy processes and acts as a form of check and balance. In the REIPPPP, the biggest shortcoming of the monitoring and evaluation apparatus has arguably been its obsessive focus on the quantitative achievements of the programme. In other words, the foreign direct investment attracted, megawatt capacity added and jobs created are the prioritised indicators of progress. Yet the insights they yield are limited; for example, regarding the jobs created, are these jobs permanent or temporary, and are the workers actually benefitting?

A shift in the approach to monitoring and evaluation is required going forward. The qualitative elements of the programme have not been given as much attention as the quantitative, probably because they are usually more complex and fluid and therefore more difficult to describe. Yet this is not a valid reason to overlook them.

2.4.6 CONCLUSION

It is evident that, although the REIPPPP has delivered on the promise of cost-effective and clean energy, this has not been achieved with adequate inclusion of BWOBs in the programme. This is due to the uneven distribution of power and weak social ties across gender and racial groups, which could be attributed to a legacy of mistrust fuelled by the country's history of Apartheid. It is only through the state taking the initiative, as lead actor, that the ***status quo*** may change. Applying a model based on inquiry, commitment, action and tracking (ICAT) could prove fruitful in these efforts.

The ICAT model recommends that a detailed inquiry into the situation be conducted, with the aim of clarifying the magnitude of the exclusion while simultaneously providing a departure point for evidence-based solution design. Commitment is a catalyst for change and this commitment must be demonstrated by clearly articulated initiatives. To bring about change, there will need to be clear action and implementation plans flowing from the commitments made via various channels and measures. Lastly, if compliance monitoring is not supported with impact evaluation, then there is the risk of repeatedly facing similar challenges in the future.

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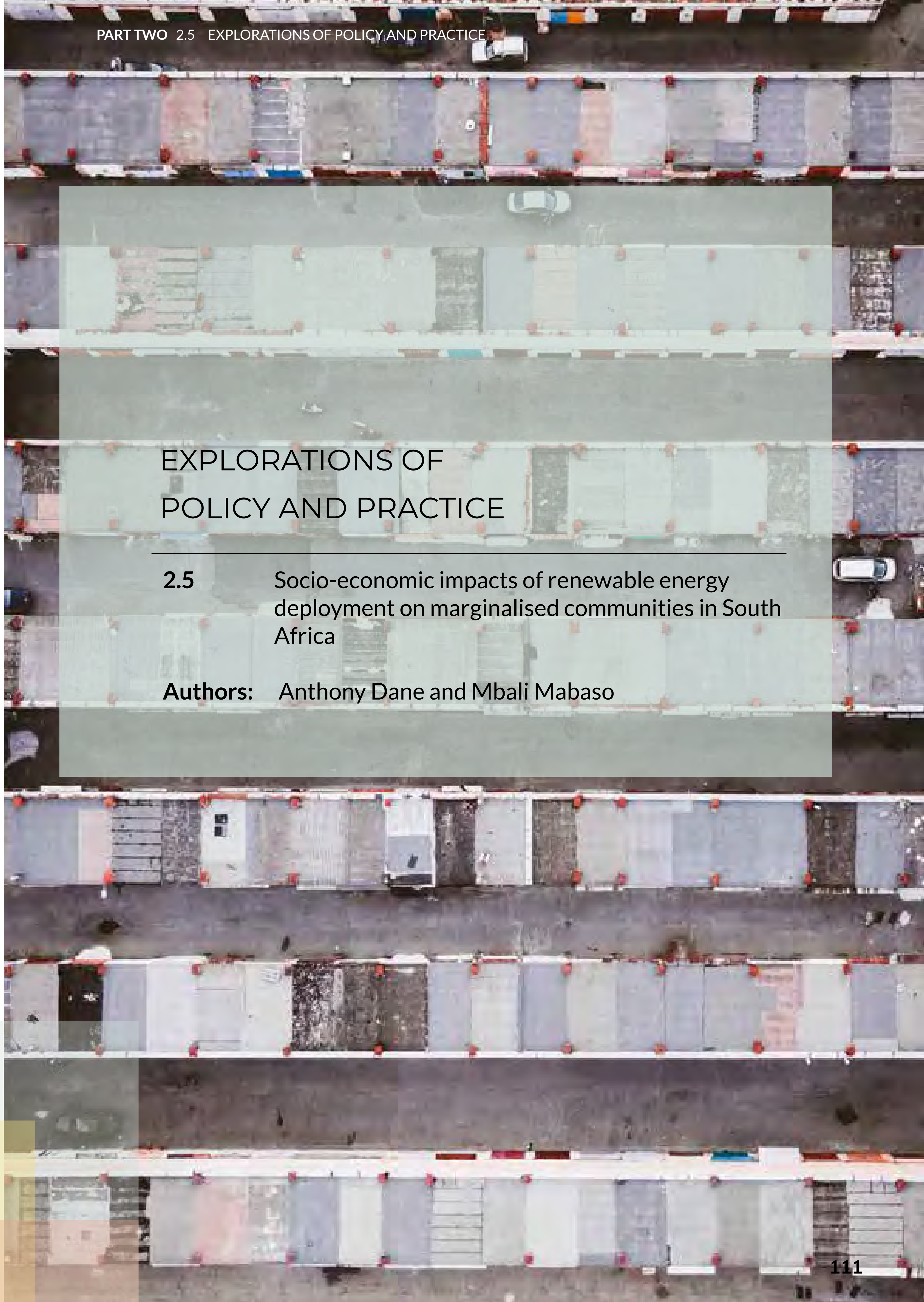

EXPLORATIONS OF POLICY AND PRACTICE

2.5 Socio-economic impacts of renewable energy deployment on marginalised communities in South Africa

Authors: Anthony Dane and Mbali Mabaso

2.5.1 INTRODUCTION

Understanding the socio-economic impacts of renewable energy (RE) deployment is critical in legitimising the industry and informing a just transition in the power sector. Despite evidence of growing interest around this topic in South Africa and globally, aspects relevant to emerging and developing economies, such as access to energy, rural development and health impacts, have not been sufficiently considered (Borbonus, 2017).

This chapter draws on the results of a study titled ***Economic Prosperity for Marginalised Communities through Renewable Energy in South Africa*** (IASS Potsdam, 2019). It was part of a 2019 series of four studies assessing the co-benefits of decarbonising the power sector in the country, funded and edited by the Institute of Applied Sustainability Studies (IASS) and commissioned by the Council for Scientific and Industrial Research (CSIR)[5]. The study interprets 'marginalised communities' as those that have experienced social and economic exclusion both historically and currently, as evidenced by a range of socio-economic indicators, such as high poverty and unemployment rates. The study draws on quantitative and qualitative information accessed through independent power producers (IPPs), aiming to quantify the positive socio-economic impacts of projects in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

In this chapter, a brief overview is provided of prominent international and local studies that explore the socio-economic impacts of RE. Following this, the COBENEFITS project is explored in some detail, including a review of the methodology used, findings, reflections and, most importantly, the study's recommendations for creating an enabling environment for improved development outcomes from RE deployment in South Africa.

This section provides a summary of existing studies on the socio-economic impacts of RE and relevant assessment methodologies from both a global and a South African perspective.

5 The other three studies explore RE in relation to health and reducing costs, solar PV self-consumption, and skills and job creation. All reports are available at www.cobenefits.info.

2.5.2 STUDIES OF THE SOCIO-ECONOMIC IMPACTS OF RENEWABLE ENERGY

2.5.2.1 International studies

Studies with a focus on the socio-economic impacts of RE have been conducted at various levels, including regional, country-specific, rural electrification programmes and project-specific studies, to name a few.

At a regional level, Jenniches (2018) explores a range of methods used to assess the economic impacts of RE technologies, based on the assertion that changes at regional level are more evident than at national level, given the distributed nature of RE technologies.

On a global level, the International Renewable Energy Agency (IRENA) (2016) has carried out various studies on the macro-economic benefits of RE technologies since 2011. The initial benefits identified include employment and skills creation, but these were later expanded to include gross domestic product (GDP), welfare gains (such as health, education and reduced greenhouse gas emissions), local economic value creation, improved livelihoods and gender-specific benefits, among others. In a recent study, IRENA (2018a) analysed the RE jobs created globally per RE technology type. Internationally, an estimated 9.8 million jobs were created in 2016 directly from renewables (IRENA, 2018b). The resulting welfare gains globally for the same year were reported to be highest in Mexico, Brazil, India and the territories of Oceania respectively. The indicator for global welfare is conceptualised by IRENA (2018b) to include economic, social and environmental welfare indicators which influence human wellbeing and are not reflected in GDP or employment figures.

In a country-specific approach, the IASS Potsdam, together with various implementing partners, launched the COBENEFITS project, aimed at identifying the socio-economic benefits of country-specific renewable energy and climate change mitigation targets and policies (IASS Potsdam, 2018). The COBENEFITS project places emphasis on the alignment between the current interests of government ministries in each country and the opportunities created to inform the way in which co-benefits are identified and prioritised (IASS Potsdam, 2018). Partner countries participating in the project so far include India, South Africa and Vietnam.

2.5.2.2 South African studies

Renewable energy IPPs are subject to both localisation and local economic development prescriptions that go beyond those of any other public procurement programme in South Africa (Eberhard, 2016). The IPP Office in the Department of Energy (DoE) is mandated to contribute to national development and transformation objectives by leveraging RE investments to grow local industry, drive job creation, support economic transformation, and contribute directly to local community development through spending on education, social welfare, healthcare, and enterprise development (Independent Power Producer Office, 2018).

The IPP Office (2019) reports that, as at 31 March 2019, socio-economic development (SED) contributions are estimated at ZAR860 million to date, with a total commitment of ZAR23.1 billion until 2035 (ZAR18.8 billion of this is allocated to local communities). Enterprise development (EnD) contributions of ZAR276.7 million have been made to date, with a total commitment of ZAR7.2 billion until 2035 (IPP Office, 2019).

In a review study, the World Wide Fund for Nature (WWF, 2015) explored the challenges of the initial implementation of the REIPPPP, with input from bidders, communities and policy stakeholders. The report highlights that the REIPPPP requirements are successful in creating opportunities for local community development, but that the programme lacks the framework required to bring these opportunities to fruition. In a study investigating the impact of the power sector transition on employment in South Africa, Meridian Economics (Tyler & Steyn, 2018) provides a summary of key South African publications with a focus on the subject and concludes that a review of the literature reveals a gap in the standardisation of employment metrics.

Various other studies have been carried out to quantify the contribution of the REIPPPP, but there are limited examples of studies which quantify the socio-economic impacts of the programme.

2.3 Methods for assessing socio-economic impacts

Various methods and tools exist for assessing the socio-economic impacts of RE deployment, all of which face challenges related to valuing non-market impacts, determining attribution, considering impacts that accrue over longer periods and a lack of robust data.

IRENA and the Clean Energy Ministerial (CEM) have explored methodologies and developed frameworks for assessing the deployment of utility-scale RE projects (IRENAa, 2016). IASS builds on this work and proposes a framework better suited to developing countries (Borbonus, 2017). In all cases, the frameworks accommodate a variety of methods and tools. Borbonus (2017) distinguishes between 'gross' approaches, encompassing employment factors, gross input-output analysis and value chain analysis, and 'net' approaches including, for example, net input-output methods, macro-economic models, general equilibrium models and economic simulation models. Importantly, any analysis of the socio-economic effects of RE has to be adapted to different country perspectives and to support the economic and social development goals of each (Borbonus, 2017).

In South Africa's case, the requirement for direct development spend and community ownership of IPP projects demands an approach that assesses direct, indirect and induced impacts

associated with SED and EnD spend, as well as dividend flows associated with community ownership. Methodologies to assess local development spend have been applied in the case of corporate social investment (CSI) and SED and EnD requirements for mining companies. These range from robust statistical impact assessment methods (such as randomised control trials), to process evaluations that draw on theories of change which rely on proxies and subjective assumptions, and which have a tendency to focus on outcomes rather than impacts. Various specific social impact assessment methodologies exist for companies and investors that make these kinds of investments, such as social return on investment (SROI), and several frameworks and methodologies are available for measuring companies' contribution to the Sustainable Development Goals (SDGs) (Salverda, n.d.; Durand 2019).

2.4 Measuring the impact of development interventions in South Africa

Given the significant role of the private sector in deploying RE technologies in South Africa, it is worthwhile considering the existing efforts by companies in other sectors of the economy to measure their development interventions. Here are some examples:

- The Mineral and Petroleum Resources Development Act (MPRDA) requires that community ownership and SED and EnD spend by mining companies be measured, based on their approved Social and Labour Plans (Centre for Applied Legal Studies, 2018).
- The Department of Trade and Industry's broad-based black economic empowerment (B-BBEE) rules incentivise EnD spending as a component of a company's B-BBEE level.
- Listed companies are expected to deploy CSI and, in 2018, South African companies spent an estimated ZAR9.7 billion to this end (Trialogue, 2018).
- Investors are increasingly requesting information on the socio-economic and environmental impacts of their investments, driven by a recognition of the importance of environment, social and governance (ESG) risks for shareholder value.

2.5.3 COBENEFITS: OVERVIEW AND METHODOLOGY

The feedback provided by practitioners working in these areas is that private-sector SED and EnD investment is characterised by a limited understanding of impact, among other challenges.

Another approach, namely the COBENEFITS project's aforementioned ***Economic Prosperity for Marginalised Communities*** through Renewable Energy in South Africa study, is worth looking at in some detail. RE deployment can impact marginalised communities through a variety of 'impact channels'; in this case, the assessment focused particularly on utility-scale impact channels (as opposed to, say, smaller and off-grid channels). This focus was motivated by the broader COBENEFITS focus on utility-scale RE deployment. It was also informed by the project team's experience and expertise around RE impact areas, with the most significant potential impact being on marginalised communities in South Africa.

The study included an assessment of impacts to date and projected impacts based on a variety of national energy planning scenarios. A specific investigation of the impacts associated with project-induced in-migration was also undertaken, as well as a review of the criteria for selecting beneficiary communities. The process is summarised in **Figure 11**.

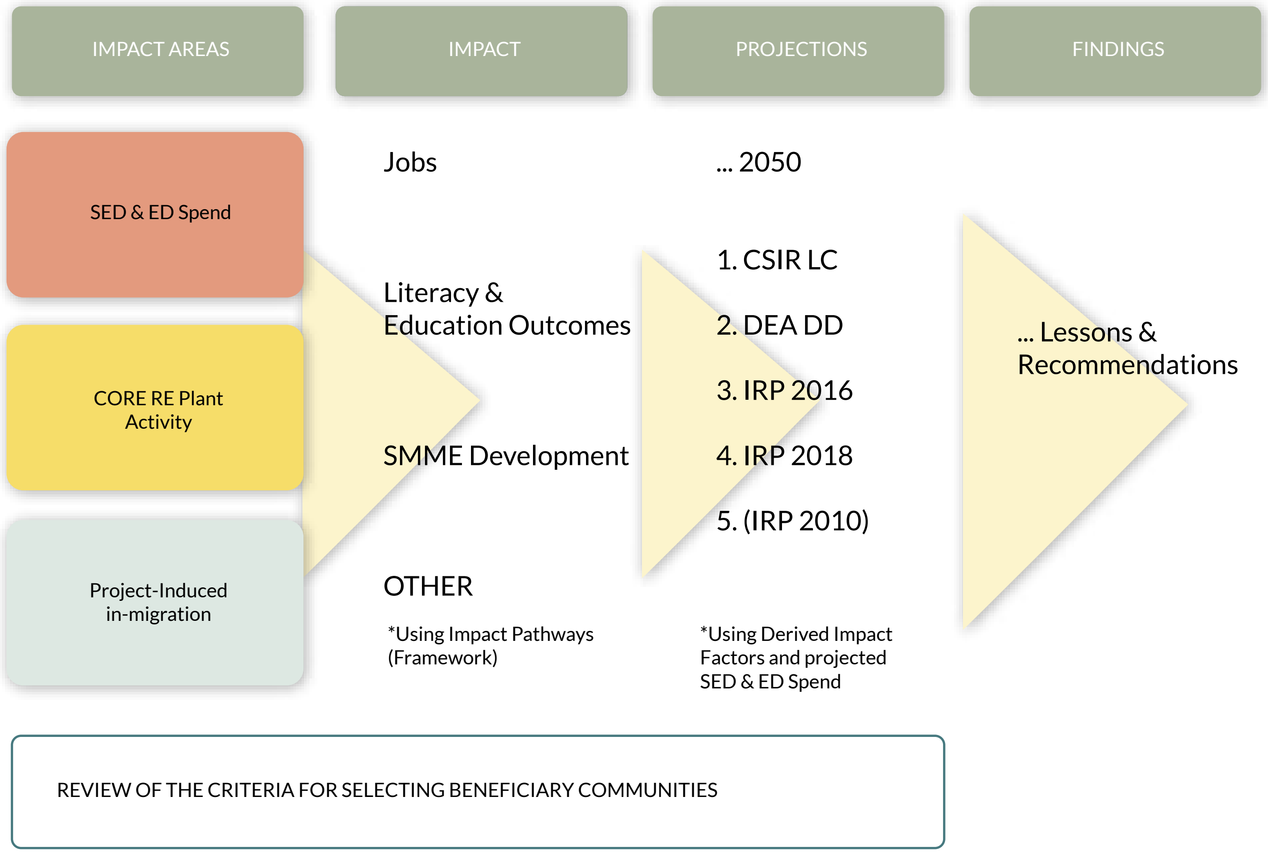

FIGURE **ELEVEN** *Cobenefits methodological approach (Source: author creation)*

The study found that there was a lack of publicly-available methodologies, data and multipliers associated with socio-economic development; thus, a novel methodology that can be adopted and improved upon was developed. The analytical framework allowed for an overarching assessment that draws on both qualitative and quantitative information of varying degrees of completeness and accuracy. It built on the work of IASS and IRENA and drew on theory of change techniques to build a broadly applicable methodology that, while accommodating local contexts explicitly, enables comparability across different project sites in different geographies.

Three sites were chosen as case studies for the project. 'Impact pathways' were developed for each site (associated with 'SED and EnD spend'), and at an aggregated level of all three for the 'RE investment'. This is consistent with the logic that specific activities that deliver outputs will lead to outcomes and finally to impact (or to intermediates and/or proxies for impact). Site pathways were populated, based on the best available data, to test whether the impact logic holds and, subject to constraints, to assess the extent to which impact was achieved.

The case studies included three REIPPPP sites: two wind farms and one solar photovoltaic (PV) power project. Owing to sensitivities, the selection of project sites was primarily guided by the quality of existing relationships with the respective project companies. The locations of the projects across South Africa, the duration of their commercial operation, as well as the expected level of community engagement were also important factors in the selection process. Primary data were collected via structured focus groups and interviews, while secondary data came from the relevant economic development managers as well as project information available in the public domain.

Impact factors were used to model country-wide impacts in 2030 and 2050 for different national energy mix and climate scenarios.

Measurements of the actual impacts in the case study sites were used to derive the 'impact factors', which are multipliers that can be used to estimate impacts per unit of development spend. The impact factors arrived at in the study are the result of an averaging of relevant results across the three study areas; thus, the factors were not tailored according to specific RE technologies or geographies. Determining impact factors is critical for any scenario modelling exercise. Impact factors (IF 1, 2 and 3 below) derived from, and used for, the COBENEFITS scenario modelling are shown in **Table 8**.

	INDICATOR	IMPACT FACTOR	
IF 1	Direct and indirect jobs	0.02 - 0.09	Number of jobs created through SED and EnD spend, per ZAR million (cumulative over the project life)
IF 2	Literacy and education outcomes	5.73	Number of beneficiaries per ZAR million, per year who feel empowered to access opportunities (i.e. improved education outcomes)
IF 3	Creation and growth of SMMEs	0.67	Number of enterprises supported and who perceive positive impact on their sustainability, per ZAR million, per year

TABLE **EIGHT** *Project Impact Factors (Source: author creation)*

These impact factors were used to model broader country-wide impacts in 2030 and 2050 for different national energy mix and climate scenarios. The scenarios considered were:

- CSIR Least Cost– '**CSIR LC**'[6]
- Department of Environmental Affairs Rapid Decarbonisation– '**DEA DD**'[7]
- Draft IRP 2016 Base Case – **'IRP 2016'**
- Draft IRP 2018 IRP 1 (least cost; no annual build limits on RE) – '**IRP 2018**'

6 The CSIR least cost scenario refers to the scenario presented by Wright et al. (2017) in the CSIR's formal comments on the Integrated Resource Plan (IRP) Update Assumptions, Base Case and Observations 2016.

7 The Rapid Decarbonisation scenario is from the DEA project "Projected Greenhouse Gas Emissions Pathways" 2018.

2.5.4 COBENEFITS: FINDINGS AND REFLECTIONS

2.5.4.1 Socio-economic impacts to date

The socio-economic impacts of SED and EnD spend in the three project sites have been moderate, mainly as a result of the short period that the SED and EnD programmes have been in implementation. Acknowledging that it takes time for socio-economic development impact to materialise, key findings so far include:

- Women are the foremost beneficiaries of SED and EnD initiatives for all three project sites.
- The top three SED initiatives, in order of prevalence, are (1) early childhood development, (2) educational support for learners and (3) public infrastructure investment.
- In general, the jobs created and sustained over the project lifetime (25 years) are services for the construction, operation and maintenance of the power plant.
- In communities with other opportunities in the local economy, the enterprises supported through SED and EnD spending are those outside renewable energy generation, such as services for the mining industry.
- In-migration into marginalised communities primarily takes place during the construction period, and minimal adverse impacts were identified. In-migration associated with the operation and maintenance of RE power plants has been negligible to date; in other words, requiring very few workers to move to the area from elsewhere.

2.5.4.2 Projected impacts

In contrast to the employment impacts of traditional fossil fuel power plants, such as coal, which are typically limited to the geographic region of the primary energy source, the employment impacts of renewable energy projects are distributed nationwide. **Figure 12, Figure 13 and Figure 14** illustrate the distribution of jobs, education and enterprise development, respectively, in each of the different scenarios.

Some key general takeaways include:

- The geographic spread of impacts reflects deployment, with most benefits for marginalised communities accruing in the Northern Cape and Eastern Cape provinces.
- Maximum impacts are achieved inland when solar PV is preferred (DEA DD scenario).
- Maximum impacts are achieved on or close to the coast when wind is preferred (CSIR LC scenario).

- Employment, education and enterprise impacts increase, across all the scenarios, as the deployment of RE increases up to 2050.
- With its socio-economic co-benefits, the REIPPPP programme importantly contributes to meeting the objectives of the 2030 SDGs.

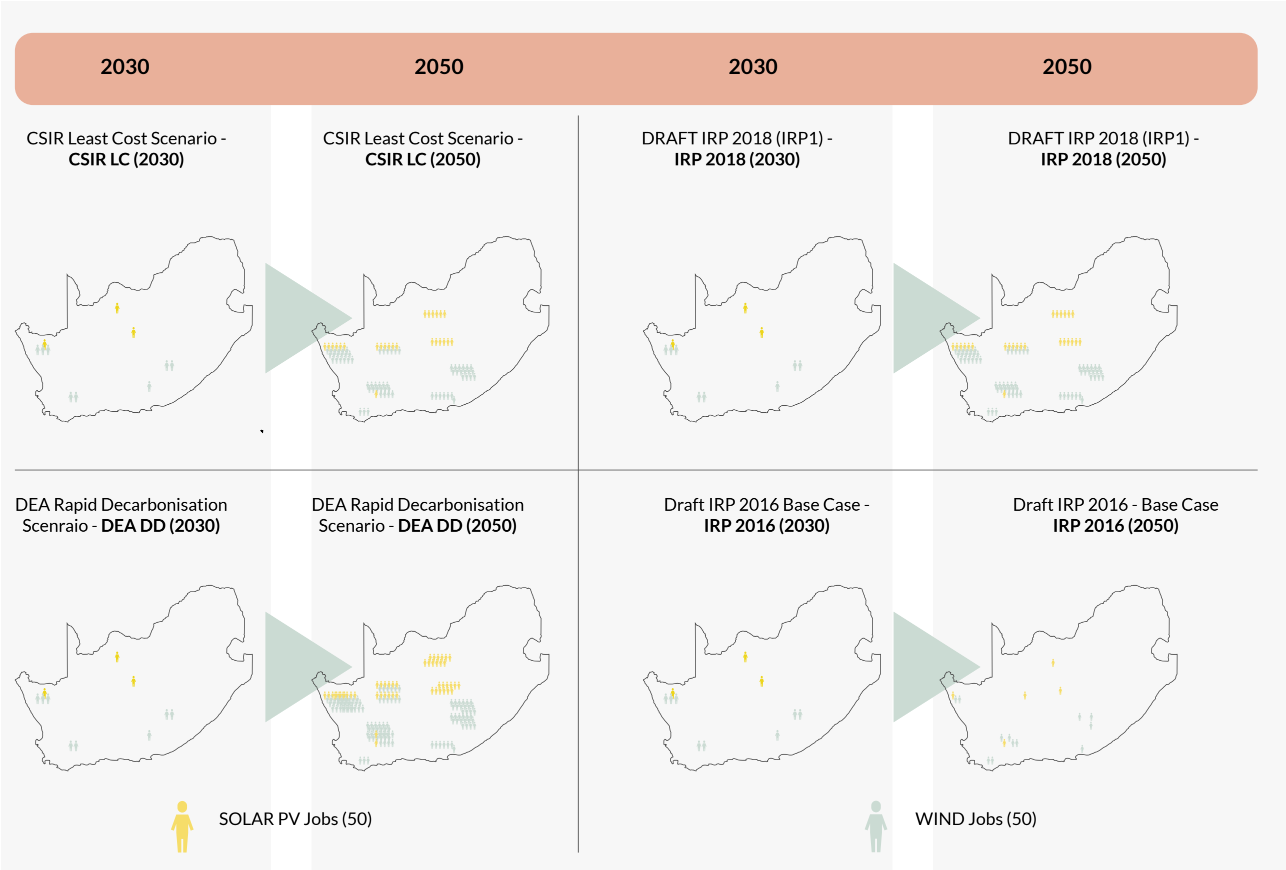

FIGURE **TWELVE** *Projection across planning scenarios: jobs created through EnD and SED spend*

Key takeaways regarding the employment projections include:

- Up to 10 000 local jobs could be created nationally by the year 2050 through the REIPPPP, specifically in marginalised communities.
- The IRP 2018 scenario could result in an additional 45% of such new jobs.
- Jobs created through EnD and SED spend for local enterprise development could reach a total of 5 000 nationally under the IRP 2018 scenario, while the CSIR Least Cost scenario could increase this figure by 60%.

It is important to note that this study focused on jobs created specifically for marginalised communities, primarily as a result of the SED and EnD spend, and should be considered together with another study in the COBENEFITS project which assessed the economy-wide job creation associated with utility-scale RE deployment. To gain an understanding of the full employment impact associated with RE deployment, these two studies should be taken together.

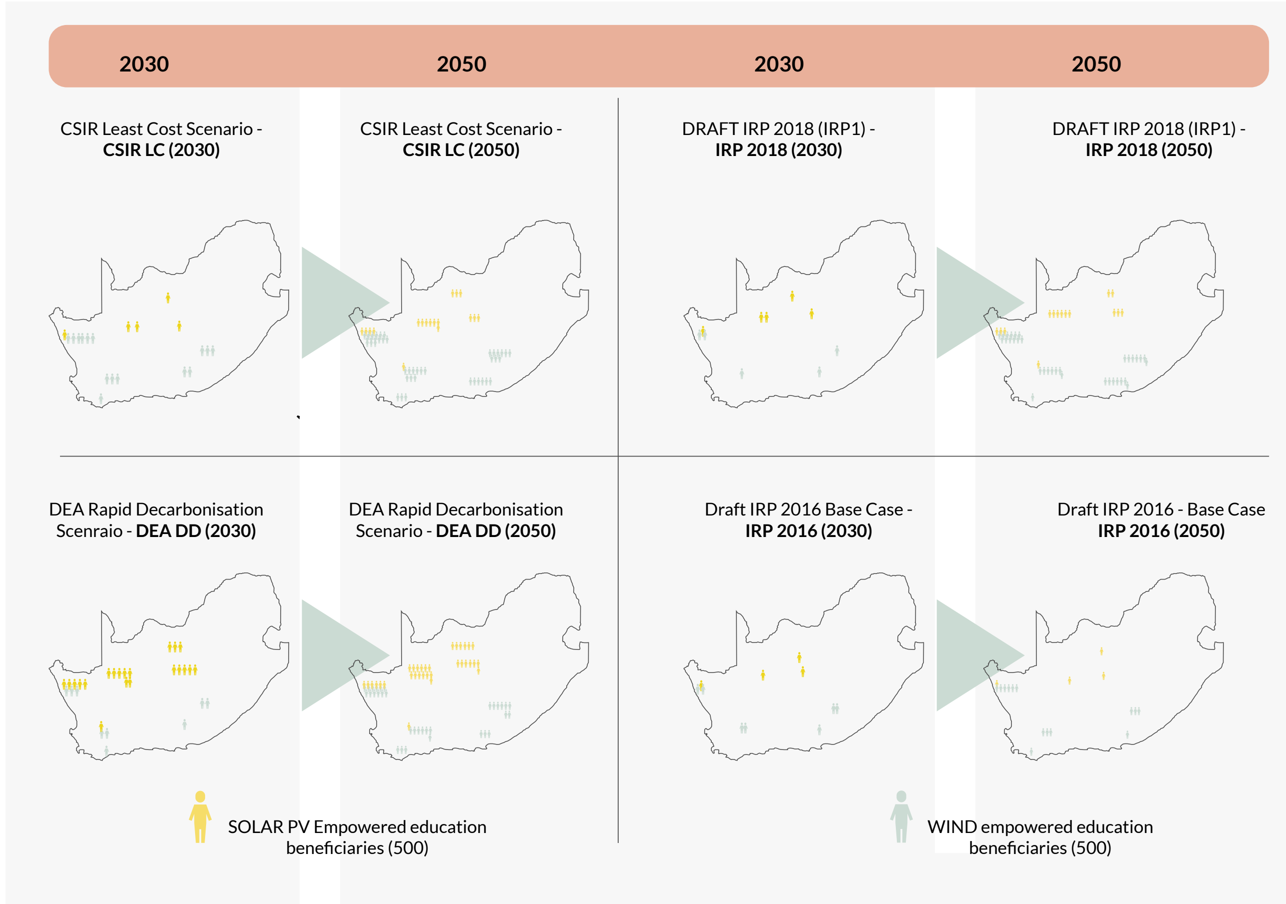

FIGURE **THIRTEEN** *Projection across planning scenarios: educational beneficiaries supported through EnD and SED spend*

Key takeaways regarding the education projections include:

- Until 2050, IRP 2018 will have enabled 19 000 individuals to benefit from access to education-related programmes.
- In the CSIR Least Cost scenario, this benefit could be additionally increased by 34%.
- In the DEA's Rapid Decarbonisation scenario, it is increased by more than 50%.

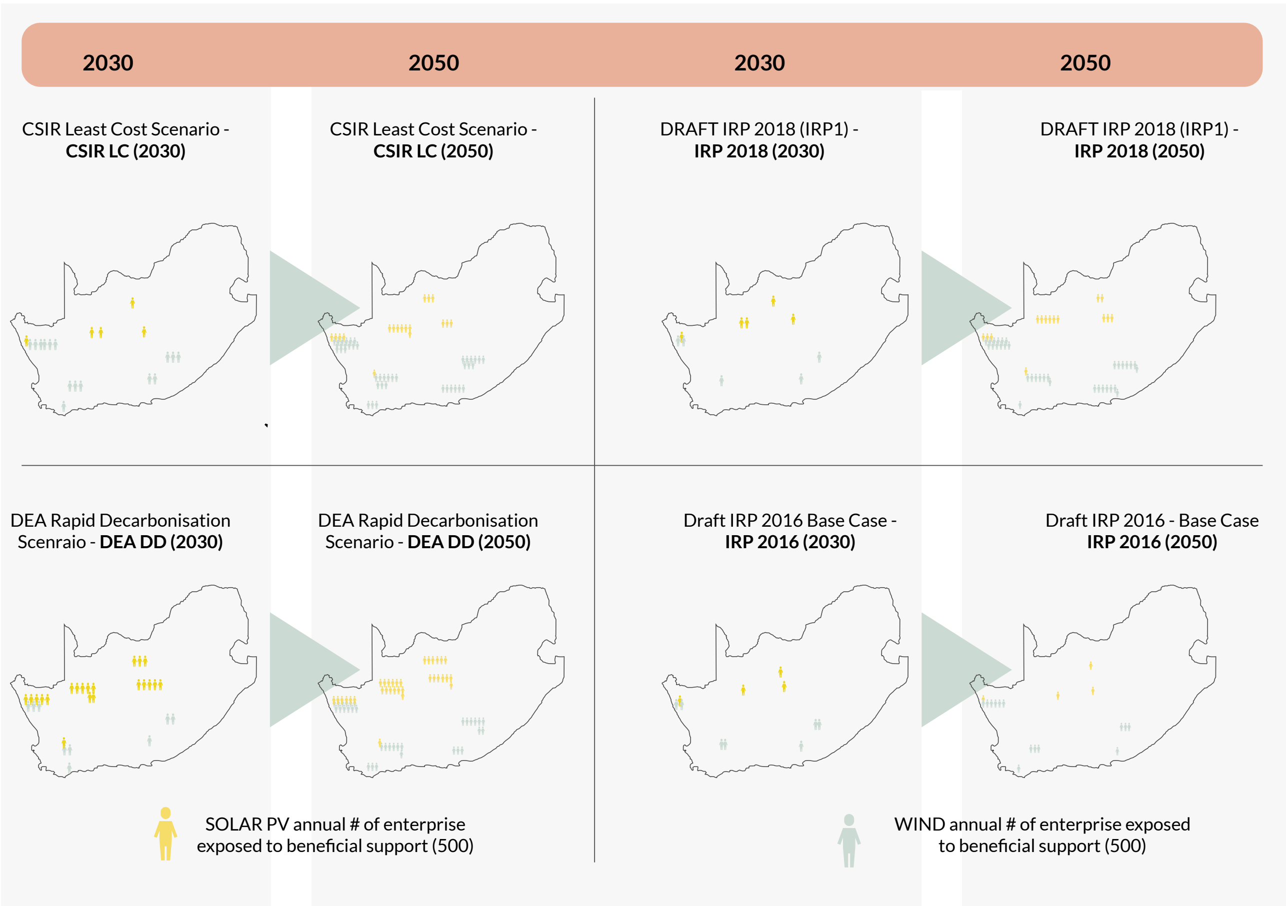

FIGURE **FOURTEEN** *Projection across planning scenarios: enterprises supported through EnD and SED spend*

PART TWO 2.5 EXPLORATIONS OF POLICY AND PRACTICE

Key takeaways regarding the enterprise development projections include:

- IRP 2018 will have supported more than 2 200 local enterprises by the year 2050.
- In the DEA's Rapid Decarbonisation scenario, this benefit could be additionally increased by 17%.
- In the CSIR Least Cost scenario, it is increased by more than a third.

2.5.4.3 Reflections on communities and community ownership

Shareholding for communities is not fundamentally problematic, yet there are issues that have created certain challenges. Notably, communities that are defined through geography and shared history have to be 'reformulated' into juristic entities – community trusts, primarily – that exist for the life of the project. This process has been hampered by a lack of consultation and the skills needed to empower those communities to manage trusts.

Of further concern are the funding terms. Sizeable benefits typically flow in the final five to seven years of project operations and, thus, present the risk of a 'gold rush' in the final years. This lack of returns in the short term, and a lack of understanding of and transparency around the terms, risks political in-fighting. This presents a challenge for fostering investment in development projects.

Additionally, there are currently no specifications regarding a preferred community benefit structure and no clear suggestions from stakeholders regarding the most appropriate approach(es). Deliberations to this end are ongoing.

2.5.5 COBENEFITS: RECOMMENDATIONS

The study found that investment in large-scale renewables through the REIPPPP does translate into socio-economic co-benefits for marginalised communities in South Africa. The requirement to spend a portion of revenue on SED and EnD represents the most significant current impact channel for these communities. In the longer term, the flows of dividends to communities – due to their shareholding in projects – will deliver substantial socio-economic benefits, especially if spent and invested wisely.

Investment in large-scale renewables through the REIPPPP does indeed translate into socio-economic co-benefits for marginalised communities in South Africa.

The RE investment itself creates jobs and adds value through the project lifespans, but these benefits accrue largely to higher-income beneficiaries. Local content requirements will likely stimulate local industries and create some socio-economic benefits for marginalised communities, but these were not assessed as part of this study. Again, though, it is expected that the majority of direct benefits would accrue to higher-income households.

Of potentially greater significance are the indirect benefits associated with a reduced electricity price and a cleaner energy source, as compared to more fossil-fuel intensive mixes. A lower price has an obvious direct benefit, but could also indirectly stimulate economic growth that would facilitate more jobs and income for marginalised communities. The benefits of cleaner energy are also pronounced: improved health and, consequently, reduced costs and time seeking treatment.

While these are demonstrable benefits, there remain significant challenges (and opportunities) to improve the development outcomes of RE deployment and the associated development interventions. The study therefore makes the following recommendations related to the REIPPPP policy and its implementation.

Longer and higher-quality local participation to increase benefits for marginalised communities. This requires:

- Transparency and publicly-available data
- Consistency and coordination in reporting
- Collaboration within the research and implementation communities to better understand and measure the broader socio-economic impacts
- Structured participation of local government

A set of practice guides should be developed to codify community engagement. This is necessary to guide IPPs on the following aspects:

- When and how to engage local stakeholders and the community at large
- How to specifically outline the baseline and monitoring data and types of studies that must be undertaken (at project inception and on an ongoing basis)
- Ways to collaborate with local government to create long-term, strategic social investment plans, among other important collaborations

Community ownership represents a significant risk and opportunity for socio-economic development of marginalised communities. The following should be considered to maximise potential benefits:

- **Capacitate communities through awareness raising and provision of resources**
  Agencies with the community's interests at heart, or ownership structures like legal and financial advisors, are needed to negotiate contract terms and explain their implications to communities. This could be funded through development finance institutions (DFIs) and could allow communities to take custodianship of their vehicles from inception.

- **Create broad investment vehicles**
  With community agreement, create broad investment vehicles with the ability and intent to invest in other revenue-generating assets. This will strengthen community wealth funds and reduce the reliance on the finite and timebound IPP revenue.

- **Active monitoring**
  Community trusts and other investment vehicles should be actively monitored. These should be subjected to standardised, regular reporting, with an emphasis on compliance with governance, financial management and development impact obligations. Lessons from the experiences in the mining industry and other sectors should be considered; for example, the new Mining Charter aims to create a specific agency to manage community trusts, and envisages a 'trickle dividend' that will deliver some short-term returns.

- There is a strong need for **coordination** both internally within the RE industry and externally with other stakeholders (especially where 50km-radius communities are clustered)

- **Foster deeper understanding**
  A deeper understanding of communities is required, with an emphasis on a community itself and the relative deprivation among other communities within a locality. This is a complex task in government relations and community engagement and requires skilled professionals.

- **Formalise the community engagement approach**
  Draw on approaches, such as Participatory Rapid/Rural Appraisals (PRA), at the project development and bid-preparation stages to determine, among other things, the true boundaries of the locality. The state must provide guidance.

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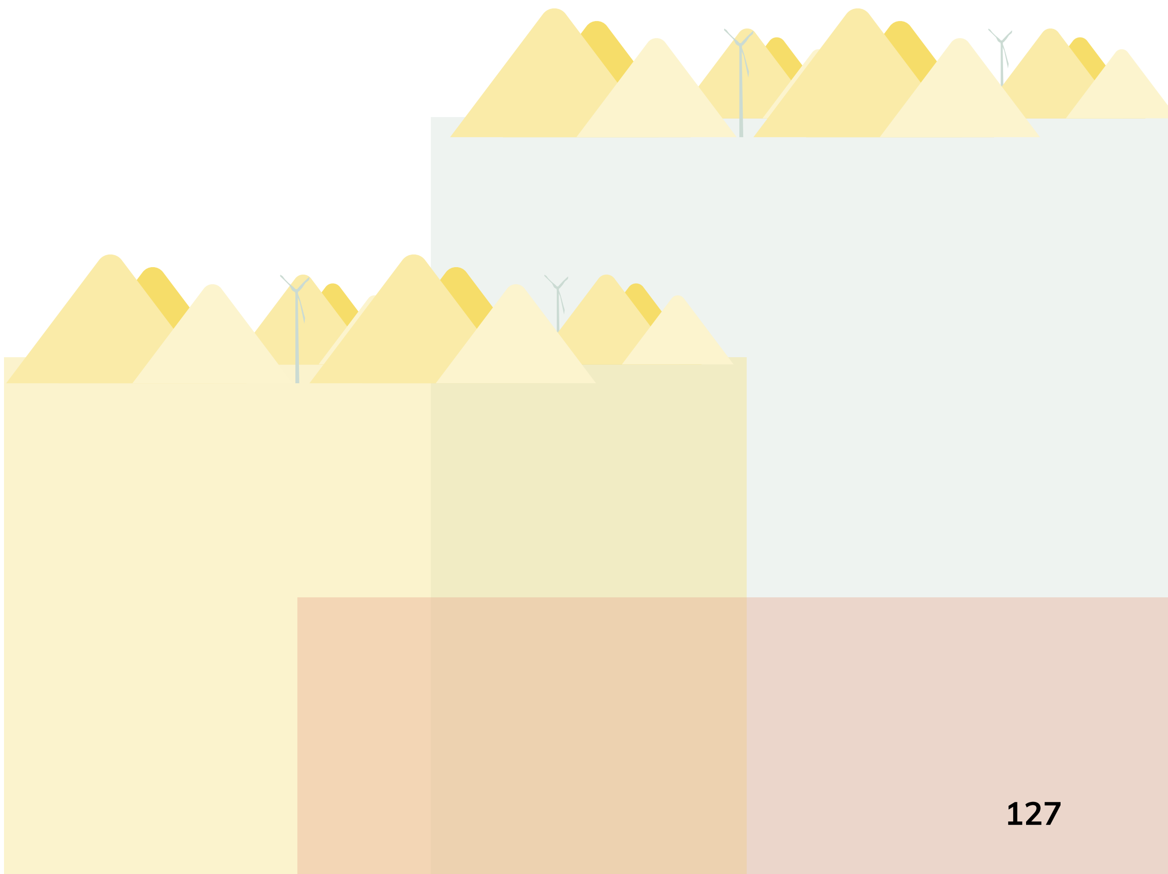

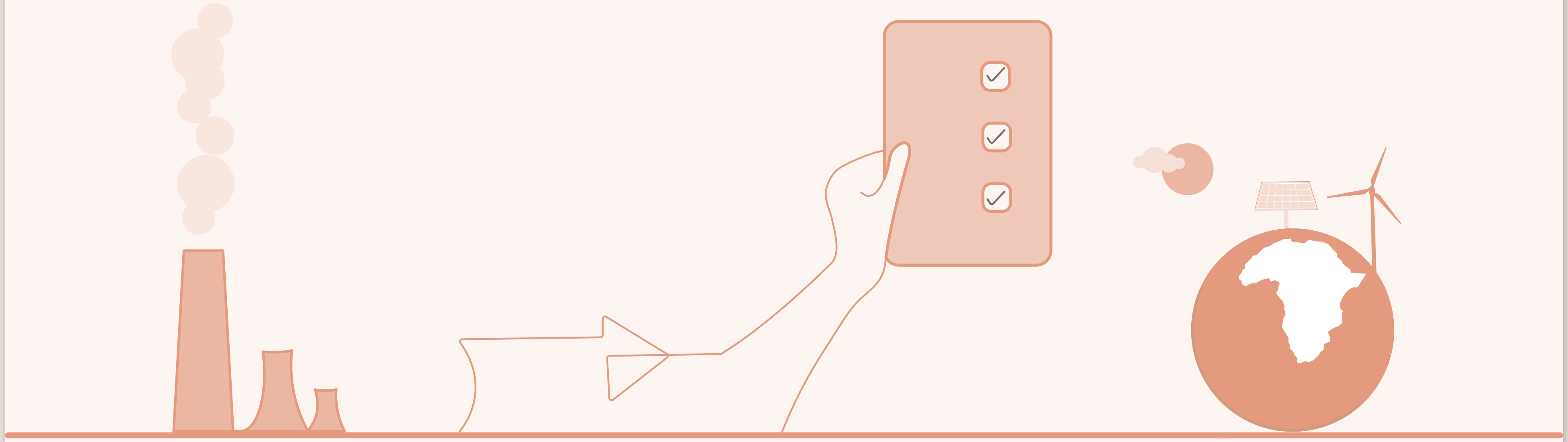

Decarbonisation to meet climate targets, coupled with South Africa's electricity crisis, prompted the development of the Renewable Energy Independent Power Procurement Programme (REIPPPP)

The REIPPPP has economic development requirements built into its framework, and targets that must be met in order for an Independent Power Producer (IPP) to successfully win a bid. The IPP office is the governing body that oversees all aspects of the REIPPPP including bid windows, procurement and operations.

PART THREE 3

PLACE-BASED CASE STUDIES

3.1 Empowering local communities through utility-scale renewable energy: A case study of Hopefield Wind Farm

Author: Kyle Swartz

PART THREE 3.1 PLACE-BASED CASE STUDIES

3.1.1 INTRODUCTION

The roll out of utility-scale renewable energy projects holds significant potential to support the energy transition across Sub-Saharan Africa and the continent. Renewable energy (RE) presents a range of socio-economic benefits that can be applied across a continent faced with extensive development challenges, potentially powering unelectrified communities and leap-frogging a carbon-intensive development model. In this context, there are useful lessons from the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), South Africa's flagship utility-scale renewable energy auction programme. The REIPPPP has been designed to address several objectives simultaneously. It is a deliberate attempt to create an RE generation market and to drive inclusive growth (Montmasson-Clair & Das Nair, 2015).

The REIPPPP mandates independent power producers (IPPs) to contribute towards social and economic development in the country. Successful IPPs are required to include local communities through a partial shareholding in the RE generation facility and to channel a portion of their annual profits towards socio-economic development (SED) and enterprise development (EnD) within a 50km radius of the project site (WWF, 2015). The figures involved are substantial, and the potential for meaningful impact significant, yet the challenges are profound.

The purpose of this chapter is to look at how the local rural community of Hopefield, in the Western Cape of South Africa, has received community benefits from the development and operation of the Hopefield Wind Farm, procured under the REIPPPP and developed by Umoya Energy. This case study presents insights into the successes and hurdles faced in private sector-led community development within the REIPPPP. The Hopefield Wind Farm pioneered an innovative approach to community engagement, as well as novel institutional and financial arrangements to deliver their economic development investments. More specifically, Umoya's flagship Home Improvement Project (HIP) is the focus of research in the case study. A qualitative research methodology was employed, making use of participant observation and semi-structured interviews between March and June 2018.

The deep consideration of local beneficiation within the REIPPPP represents a potential first step towards transformation and empowerment in South Africa. The achievement of these goals might be assisted by the application of guiding principles of community development and local economic development. This potential is explored through the case study of the Hopefield Wind Farm.

3.1.2 FRAMING COMMUNITY BENEFITS WITHIN THE REIPPPP

Communities within a 50km radius of the project site are eligible to receive funds for community upliftment and empowerment (this was later amended to the municipal boundary). Local communities benefit in three ways (Eberhard & Naude, 2017; Tait et al., 2013; Wlokas, Westoby & Soal, 2017):

1. Communities accrue income from share ownership, as a minimum of 2.5% of the project needs to be owned by the local community. Loans required for community ownership are often provided by development finance institutions (DFIs) (Tait et al. 2013). The shares are typically managed by a DFI and dispersed through a local community trust. The trust boards are comprised of community elected representatives. The DFI and the community trust leadership both participate in deciding how revenue is to be spent (Montmasson-Clair and Das Nair, 2015).
2. Community benefits are distributed through a percentage of annual income from the project, with 1.5% earmarked for spend on SED.
3. For community benefits from EnD spend, again, a percentage of annual income (0.6%) is allocated.

Collectively, the REIPPPP projects have generated substantial place-based investments in local communities across the country. The IPP Office (2018) notes that communities will accrue in excess of ZAR58 billion over bid Rounds 1 to 4. These funds hold tremendous transformative potential. Despite this well-intended support, early reports highlight several challenges in spending the money.

IPPs now need to practice community development and drive local economic development; however, these key functions are entirely new to them.

Notable community development challenges identified within the industry include poor community engagement between IPPs and locals, poor management of community trusts, a lack of guidance from government, and the (mis)management of community expectations (WWF, 2015; Wlokas, Westoby & Soal, 2017). In essence, IPPs now need to practice community development and drive local economic development. However, these key functions are entirely new to them, as they have not been integrated in their business operations before.

Montmasson-Clair and Das Nair (2015) discuss various complexities resulting from IPPs' responsibility to practise community development and the resultant unintended consequences.

It risks the possibility of wasteful expenditure of funds that are dearly needed to address local socio-economic challenges in rural South Africa. An opportunity exists to correct this trend before the bulk of these place-based investments begin accruing to local communities. It is within this context that lessons from the Hopefield Wind Farm become relevant.

To better understand the socio-economic benefits of the REIPPPP in the case of Hopefield and the Umoya IPP, two theoretical perspectives are applied, namely 'community development' and 'local economic development' (LED). Community development and LED are key sets of literature (outlined briefly below) that could assist in the fruitful delivery of local benefits under the REIPPPP. Community development represents the practice which IPPs need to cultivate and exercise, whereas LED is the intended outcome of said practice.

3.1.2.1 Overview of community development literature

Broadly understood, community development is the collective addressing, by a group of individuals, of a common cause to improve the lives of those in the community within a geographically defined area (Bhattacharyya, 2004; Westoby, 2014; Wlokas et al., 2017). In understanding the practice of community development, Westoby (2014: 22) reflects upon Dunne (2011), noting that the field can be understood as lying between "an enclave of specialised community development theory and practice" and "an enclave of non-specialist human endeavour to bring social change through citizen effort". Practice informs the practical know-how of people-oriented activities, in contrast with the acquisition and use of technical knowledge (Westoby, 2014). In the same vein, Westoby (2014) notes that there is no single agreed-upon definition of community development, nor is it necessarily helpful to identify one: "From a researcher's perspective, what is more important, or more interesting, is how community development theory and practice is deployed as an idea, and in action" (Westoby, 2014: 25).

Westoby (2014) commonly draws examples from South African community development case studies to illustrate the sustainable livelihoods approach (SLA) and asset-based community development (ABCD). Nel (2015) considers both SLA and ABCD to be community development approaches that move away from needs- and problem-based orientations, to rather emphasise the strengths and assets of communities that can contribute to a self-sustained, improved quality of life. Wlokas et al. (2017) note that the ABCD approach is commonly used within the mining industry, and suggest that the RE sector can learn from the mining sector's extensive community development practice in South Africa. Marais et al. (2018) agree; further, the authors express a note of caution against a narrow definition of 'communities' and highlight the importance of creating responsive institutions and skilled community practitioners.

The repositioning of the private sector in recent years has resulted in large corporate companies acting as community development agents in South Africa (McEwan et al., 2017).

3.1.2.2 Overview of local economic development literature

The concept of LED, as a means of promoting and ensuring the economic wellbeing of local communities, has received considerable attention from public-sector authorities and agencies (Nel & Rogerson, 1996). LED is a local development agenda that is designed to achieve socio-economic redress, to empower poor people and poor regions, and to promote economic growth (Nel and Rogerson, 2016). LED involves creating jobs, improving living standards and increasing the capacity of communities to be socio-economically self-sufficient (Mutrifa, 2002).

LED has played a significant role in efforts to achieve economic upliftment in South Africa since 1994. The post-1994 period has been dramatic, as the country has had to grapple with an oppressive, Apartheid-induced legacy, while simultaneously responding to the challenges of neoliberalism and globalisation (Nel & Rogerson, 2005). Within this context, Nel and Rogerson (2005) note that state-recognised local government institutions were identified as key agents of change and were specifically tasked to respond to the developmental needs in their localities, with a special focus on the poorest members of society. Sections 152 (c) and 153 (a) of the Constitution state that local government must "promote social and economic development", as well as "structure and manage its administration, and budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community" (Republic of South Africa, 1996).

A community-based approach is seen as a contemporary LED strategy that emphasises the importance of working directly with low-income communities and organisations to ensure maximum benefit to locals (Bond, 2003). Isaacs (2006) believes that this approach, coupled with pro-poor LED policy, is the most effective and sustainable strategy, as it encourages empowerment and capacity-building that can assist communities and individuals to acquire skills.

In the modern neoliberal economy, as argued by Hamann (2003), companies' social and environmental responsibilities are increasing, especially towards sustainable development, due to global changes in the perception of business's role in society. This responsibility, known as 'corporate social responsibility' (CSR), entails maximising the positive, and minimising the negative, social and environmental impacts of business, while maintaining profits and contributing to sustainable development (Hamann, 2003). In Hamann's words:

- CSR seeks to provide a vital impetus that links these strands together for self-sustaining, integrated and fair socio-economic development (Hamann, 2003).

- To embrace economic, social and environmental aspects of sustainability in a holistic manner, and to provide maximum development benefit, CSR must be integrated into core activities and decision-making of a company. Hence, sustainability needs to be seen as a concern by top management (Hamann, 2003).

In the context of South Africa, drawn from the experience of the mining industry, CSR objectives intended to promote LED are usually driven by a top-down management practice to avoid collaborative planning initiatives (Marais et al., 2018). Again, this experience holds lessons for the community development component of the REIPPPP, which is an essential key for unlocking the LED potential of marginalised communities surrounding project sites. According to Tait (2012), the REIPPPP process is designed to act as a driver for the private sector to foster socio-economic development within historically-disadvantaged communities.

In summary, it is instructive to bridge these two bodies of literature in order to critically examine the case of the Hopefield Wind Farm. LED points to the critical examination of local socio-economic development needs and objectives, while community development signifies the practice through which those contextually defined objectives can be reached.

3.1.3 INTRODUCING THE HOPEFIELD WIND FARM

The following section describes how Umoya Energy, through its involvement with the Hopefield Wind Farm, has practised development within the local community and innovated strategies to achieve local economic development. The small town of Hopefield is situated along the West Coast of South Africa, roughly 120kms away from Cape Town, and is home to approximately 6 500 people, of which 97.7% reside in formal dwellings. The town has a predominantly agriculture, and mining and minerals-processing based economy. It serves the grain, dairy, meat, honey and waterblommetjie farmers of the area. Langebaan and Vredenburg are nearby industrial and economic hubs within the Saldanha Bay Municipality (StatsSA, 2011).

The Hopefield Wind Farm is a 66.6MW wind farm project developed and managed by Umoya Energy and wholly owned by an infrastructure investment branch part of the Old Mutual Group. In 2011, Umoya was selected as a preferred bidder in Round 1 of the REIPPPP for the development of the Hopefield Wind Farm, and a 20-year power purchase agreement (PPA) was signed with Eskom.

Under the REIPPPP implementation agreement, Umoya is mandated to spend an accumulative 2.1% of annual revenues back into the local community, with 0.6% allocated to EnD and 1.5% to SED. Furthermore, the local community have a 5% shareholding of the R1.5 billion wind farm. This is double what is legally required, and demonstrates Umoya's explicit commitment to achieving the development ambitions of the REIPPPP.

3.1.4 UMOYA'S STAKEHOLDER ENGAGEMENT APPROACH IN HOPEFIELD

Umoya's approach is characterised by continuous engagement, involving the sharing of knowledge and experience, with a focus on relevance and practicality to the locality-specific challenges in Hopefield. The needs of the community were identified through a consultative process, rather than through a formal, predetermined community development approach, yielding bespoke outcomes. Indeed, the creation of the Home Improvement Project (HIP) resulted from Umoya's unique and context-specific approach to community consultation. The process unfolded, in summary, as follows:

- Consultations took place as part of Umoya's preparation for bid submission.
- It was quickly identified in these consultations that there was a glaring need to improve Hopefielders' living conditions.
- With help from the former mayor, who had been identified as a key representative in the community, along with other key local actors, a social compact was created between the IPP and the community.
- The IPP committed that, if the bid submission was successful, Umoya would channel their community development activities towards the improvement of living conditions of poorer households in the community.
- Umoya further communicated that they would fast-track their community development initiatives, and thus set up considerable expectations in the community.
- To demonstrate the seriousness of their commitment, Umoya upgraded two sub-economic houses in the town to showcase the potential of HIP. Recall that Umoya did this during the pre-bidding stages to show interested beneficiary residents what they were getting themselves into before agreeing to participate.
- This clear demonstration of the kind of work that Umoya would be engaging in if the bid was approved helped to create a clear picture in the minds of community members what the IPP was committing to.
- The community were largely in support of the project. One research participant estimated that 900 households signed a list consenting to the HIP proposal. The signatures collected were submitted with the final bid application to the IPP Office.
- Umoya was awarded the PPA and the HIP project was launched.

3.1.4.1 Setting up the Hopefield Wind Farm Local Community Development Company

Across the REIPPPP, there are several challenges in the use of trusts to manage funds accrued to communities from RE projects. Community members in Hopefield voiced their 'distrust of trusts' during the consultative approach initiated by Umoya. In response to these reservations, Umoya suggested an alternative vehicle to manage the community's funds, namely a non-profit company (NPO). Thus, the Hopefield Wind Farm Local Community Development Company (HWFLCDC) came into being. The corporate structure of an NPO would give representatives clearer management roles than would have been the case in a conventional trust structure. This vehicle would also allow for more structured involvement by Umoya.

The establishment of the NPO enabled the cross-pollination of corporate management and community needs and perspectives. This was made possible by the appointment of a community representative to the board of the HWFLCDC, which consists of three directors: two from the investor institution (African Infrastructure Investment Managers – part of Old Mutual Group) and one from the local community. The appointment of these directors followed an appropriate nomination and appointment process which ensured its legitimacy and credibility across stakeholder groups. The NPO also set up a social and ethics committee that meets quarterly to report on projects and initiatives implemented in Hopefield, including their flagship HIP.

3.1.4.2 Developing the Home Improvement Project (HIP)

The HIP was designed to improve the social and economic wellbeing of Hopefield residents. One research participant expressed that there was a glaring need to 'improve their [residents'] living conditions as it was impacting many aspects of their lives'. This is far from unique to Hopefield; it is unfortunately something which many of the marginalised communities where IPPs operate have in common. The HIP was co-developed among the community, Umoya and a climate change consultancy, namely South South North (SSN).

The key objectives of the HIP were to respond to the SED challenges within the community regarding scarce job opportunities and poor living conditions. The home upgrades targeted homes that did not have safe and adequate electricity supply and lighting, ceilings or access to both hot and cold running water. The HIP upgraded and made provision for safe electricity reticulation, installation of ceilings and the installation of a solar water heater (SWH) in eligible residents' homes. Eligible homes were understood to be homes that did not have any of these provisions prior to the establishment of the project. In some instances, the extension of piped water was reticulated into homes that previously had had no access to piped water. In addition, some households received the installation of kitchens sinks; this was, again, based on a 'does not have' basis.

Owing to the large number of homes that required improvements, as well as budgetary constraints, a staged approach was adopted. At the time of writing, the HIP had taken a two-phased approach which is ongoing since 2014, with completion in 2019. There are plans (although not finalised) for replication in surrounding towns within the designated beneficiary radius. Phase 1 focused specifically on the key actors involved in setting up the project, while phase 2 incorporated both SED and ED components of Umoya's community development mandate.

- **Home Improvement Project phase 1**
  During phase 1 of the project, 21 unemployed individuals were identified from the community to be trained as artisans with the basic competencies to do the home improvements. After a month spent learning trades such as plumbing, electrical and carpentry, the top 18 individuals were identified and offered a two-year contract to do installations. Under management and supervision by SSN, three teams of six individuals were formed, with each team consisting of two carpenters, two electricians and two plumbers. The few installers who had been employed prior to the HIP had mostly had short-term contract jobs outside of Hopefield, for which they incurred high daily transport costs.

- **Home Improvement Project phase 2**
  Phase 2 built upon what had been developed in phase 1; however, it took on a more entrepreneurial character, which formed the EnD component of Umoya's community development mandate. Through a competitive evaluation process, three of the 18 installers from phase 1 were chosen to develop their own contracting businesses for further installations in phase 2. Each installation company was required to upgrade a maximum of 10 houses per month during this phase, which took place over 2017 to 2019. The three successful installers, identified through Umoya's inclusive process, were given ongoing workshops by an enterprise developer and business incubation specialist to upskill them and take their businesses 'to the next level'.

3.1.4.3 Grappling with implementation challenges

Despite positive progress in Hopefield, two core 'hurdles' presented themselves in Umoya's community development approach. Firstly, Umoya received no assistance from local government, both during the community engagement process and in the implementation of the project. This occurred despite the municipality being kept abreast of the activities in Hopefield by Umoya. One interviewee expressed the view that the local government 'didn't obstruct the project but they didn't lend a hand in any way'. In addition, an attempt was made to align the HIP with the regional Integrated Development Plan (IDP), although the engagement and collaboration was not present. A disclaimer was made that if they were to collaborate, Umoya would drive projects from their own apolitical stance.

Secondly, at the time of the research discussed in this chapter, two of the three EnD beneficiaries were still dependent on the HIP to sustain their business operations, and neither had solid plans as to what they would do once the HIP contract is completed. That being said, all three had plans to expand their client base to surrounding towns.

3.1.5 REFLECTIONS ON THE HOPEFIELD CASE

The story of Hopefield is an instructive and inspiring case from which struggling IPPs can learn. From the perspective of the community development and local economic development literatures, it becomes clear that Umoya cultivated a context-appropriate approach to engaging with stakeholders in Hopefield, most strikingly demonstrated in the HIP. The HIP was conceptualised and implemented to upgrade beneficiary homes with energy interventions to ensure their safe and affordable access to energy, while at the same time ensuring that locals were upskilled and given employment to do the home upgrades themselves. The community leader ensured that unemployed locals signed up.

Cultivating a social compact was a risky, yet important aspect, and the voices of the community were heard and considered right from the start.

The HIP took into account both the SED and EnD requirements of the REIPPPP. While the HIP initially focused strictly on the SED requirements, Umoya was able to integrate the EnD component during the second phase. The business incubation and mentorship provided for the installers not only helped them in establishing their own contracting companies that could generate income from the home improvements, it also provided them with a platform from which to expand their client base beyond the HIP.

The approach taken by Umoya built creditability and confidence within the community. Cultivating a social compact was a risky, yet important aspect of the leadership style undertaken. The voices of the community were heard and considered right from the start. One particularly bold outcome of this was the creation of a community company rather than a trust, in response to the community expressing that they had been let down by trusts before.

This well-intended and well-conceived community engagement and development project had its share of challenges during the project's implementation, and these are ongoing. However, this case study represents a collaborative process that has empowered unemployed and under-skilled people to partake in improving their lives, living conditions, and community.

PART THREE 3.1 PLACE-BASED CASE STUDIES

These positive steps were driven by the development of a wind farm within a social and economically inclusive renewable energy auction programme.

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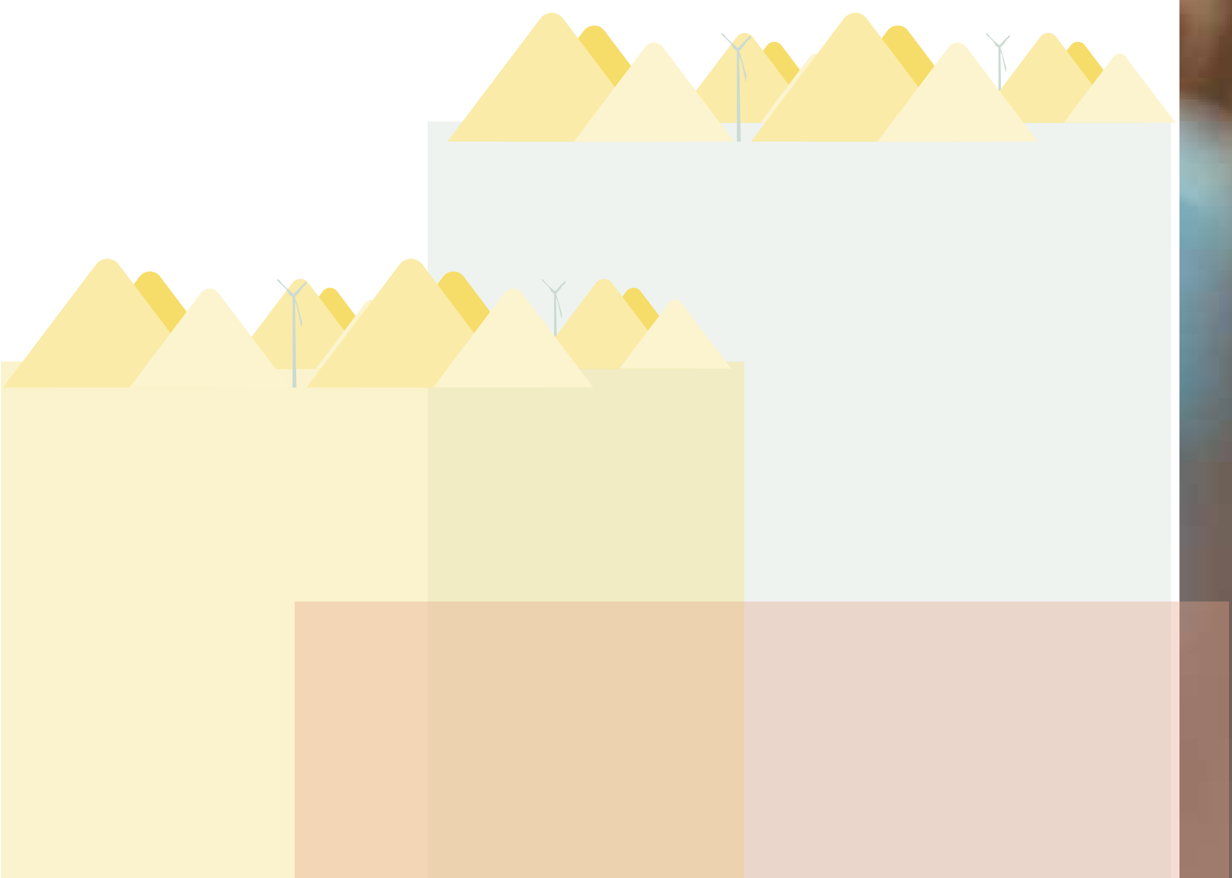


PLACE-BASED CASE STUDIES

3.2 Experimenting with regional collaborative governance: The ZF Mgcawu District Development Coordinating Forum

Author: Megan Davies

3.2.1 INTRODUCTION

As more and more wind farms and solar plants are erected across the windy escarpments and sun-drenched plains of South Africa, the country's relationship with electricity is being reformed. Often landing like asteroids in marginalised and rural environments, these mega-projects span multiple jurisdictions and activate complex interactions, while remaining intimately (and often problematically) tethered to the national government departments, finance institutions and multinational corporations that legitimate them. Grappling with these complexities through collaboration and coordination has become a prominent challenge for the renewable energy (RE) industry, as well as for the civil society and public-sector stakeholders involved in implementing the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

The case study presented in the chapter critically reflects on the efforts by an evolving constellation of regional actors (from civil society, industry and government) to convene a Development Coordinating Forum (DCF) in the ZF Mgcawu District Municipality in the Northern Cape of South Africa. The approach took the form of a unique place-based multi-stakeholder collaboration, initiated by the Industrial Development Corporation (IDC) in 2015 and hosted in Upington, a regional town in the Northern Cape.

This inquiry demonstrates that, while this experimental initiative was powerful in surfacing visions of alternative energy governance arrangements, the potency of the 'rules of the game' of the REIPPPP dulled its transformative potential. By operating within the confines of a policy framework that incentivises compliance over collaboration, independent power producers' (IPPs) place-based investments, as part of their economic development (ED) requirements, fell short of the developmental potential envisaged in the very same policy framework. Nonetheless, insights from the ZF Mgcawu District DCF suggest ways in which the 'rules of the game' might be reconfigured to cultivate outcomes more in line with the vision for energy democracy, outcomes where the developmental potential of the energy transition might be advanced alongside decarbonisation.

The case study builds on a period of embedded research by the author between April 2016 and May 2018, in line with a transdisciplinary research methodology (Lang, Wiek, Bergmann, Stauffacher, Martens, Moll, Swilling & Thomas, 2012; Swilling, 2014; van Breda & Swilling, 2019). My research methods included sustained engagement with the DCF and participation in 9 monthly meetings and workshops, as well as 46 semi-structured interviews, supplemented by extensive participant observation and document analysis.

3.2.2 GOVERNANCE FOR SUSTAINABILITY TRANSITIONS

Governance' has become a vague umbrella term that encompasses a diversity of modes and strategies for engaging, organising and steering societal development towards more sustainable futures (Lange, Driessen, Sauer, Bornemann & Burger, 2013; Sjöstedt, 2019). While it certainly does have such diverse applications, the concept of governance has been helpfully refined in the context of the sustainability transitions literature (Loorbach, Frantzeskaki & Avelino, 2017; Turnheim, Asquith & Geels, 2020). Sustainability transitions are inherently political processes, aimed at transformational change at a societal level through the reconfiguration of socio-technical systems (Köhler et al., 2019; Zolfagharian, Walrave, Raven & Romme, 2019). In the context of sustainability transitions, considerable focus is given to the institutional arrangements and governance modalities that are required for accelerating and directing socio-technical change. I am thus not simply talking about governance, but 'transition' and 'experimental' governance.

Transition governance is about organising collective responses to complex sustainability challenges; for this, experimentation, novelty and innovation are crucial (Hildén, Jordan & Huitema, 2017). An experiment is defined as an inclusive, practice-based and challenge-led initiative, which is designed to promote system innovation through social learning under conditions of uncertainty and ambiguity (Sengers, Berkhout, Wieczorek & Raven, 2016; Sengers, Wieczorek & Raven, 2019; Hildén et al., 2017; Raven, Sengers, Spaeth, Xie, Cheshmehzangi & de Jong, 2019). Thinking about governance in experimental terms creates spaces for highlighting diverse strategies for organising collective responses among a multitude of actors. Experimental governance makes space for approaches to governance that involve multiple actors at different levels across sectors (Voß & Simons, 2018).

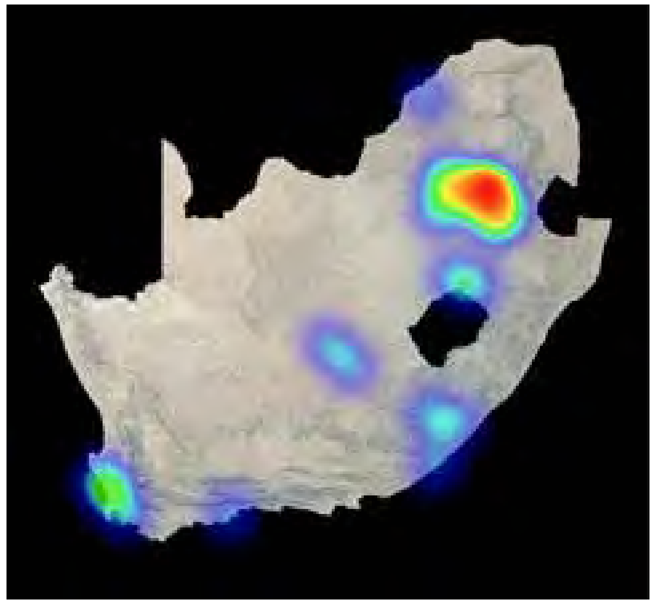
In this chapter, I frame governance as the mechanisms, frameworks, processes of interaction and decision-making that enable a multitude of actors and coalitions to build shared understanding, realise binding decisions and unlock collective action around sustainability goals. In order to investigate, make sense of, and see the potential of, the ZF Mgcawu District DCF, the researcher (and now reader) must be alive to experimental governance.

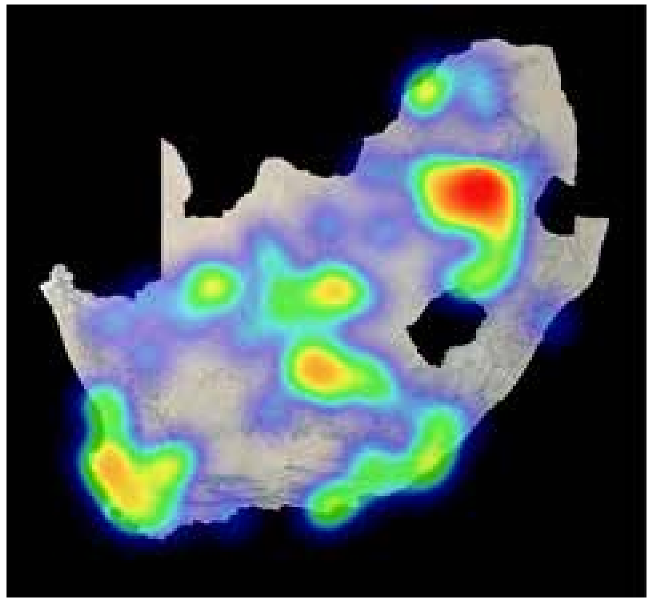
3.2.3 ECONOMIC DEVELOPMENT IN SOUTH AFRICA: GOVERNANCE AND POLICY CONTEXT

Making sense of the REIPPPP's implementation challenges requires an understanding of the country's broader policy and governance context pertaining to economic development. This section explores the context into which the REIPPPP was introduced; in particular, the long-standing history of centralised energy governance, and the evolution of development planning in the public sector leading to the emergence of developmental local governments, are explored. These two overarching dynamics contribute to, and even amplify, the challenges of implementing and governing the place-based investments required by the REIPPPP.

South Africa's carbon-intensive political economy has co-evolved an electricity policy and governance paradigm that accord with the generation and consumption of coal-based electricity. This socio-technical electricity regime is characterised by the fact that political authority, policy directives and administrative oversight are concentrated among a set of tight-knit (although not always coherently aligned) national-level institutions. The governance of electricity has been dominated by national government for over a century (Mosdell, 2016). Centralised governance has been an expression of hegemonic state control, rooted in the Apartheid state, locked in through the mineral-energy complex and now re-oriented in service of a democratic developmental state. Eskom, through the single-buyer model, also plays a key role in the sustained centralised governance of the electricity sector.

In material terms, this socio-technical system has been rooted in the Mpumalanga Province, where the spatially concentrated business of extracting coal for the production of coal-fired electricity takes place. Dominated by mega-projects under the control of national government and in service of evolving national development imperatives, South Africa's electricity sector is strongly centralised. Brisbois (2020: 16) describes centralisation as those systems that "involve a limited number of generation assets that produce power that flows to consumers through a centrally controlled grid". However, since the government's introduction of policies to support RE-based electricity generation, the material basis of this socio-technical electricity system is beginning to shift towards including spatially dispersed and decentralised RE infrastructure into the national electricity grid.



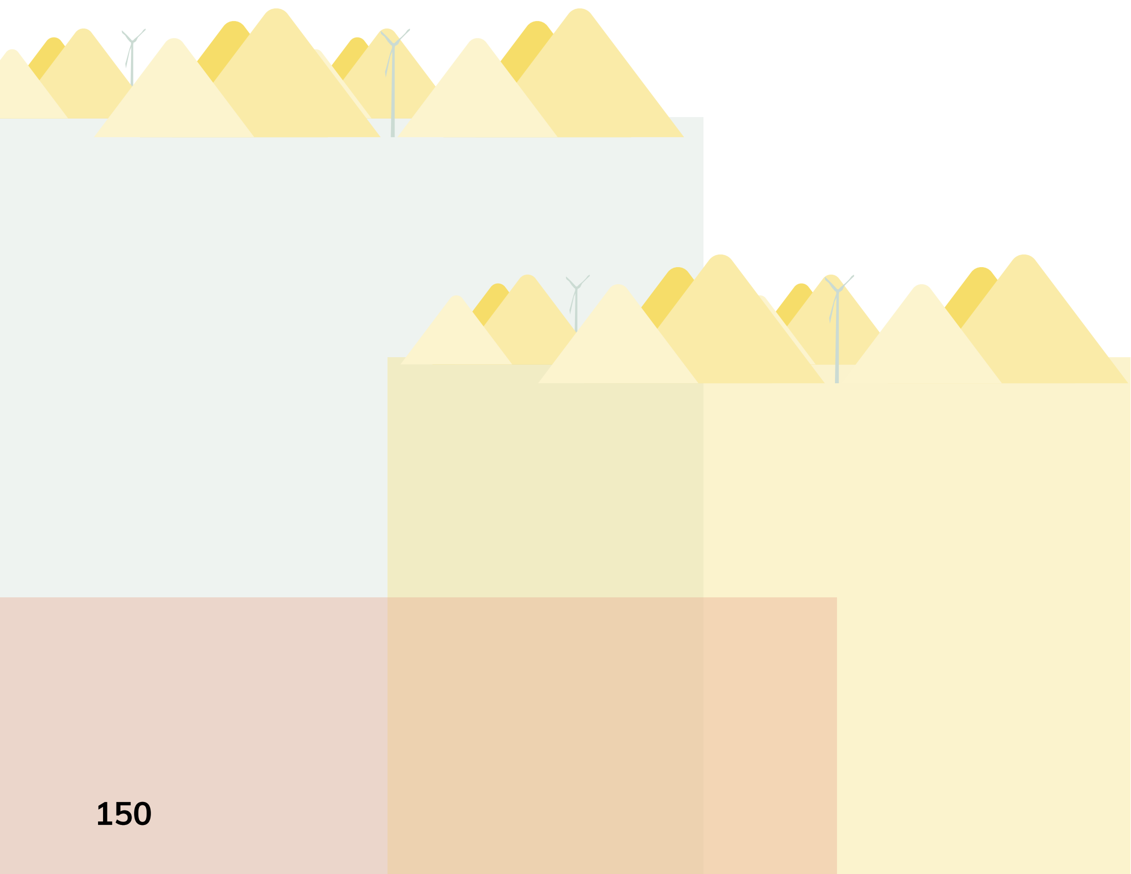


HEAT MAPS

A visualisation of the spatial arrangement of South Africa's power generation infrastructure by capacity in 2011 and what it will look like at the end of 2021 (Source: Forder, 2021)

Looking beyond the electricity sector, it is also important to recognise the formal, state-led development planning and governance context into which this RE programme was introduced. South Africa has a history of highly centralised governance, with the Apartheid government concentrating power and resources in institutions that safeguarded and entrenched segregatory development policies. Following South Africa's democratic transition, the institutions and objectives of government have been re-oriented towards the vision of a developmental state (Parr et al., 2018). The devolution of power through the restructuring of government is thus significant for the evolution of development planning and governance in the country.

Part of this restructuring has translated into the empowerment of local government, as one of the three spheres of government alongside provincial and national government, with an explicit developmental agenda. A meaningful role for local government (which is comprised of three tiers: metropolitan, local and district municipalities) within the developmental state is encapsulated in the Constitution. This intention for local government to be a democratic, inclusive, delivery-oriented sphere of government is captured in the 1998 White Paper on Local Government, and enacted through various policy frameworks, including the 2001 Local Government Systems Act (Dlamini & Reddy, 2018).



The 2001 Systems Act requires that municipalities engage in integrated development planning, a component of which involves service delivery and local economic development (LED). A local municipality's purpose in engaging in LED planning is to facilitate the high functioning of local economies through coordinated planning and implementation, and to support local community access to economic opportunities. Within this comprehensive set of local government legislative frameworks, integrated development planning concerns the coordination of legal instruments and planning mechanisms for municipal service delivery. Integrated development planning has been a core concept driving the evolution of post-1994 local government development planning (Dlamini & Reddy, 2018). This vision of local government as a developmental partner – a vision operationalised through the integrated development planning and LED functions – means, in theory, that collaboration and multi-stakeholder engagement is at its core.

Unfortunately, in reality, the failures and ineptitudes of local governments are widely documented (Statistics South Africa, 2019). Local governments are neither sufficiently equipped nor appropriately capacitated to attend to South Africa's myriad local developmental challenges. These failures are evident in the systemic dysfunctionality of local governments and their inability to fulfil core developmental mandates in the form of service delivery and local economic development. South Africa's developmental challenges manifest in deeply ingrained and enduring spatial and socio-economic inequalities (Statistics South Africa, 2019).

While an assessment of the function of local government as a whole is beyond the scope of this chapter, it is clear that the ability of this sphere of government to work effectively with other agencies and levels of government is limited, and that this inhibits the realisation of inclusive and transformative local economic development.

3.2.4 GOVERNANCE CHALLENGES IN THE REIPPPP

The significance of the place-based investment flows in the REIPPPP is exactly that: they are tied to a physical place, and can therefore have cumulative effects when the beneficiary regions of IPPs overlap, as they often do. IPPs are required to engage in a much wider range of activities, beyond the development and management of RE plants, than what they are accustomed and equipped to do. This circumstance alone has triggered a host of emergent and often unforeseen and unprecedented dynamics and implications. The IPP Office was appointed as the custodian and implementing agent of the REIPPPP, mandated to ensure that IPPs comply with the 'rules of the game'. To this end, IPPs are contractually obligated to report on their activities to the IPP Office. In practice, this means that a small but relatively well-capacitated body within the IPP Office carries the responsibility for the implementation, management and monitoring of the programme. Currently, that includes the activities of a total of 92 projects across the country.

Building on previous work by Davies, Swilling and Wlokas (2017) on the evolving spatiality of South Africa's energy transition, the dispersed and decentralised nature of this grid-connected and centralised RE infrastructure makes apparent various incongruencies and tensions in the programme's governance. IPPs are required to carry out various economic development functions, which are overseen by the IPP Office and reported on as part of stringent compliance frameworks to the Department of Energy (DoE). These investments and activities take place against the backdrop of a multiplicity of local government jurisdictions, where it is municipalities that are mandated to facilitate local economic development. And yet, IPPs are not formally required to consult with or report to local municipalities as part of the compliance regime. This unfortunate arrangement naturally creates the conditions for tension, misalignment and governance failures.

It is clear that, within South Africa's fossil fuel-based electricity policy planning and governance regime, there are inappropriate accountability and oversight mechanisms in place to deal with the widespread challenges arising from the particular design of this policy instrument. The unintended consequences of the design and enactment of the REIPPPP provide fertile ground for the emergence of novel and innovative governance arrangements.

3.2.5 EXPERIMENTAL GOVERNANCE IN THE ZF MGCAWU DISTRICT DCF

The ZF Mgcawu District DCF is a governance experiment in the form of a place-based multi-stakeholder collaboration. The Forum was initiated by the IDC in 2015, at the same time that the organisation set up a similar initiative in the neighbouring Khai Ma Local Municipality, where similar dynamics were being experienced.

3.2.5.1 Establishing a regional initiative (2014)

The IDC is a South African development finance institution (DFI) with a focus on the promotion of economic growth and industrial development. In 2012, the government launched the National Infrastructure Plan (NIP), recognising the critical role that the

expansion of infrastructure plays in realising socio-economic development targets outlined in the National Development Plan (2030) and operationalised through key economic policies such as the New Growth Path (NGP) and Industrial Policy Action Plan (IPAP). The IDC, as a state-owned enterprise and DFI, is one of the key strategic players in the financing of infrastructure development, supporting the development of the country's industrial base, as well as those of other countries in Africa. More specifically for the research in focus, the IDC was involved as a funder in many large-scale infrastructure and industrialisation projects across the Northern Cape Region, in various sectors from mining to agriculture and, indeed, renewable energy.

Across the region, municipalities had expressed a sense of exclusion, a lack of understanding and insufficient consultation about the REIPPPP.

The IDC, having already invested in a number of IPPs in the Khai Ma Local Municipality and the ZF Mgcawu District Municipality, was familiar with the risks associated with the expansion of the REIPPPP. In early 2014, the IDC's regional team advised that it would be favourable to have an initiative to serve as a meeting point for the various stakeholders, in the hopes of aligning development frameworks and avoiding duplication. An underlying reason for the IDC to push for such an initiative was therefore to reduce risk to their investments; yet it was also made explicitly clear that the public sector, namely local and district municipalities, were intended as one of the primary beneficiaries. Across the region, municipalities had expressed a sense of exclusion, a lack of understanding and insufficient consultation about the structuring and implementation of the REIPPPP. By proactively including them and bringing other stakeholders together from the outset, the IDC hoped to ameliorate these and other issues arising.

3.2.5.2 Shaping engagement by defining the Terms of Reference (2015)

Taking a regional perspective, the Forum was structured to support wide and diverse participation from IPPs, mining companies, agricultural entities, business chambers and private-sector players, community trusts, local and district municipalities, and provincial and national government. The IDC, and the regional economic development team operating in the region, took the lead in drafting a Terms of Reference (ToR) in 2015. This arduous and comprehensive process took almost a year to finalise. The protracted negotiation process with regional stakeholders was instrumental in surfacing vested interests, misconceptions and divergent agendas, highlighting to the IDC team that deeply conflictual dynamics were at play. The ToR was the only concrete output of the Forum during the initial period, as the focus was on establishing the group and building relationships.

Formalising the TOR was helpful in solidifying the Forum and its structure, yet also set the precedent for it to be rather formalised, bureaucratic and procedural. The focus was quite linear when setting up ways of working, a governance structure, and focal areas. Again, this was beneficial in articulating the purpose and intention of the Forum, yet it delayed action. The activity and structure of the Forum became quite dependent on the IDC, the IDC chairperson and administrative support. The ToR stipulates the following objectives for the Forum (REFS):

- To ensure integrated development planning and implementation.
- To ensure collaboration and coordination among stakeholders.
- To allow for information-sharing, communication and networking.
- To ensure credible, sustainable projects.
- To ensure proper monitoring and evaluation.

3.2.5.3 Grappling with regional collaboration (2015 and 2016)

The Forum then entered what was intended to be an operational phase. It was envisaged that the finalised ToR would shape effective communication and aligned activities, leveraging the extensive period of consultation and stakeholder engagement. The Forum thus proceeded in the form of a monthly morning meeting, convened and facilitated by the IDC, and taking place at the Small Enterprise Development Agency (SEDA) premises in Upington.

On the whole, the activities of the Forum were limited to these monthly meetings, interspersed with meetings by a smaller steering committee focused on more strategic aspects of specific activities. These all followed a framework defined in the ToR, which meant that the gatherings were structured as formal meetings and inscribed with formal practices, such as deference to the chairperson and a formulaic progression through items on an agenda.

In principle, wide and diverse participation meant that the Forum was comprised of a representative network of stakeholders from the region. Consequently, the Forum was widely reported on in local and district municipalities, as well as in the various IPPs and business chambers operating in the area. The Forum came to represent a meeting place for these diverse stakeholders across the region, creating an invaluable opportunity to meet and engage.

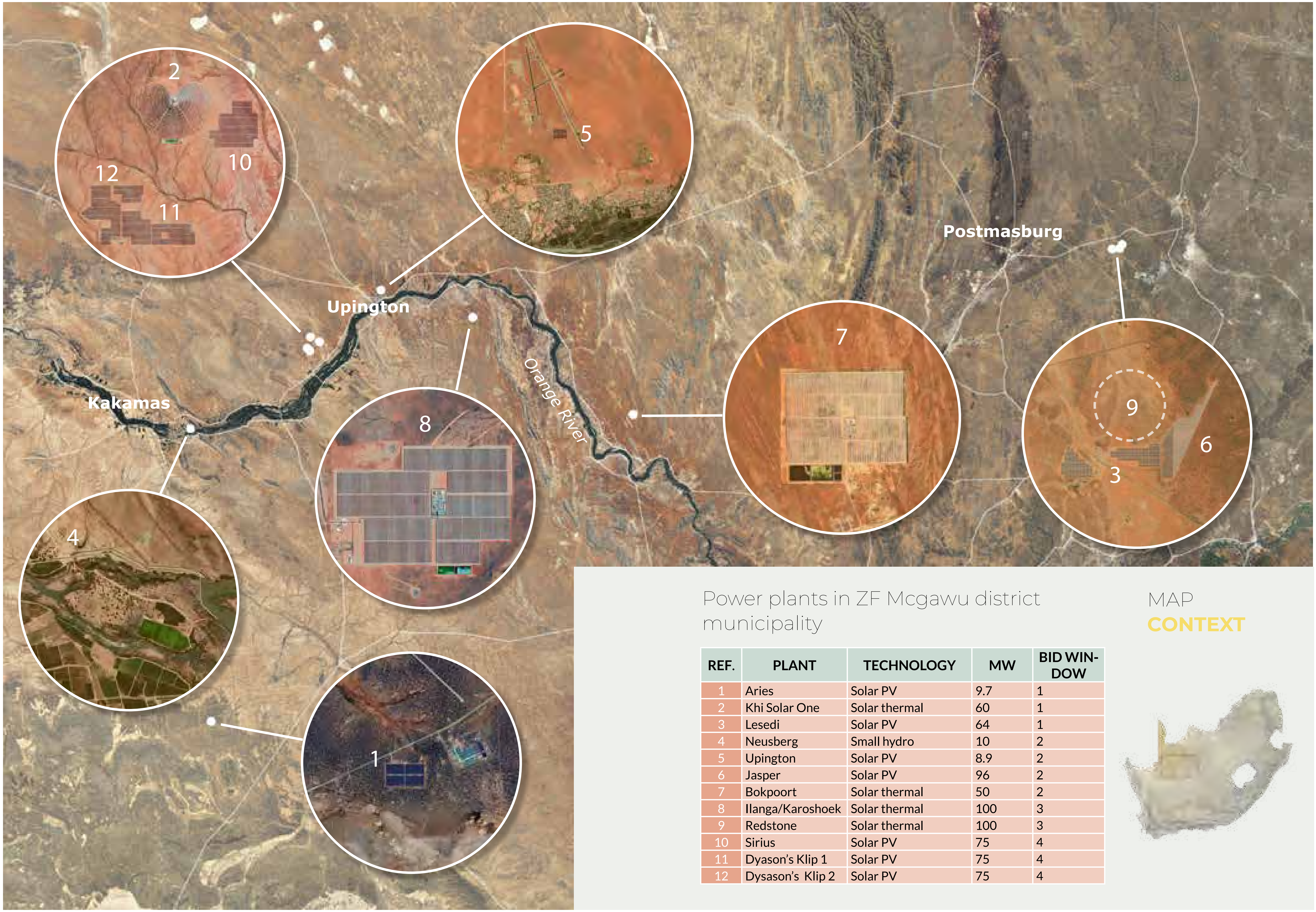
In practice, this meant that the Forum became predominantly an information-sharing platform, with a wide ambit. Upcoming events (including a Women's Golf Day organised by the business chamber) and ongoing initiatives, such as efforts to convene a collaborative small, medium and micro enterprises (SMMEs) training event, were described and punted. Often, IPPs made ad hoc presentations about their activities in the region, or municipalities reported back about ongoing public participation processes. As the Forum became more widely known, many service providers requested to present their offerings there, with the hope of garnering support for their initiatives.

Open discussions tended to coalesce around the same recurring themes, most notably, the lack of municipal participation and representation, the difficulty in accessing information about the practices of IPPs, the disjointed operations of community trusts, and the form and function of the Forum itself. It became a familiar refrain that overcoming the challenges of kickstarting action in the Forum would follow from its formalisation as a legal entity. This did not transpire, though, and the Forum continued in its diligent efforts to rouse collective action in the form of shared projects by IPPs and coherently structured engagements with local government.

Despite the continued refrain that the Forum needed to 'show something for itself', its value to the stakeholders was continually and ardently affirmed. The imperative for more effective coordination and collaboration was not isolated to this region. Various other governance experiments in the Western Cape and Eastern Cape, as well as within the wind energy industry association, were also being initiated. Significantly, the call for more effective regional governance also came from the IPP Office itself: "IPP commitments for SED and enterprise development interventions need to be better coordinated, monitored and aligned to existing needs identification and financing mechanisms for improved effectiveness and societal upliftment" (IPP Office, 2017: 46).

Following South Africa's local municipal elections in August 2016, there was renewed investment into the Forum, which opened a window of opportunity for re-calibration. It was at this point that the Forum responded to a prior proposal I had made to facilitate a process to co-create a possible framework for collective action. Having set in motion particular ways of working within this governance experiment, the Forum took a further step by re-orienting its approach and being open to support and facilitation.

PART THREE 3.2 PLACE-BASED CASE STUDIES



MAP CONTEXT

Power plants in ZF Mcgawu district municipality

REF.	PLANT	TECHNOLOGY	MW	BID WIN-DOW
1	Aries	Solar PV	9.7	1
2	Khi Solar One	Solar thermal	60	1
3	Lesedi	Solar PV	64	1
4	Neusberg	Small hydro	10	2
5	Upington	Solar PV	8.9	2
6	Jasper	Solar PV	96	2
7	Bokpoort	Solar thermal	50	2
8	Ilanga/Karoshoek	Solar thermal	100	3
9	Redstone	Solar thermal	100	3
10	Sirius	Solar PV	75	4
11	Dyason's Klip 1	Solar PV	75	4
12	Dysason's Klip 2	Solar PV	75	4

3.2.5.4 Taking stock and re-orienting the Forum (2017 to 2018)

Between June 2017 and April 2018, the Forum moved through a facilitated process comprising a series of workshops focused on re-calibrating and re-directing the initiative. In short, the five-phased approach was structured around the question 'How to organise collective impact in the ZF Mgcawu District?' The five phases were as follows:

1. Stakeholder mapping: What stakeholders make up the Forum and what can we learn from one another?
2. Data analysis and spatial mapping: What is our shared understanding of the challenges and opportunities in this region?
3. Articulating inclusive development: How do we understand 'development' and what is the future for the ZF Mgcawu District?
4. Implementation and impact: How do we measure impact and what initiatives or activities will achieve this?
5. Institutional plan and way forward: How do we want to work together and what is the way forward for the Forum?

This process of co-production culminated in a shared, living document that provided guidelines to inform ways of working. This internal working document, developed and refined collectively, captured various aspects of the Forum's purpose and strategic intent, its perspective on long-term economic development in the region and shared understanding of the problem context. Additionally, it spelled out various activities to support a framework of 'collaboration, coordination, communication and capacity-building', informed by principles to measure success and progress.

3.2.5.5 Towards a framework for collective action? (2018)

The facilitated process concluded in April 2018. The key output was the internal guiding document, but of more significance was the process of co-production itself. Recommendations made pertained to the four aspects of collaboration, coordination, communication and capacity-building within the Forum's network of stakeholders.

The facilitated process with the Forum between July 2017 and April 2018 resulted in some positive outcomes. The Forum's value and distinctive role had certainly been clarified. However, there was little movement with respect to convening influential stakeholders. It became apparent early on that stakeholders attending the Forum meetings were not those with meaningful decision-making power. There appeared to be a tacit approach, shared by all stakeholder groups, of mitigating risk through inclusivity; in other words, all stakeholders were included and in turn, those attending were seen to be represented. Nonetheless, for

those consistently in attendance, the Forum provided a space for open conversations and trust building. Ultimately, the strategic framework for collective action and the guidelines for ways of working presented to the Forum unlocked significant energy and a number of potentially viable and exciting initiatives. However, it did not stipulate in detail any tangible strategic collaboration initiatives or an associated project pipeline.

On the whole, the Forum was an opportunity for information-sharing and relationship-building. But, beyond that, stakeholders lamented the fact that they were not able to reach a project portfolio that corresponded to the re-affirmed value of the Forum in supporting collaboration and coordination. The primary success of the process was how this series of creative and boundary-pushing conversations was able to reveal to stakeholders that so much more was possible than what was currently in place. Moreover, it became apparent to the group that thinking through these possibilities and imagining radically different scenarios was accessible and energising. However, what was disheartening for the group was realising that certain things never seemed to change; for example, the risk-averse nature of IPPs, the lack of capacity within community trusts and the contained and highly politicised conditions within local government, meant that it was a near impossible feat to take viable steps towards the scenarios they imagined for the Forum. Seen together, what it did achieve, though, was making a strong case for more locally responsive, context driven governance approaches that, in turn, might complement the oversight and accountability located within the IPP Office.

The Forum represents an experiment that was thwarted by stringent policy rules and institutional lock-in, yet spurred on by the power of imagination and place-based connections.

As the dull compulsion of the underlying logic of the 'rules of the game' prevailed, stakeholders retreated to business-as-usual roles defined by compliance and risk aversion. To a large extent, this can be attributed to the institutional and policy lock-in that accompanies the implementation of the REIPPPP. In essence, the Forum represents an experiment thwarted by stringent policy rules and institutional lock-in, yet spurred on by the power of imagination and place-based connections.

Insights from this engagement with the Forum demonstrate that a relational approach to collaboration is vital, and is often overlooked or underemphasised in favour of the structural and function aspects of collaboration. Importantly, however, investing in a relational approach to collaboration is not sufficient when policy conditions and institutional frameworks are not conducive to or enabling of an experimental governance approach of the kind the Forum hoped to cultivate in the ZF Mgcawu District Municipality.

6. CONCLUSION

Governance experiments in South Africa's renewable energy programme represent openings for change within the country's political economy of energy. Following Pinker's (2018) conception of energy decentralisation, experimental spaces, in the form of place-based multi-stakeholder collaborations, emerge as sites for the gradual reconfiguration of infrastructure and political and socio-economic power relations. Governance experiments represent emergent forms of political possibility (Pinker, 2018).

Actors within the ZF Mgcawu District Development Coordinating Forum explored ways to contend with the ramifications of the REIPPPP in this District Municipality, and also to innovate strategies that might shift the mechanisms of oversight and modalities of engagement baked into the REIPPPP. Despite their best efforts, this governance experiment did not succeed in materially improving the place-based impacts of the REIPPPP, leveraging these considerable financial flows for wider developmental impacts or shifting the balance of power toward local accountability and participation.

Having said that, the Forum's experiment with collaborative ways of working to achieve the full developmental potential of place-based investments illuminated, for a brief time, a vision of a radically different scenario for stakeholders operating withinw the region. The Forum planted seeds of possibility for place-based, accountable and democratic deliberation in South Africa's interconnected local, regional and national energy futures.

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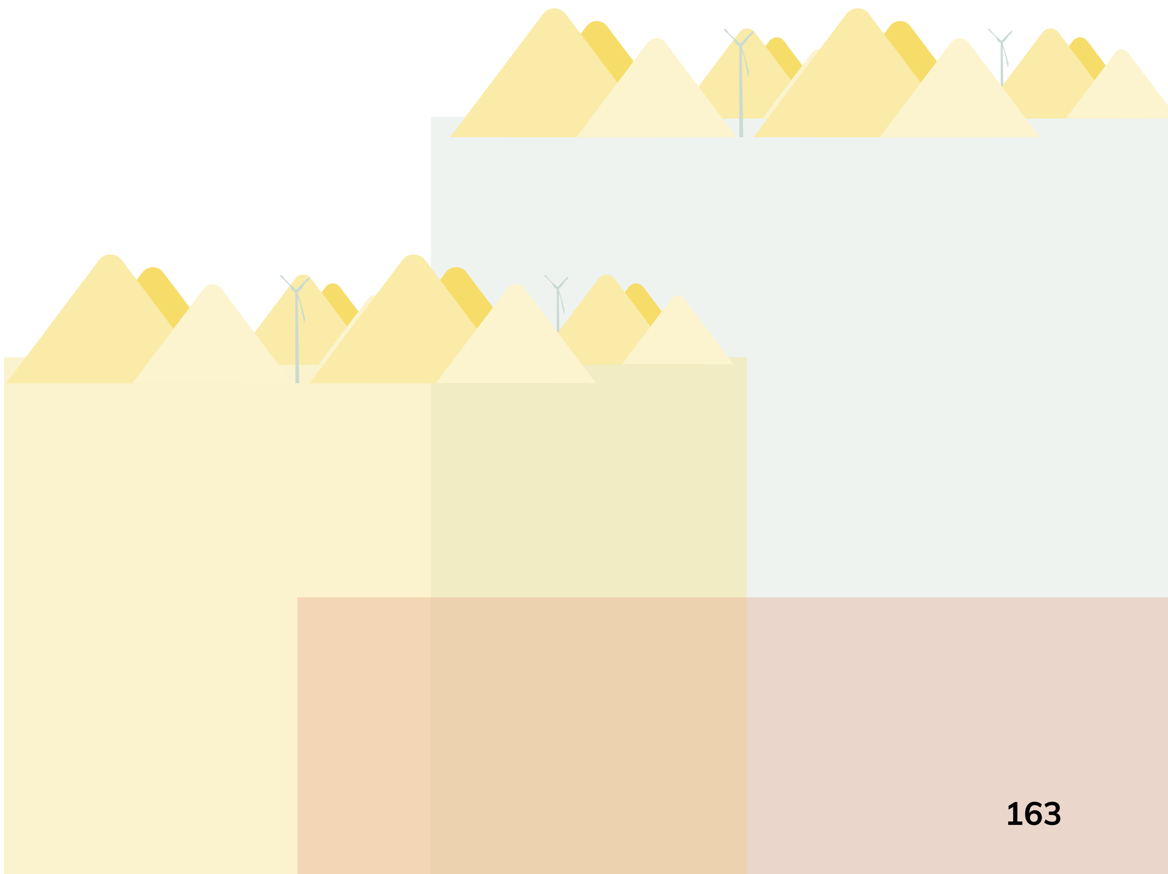

PLACE-BASED CASE STUDIES

3.3 A Corolla or a Porsche? The case of renewables in local economic development in De Aar

Author: Lochner Marais and Peter Westoby

3.3.1 INTRODUCTION

Author Lochner Marais fondly remembers the power outages when he was at boarding school in the small Karoo town of Tarkastad in the Eastern Cape in the early 1980s: 'They gave me an excuse not to do my homework!' By the mid-1980s, the sleepy little town had been connected to the Eskom grid, the days of unreliable energy were over, and Marais had to do his homework. Eskom electricity was cheaper and more reliable than what the municipality could produce. The centralisation of energy generation continued in the period after the democratic transition and many more local authorities closed down their power stations. However, the world is changing. Eskom, South Africa's electricity public utility, is in financial trouble, 'load-shedding' is common, coal-generated electricity is acknowledged to cause environmental damage, and renewable energy is available. The children at school in Tarkastad should enjoy the power outages while they can, as renewables look set to spoil their fun.

Along with other obvious advantages linked to issues of climate change, the environment[8] , and health, renewable sources of energy offer a decentralised alternative to the prevailing centralised coal-generated energy systems (Rutherford & Coutard, 2014). In 2011, against the backdrop of dependence on Eskom and coal for energy, the Department of Energy (DoE) established the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), which has led to investment in 92 grid-connected renewable energy plants in peripheral areas. The energy from these independent power producers (IPPs) is distributed by Eskom via the national grid. IPPs have to invest in socio-economic and enterprise development, increase local shareholding (mainly through community trusts) and provide local jobs (within a 50km radius of the plant, later amended to the municipal boundary). Besides providing electricity to the ailing Eskom, renewables have helped to 'tick the right boxes' to show South Africa's commitment to climate change treaties.

Despite the intention to invest locally, conflict has sprung up between some IPPs and local communities. The communities complain that they do not benefit from the IPPs, or that IPPs make ill-informed decisions. Research on small towns and their economies is growing, but few studies explore the relationship between energy production and small-town economies. This chapter, and others in this book, fills that gap. To tell the story of De Aar and renewable energy, in 2017, we interviewed eight key role-players (three from the public sector, three from non-governmental organisations (NGOs) and two from the IPPs) and held a focus group discussion with two representatives from the public sector and one from the private sector. We also examined newspaper articles, marketing brochures and planning documents.

8 The authors are aware that renewables are not necessarily perfectly environment friendly. A serious concern is the decimation of bird and bat populations by wind turbines. But environmental issues are beyond our scope in this chapter.

The story starts with the local economic development (LED) officer in De Aar wanting to access energy for the town's development. Renewables was the simple answer. Yet it ends with De Aar providing renewable energy to the rest of South Africa – but not to De Aar. We argue that this kind of dislocation, between the local production of energy and the local economy, lies at the heart of the conflict between local communities and IPPs. Failing to decentralise renewables could further reinforce local conflict.

3.3.2 LINKS BETWEEN POWER SUPPLY AND LOCAL BENEFITS

Coal-generated energy lends itself to centralised production, but centralised production is under pressure (Bouffard & Kirschen, 2008). Creating energy-generating capacity at the source means that people elsewhere do not know where their energy comes from, and this invisible and centralised energy provision hampers useful discussions about energy systems (Hirsh & Jones, 2014).

In contrast, renewables lend themselves to decentralisation, which could change the ***status quo***. Davies et al. (2018: 63) argue that the widespread use of decentralised energy contributes to the "rise of sub-national, regional and local perspectives on energy policy and governance" and is "challenging national scale approaches" to energy generation. Decentralisation allows for energy generation in small towns and provides a "visual reminder that our energy comes from somewhere" (Nadaï & van der Horst, 2010: 144). However, decentralisation of IPPs has not always received local approval. Among the concerns expressed is "the lack of power felt by local communities to influence the decisions made about the size and siting of commercial wind farms, coupled with the absence of tangible local material benefits from the projects" (MacDonald et al., 2017: 2). Consequently, many governments and IPPs have prioritised local involvement in renewable projects (Devine-Wright, 2005). Yet there is no global blueprint for how local communities should benefit, a recent emergence of community benefit guidelines in Australia notwithstanding (Munday et al., 2011).

In South Africa, the dependence on coal, mining and cheap labour for energy is known as the 'mineral-energy-complex' (Fine & Rustomjee, 1996). Historically, this complex provided cheap energy to customers through a centralised system managed by Eskom[9]. By the late 1980s, this had helped to close many decentralised power facilities like Tarkastad's. Further centralisation was the end result of a process that started in 1948 and transformed Eskom

9 There is a valid argument that the price of coal-generated energy does not represent the actual cost if we factor in the environmental and health costs and the cost of state subsidies.

from a state regulator of electricity generation, transmission and provision, to a state monopoly. The original decentralised systems in many towns were too expensive and could not compete with Eskom's economies of scale. The De Villiers Commission of Inquiry into the Supply of Electricity in the Republic of South Africa (1983) led to Eskom initiating a single fee structure for South Africa and becoming a company in 1987, paying taxes and allotting shares, with the state as the main shareholder (Gentle, 2009). The Eskom monopoly continued after the democratic transition in 1994.

However, the utility could not keep up with demand forever and, in 2007, the country had its first experience of load-shedding (a scheduled system of cutting electricity to selected areas to avoid over-loading the grid). The global financial crises and economic recession of 2008 provided some breathing space, as negative economic growth reduced the demand for electricity. Eskom's response was to build two new coal-driven power stations, Kusile and Medupi. Years later, as of 2019, these stations are still not fully operational. Badly designed technology, corruption in the procurement process and strikes by construction workers have held up the work (REFS). Load-shedding has returned to South Africa, and Kusile and Medupi are keeping the country locked into a centralised coal-driven energy production system (REFS).

Since the global financial crisis, in response to supply-side problems at Eskom and climate change protocols, the government has initiated renewable projects. By 2018, REIPPPP-generated investments of ZAR201 billion were providing 3 000MW (approximately 7% of the country's electricity) through 56 renewable projects (Davies et al., 2018). Although the government has distributed these projects much wider geographically than the coal plants, they still provide energy through the Eskom grid. Thus, although generation capacity has been decentralised, the centralised system of distribution remains intact.

Most REIPPPP projects are located in the Northern Cape, Western Cape and Eastern Cape provinces. Davies et al. (2018) note that many of the locations are under-developed, disconnected from big cities, offer scant economic opportunity, and have cash-strapped and ill-staffed municipalities that struggle to deal with infrastructure backlogs, unemployment, poverty and inequality.

To address the problem of the local municipalities' incapacity and create local benefits and acceptability, the central government requires IPPs to set up projects to promote local ownership, socio-economic development and enterprise development. Swilling *et al.* (2016: 667) observe that the state's "capacity to link renewable energy investments to the protection of South African interests and local communities demonstrates the fusion of developmental and environmental objectives". The projects have had mixed results, however, and estimates vary as to their potential to deal with small towns' local development concerns (Wlokas et al., 2012). Some researchers are worried that the full potential remains elusive; others are adamant that the energy sector is about to change the face of small towns across South Africa (Atkinson, 2016).

The absence of a link between energy generation and local economic development lies at the heart of some of the local conflict.

The disjuncture between centralised distribution versus decentralised production in Eskom has intensified pressure on the government and IPPs to ensure local benefits. We argue that the absence of a link between energy generation and LED lies at the heart of some of the local conflict.

3.3.3 THE HOPE OF RENEWABLES AND LOCAL ECONOMIC DEVELOPMENT IN DE AAR

De Aar is situated in the Great Karoo region of the Northern Cape, falling under the Emthanjeni Local Municipality and the Pixley ka Seme District Municipality. It was established by the Cape colonial government in 1904 as a major railway junction on the route from the Kimberley diamond fields to Cape Town. Today, it is a centre for wool production and livestock farming and has the largest abattoir in the southern hemisphere (PKSDM, 2010). It has also become an important node of new renewable energy investments. Below, we relate the story of how De Aar has developed from a railway town to the solar capital of South Africa.

The Pixley ka Seme District Municipality appointed a new LED manager in 2009. His appointment followed the economic recession of 2008 and his task was to re-think the economic development strategy. As assets in the region, renewables were central to the new strategy. A marketing document from the District Municipality said that the region was “blessed with much sunshine, steady winds and plentiful water” (from the Orange River), that it was “well positioned to answer the call for more green power” (PKSDM, 2010). The LED manager realised that renewable energy would become essential to South Africa as global attention was turning away from environmentally harmful forms of energy.

The new economic development strategy linked renewable energy directly with LED. Renewables would have to create enough local energy to support economic activities and increase productivity so farmers could create a bio-energy industry. The LED manager said in his interview that his main goal was to make energy

cheaper for farmers, and the municipality's marketing booklet said the overall aim was to develop the area into a "renewable energy hub" (PKSDM, 2010). Providing cheap electricity was central to the new strategy, to give the district a competitive edge; generating renewable energy for the national grid did not feature in the plan.

The LED manager had to convince local and provincial officials and politicians of the value of his new focus on renewables. Local municipalities would have to change their land-use plans and regulations to allow for renewable energy development. He also had to find a private-sector partner to support the idea. Agri-businesses were keen to get involved. They agreed with the initial idea of supporting local industry and advised farmers to lease their land to IPPs and farm with renewables.

The initial vision was clear: the district and local municipality wanted to promote renewable energy to support LED. Their marketing was successful, and, as the list of projects in **Table 9** attests, the renewables came in. But, instead of using them to supply power locally, the DoE contracted IPPs to provide electricity to the national grid and be paid by Eskom.

PROJECT	COMPANY	TYPE	ENERGY OUTPUT (MW)	PRODUCTION DATE
Longyuan De Aar 2 North	Mulilo	Wind	140	2017
Longyuan De Aar Wind Power	Mulilo	Wind	100	2017
De Aar project 1	Globeleq	Solar	85	2014
De Aar project 2	Solar Capital	Solar	90	2016
De Aar project 3	Solar Capital	Solar	85	2016

TABLE **NINE** RENEWABLE PROJECTS IN DE AAR

What started as a logical step to create energy for the local economy ended up doing no such thing. The renewables in De Aar have no direct long-term economic links to the local economy. The construction phase, it is true, did create substantial jobs in the short term. The state mandated IPPs to invest 4% of their revenue in socio-economic and enterprise development (SED and EnD) and to set up a community trust offering local shares in their

companies. However, the local community cannot benefit from the energy they produce, as it is still directed into the national grid.

Unfortunately, what started as a logical step to create energy for the local economy ended up doing no such thing.

The Minister of Energy at the time, Tina Joemat-Pettersson, claimed that if the electricity from the De Aar 3 project had been made available to the local municipality, "it would have powered nearly all of its households" (Infrastructure News, 2016). Oddly, the local municipality, businesses and households cannot use the surplus energy when the IPPs generate more than is contractually required. One interviewee said this was like 'owning a Porsche but driving a Toyota Corolla'. Seeing the solar plants being constructed, the local community hoped for cheaper electricity, but between 2007 and 2017, the price of Eskom-generated electricity increased by 350% (Moolman, 2018).

PART THREE 3.3 PLACE-BASED CASE STUDIES

Power plants close to De Aar

REF	PLANT	TECHNOLOGY	MW	BID WIN-DOW
1	Mulilo Renewable Energy Solar PV De Aar	Solar PV	10	1
2	De Aar Solar Power	Solar PV	50	1
3	Solar Capital De Aar 3	Solar PV	75	1
4	Solar Capital De Aar	Solar PV	75	1
5	Longyuan Mulilo De Aar Maanhaarberg	Onshore wind	96	3
6	Longyuan Mulilo De Aar 2 North	Onshore wind	139	3

MAP
CONTEXT

3.3.4 CONFLICTS ARISING FROM THE DISJUNCTURE

Even though the current arrangements do not allow the municipality to provide cheaper energy, there is an expectation that it will be possible in future. Indeed, many see Eskom as the current obstacle, and they suspect that cheaper local energy would render Eskom unable to compete[10]. However, the situation is more complicated. The government fears that outsourcing energy provision to the private sector might interfere with its sovereignty. One interviewee thought the government was afraid that foreign companies in the country could manipulate the price as they become monopolies. A private-sector interviewee and participant in the focus group vehemently disagreed. However, the issue here is not who is right and who is wrong – this fear is real, and it has helped to reinforce the centralised monopoly that was created under Apartheid.

To solve the problem of 'having a Porsche but driving a Corolla' – in other words, the local community having to pay for Eskom electricity rather than locally-produced renewable energy – the government introduced local ownership requirements, and guidelines for SED and EnD, as mentioned earlier. Among our interviewees, there was substantial disagreement over how the SED and EnD projects could be implemented, although many investments appear to be managed by the formation of community trusts. Disagreements abound concerning the projects, their implementation and management, aggravating the conflict among IPPs, local communities and government.

We were made aware of a range of current conflicts associated with SED and EnD, where it was felt that the local community did not benefit adequately from the wind and solar projects going up in their backyard. The interviewees raised the issue of creating long-term benefits, as job creation during the construction phase had been only of short-term benefit. The community trust set up in De Aar to manage community and enterprise investments was in its infancy, and still needed to pay back the loan with which it had bought its shares in the first place, and thus had produced no immediate post-construction benefits.

The primary cause of disagreement was over who should have the power to decide who or what would be funded through the projects. Decisions on which projects to fund, and whom to fund, are made by the IPPs. They do not need to consult with the municipality. Unlike the situation in the mining industry, IPPs are not mandated or regulated to do collaborative planning (Marais et al., 2017). Indirectly, the local interviewees experienced this as disempowering.

10 The authors are aware of the debate over whether renewables would in fact be cheaper, but space does not allow us to engage in that debate.

Furthermore, projects that invest in human capital (bursaries or training) are often less visible than tangible projects (for example, constructing a building) and this invisibility may have contributed to interviewees' negative perceptions of the IPPs' projects.

A related concern was the nature of the contractual arrangements between the IPPs and the DoE. IPPs have to implement projects within the jurisdiction of municipalities. However, the municipalities have little control over the contractual arrangements between the IPPs and the (national) DoE. These arrangements enable IPPs to operate outside the ambit of local politics. The two interviewees from the IPPs emphasised that they have a contractual agreement with the national department and are therefore not accountable to the municipalities. These contractual agreements are not public documents. Consequently, it was difficult for local stakeholders to contribute to the projects. Working outside the ambit of local politics has its advantages. For one thing, the IPPs do not have to deal with local 'red tape'. However, the lack of transparency and local buy-in arouses local hostility.

3.3.5 CONCLUSION

Globally, the geography of energy production is changing. Renewable energy provides for decentralised energy production. This decentralisation has meant that many small towns in the Northern Cape, Western Cape and Eastern Cape provinces have become energy producers. De Aar in the Northern Cape is one of these. Proactive planning ensured that the town received some of the initial investments, but the energy for local electrification did not materialise, as the IPPs provide it to the national grid. Although decentralised energy production takes place, decentralised use of the production remains impossible for the immediate future. Using the analogy provided by one of our interviewees, this means the Corolla will remain the primary vehicle. Prevented from driving the Porsche, the local community will have to depend on investment in socio-economic and enterprise development by the IPPs, and they should later benefit from shareholding through community trusts. But they will continue to complain about the Corolla. The promised benefits simply do not measure up to the advantages of potentially cheap locally produced energy and the transformative local economic development it could bring.

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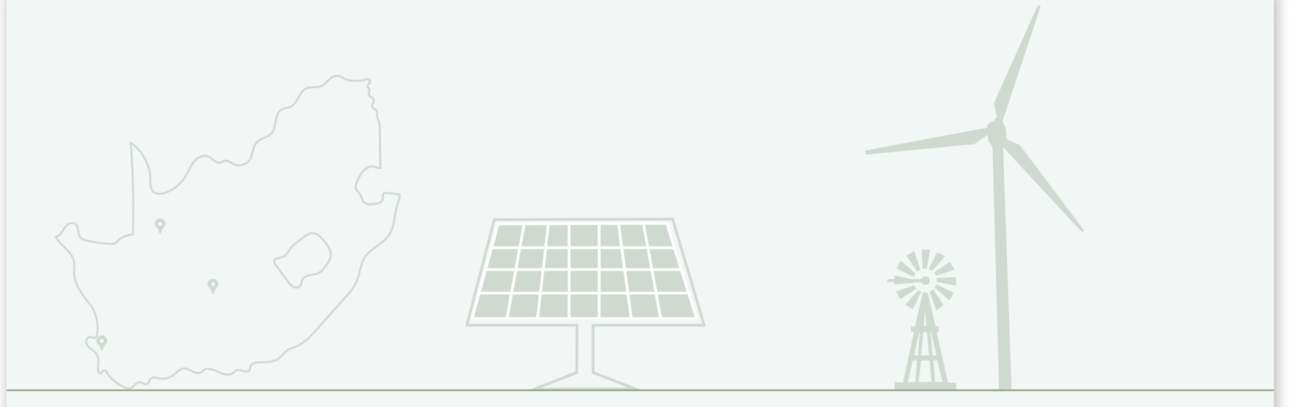


Across South Africa there are examples of renewable energy projects that are exploring collaborative governance, community empowerment and local economic development, regionally and nationally.

The Hopefield Wind Farm, procured under the REIPPPP, is one such example. They pioneered an innovative approach to community engagement, and novel institutional and financial arrangements to deliver their economic development investments. A windmill against a backdrop of a wind turbine gives Hopefield its unique silhouette.

PART **FOUR** 4

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.1 Which just transition? Lessons from the REIPPPP why a deep' shift is paramount

Author: Megan Davies

4.1.1 INTRODUCTION

The introduction by the South African government of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in 2011 signalled a potential turn towards a low-carbon transition in South Africa. It has helped to focus attention on the connection between decarbonisation and the structural transformation of the political economy.

Since the REIPPPP's inception, the language of 'just transitions' has entered South Africa's mainstream political discourse, starting with its roots in the labour movement and moving into policy deliberations, academic research, civil society organising, private-sector positioning and community resistance. Invoked as it is by nearly all sectors of South African society, the call for a just transition has come to refer most acutely to the imperative of protecting affected workers and vulnerable communities in the move away from a predominantly coal-based political economy. Beyond this narrow application, a just transition also implies the shift in the country's socio-economic development trajectory away from the prevailing status quo. Given the ever-worsening levels of poverty and inequality in the country, reconfiguring South Africa's development trajectory towards a more sustainable and inclusive future is part and parcel of what the just transition has come to signify.

At its core, the notion of a just transition rests on the potential opened up by the shift towards a new socio-technical energy regime (Jasanoff, 2018). However, the term has been so widely used by so many people in so many contexts, that it runs the risk of having its transformative potential diluted, thwarted or co-opted (Newell, 2018; Cock, 2019). Without consensus or interrogation, the notion of 'just transitions' runs the risk of becoming a nebulous and impotent call for action without any impact on the nefarious status quo (Sovacool, Baker, Martiskainen & Hook, 2019). This could lock South Africa into a development trajectory that exacerbates financialisation and the centralisation of political and economic power. In this scenario, the country will fall short of its developmental mandate and tumble towards unprecedented levels of poverty and inequality under conditions of an accelerated climate crisis.

So how ought the meaning and power of the term be preserved? In a 'shallow' framing, a just transition will manifest through moderate and reformist adjustments to the prevailing socio-technical regime. On the other end of the spectrum, a just transition is constituted by the transformative and radical disruptions that cultivate a more just, equitable and sustainable society (Cock, 2019). It is within this latter, 'deeper', framing of the just transition that I critically interrogate South Africa's first utility-scale renewable energy programme.

This chapter attempts to explore the following question: 'To what extent does the REIPPPP create the conditions for a just transition in South Africa?' I argue that South Africa's utility-scale renewable energy (RE) programme presents a unique opportunity to explore the conditions within the energy policy landscape that might be supportive of a just transition to energy democracy, and whether these might coalesce into strategies that support the decarbonisation of, and potentially more fundamental transformation of, the political economy. The chapter spells out four dynamics that the REIPPPP has unlocked, namely: (1) aligning energy policy and climate change commitments; (2) integrating socio-economic development into energy policy; (3) breaking with centralised energy governance; and (4) enhancing regional collaborative governance.

This commentary builds on the extensive research conducted by the author since 2016 using a transdisciplinary methodology (Lang et al., 2012; Mallaband, Staddon & Wood, 2017). This entailed engaging with diverse stakeholders across South Africa's RE sector, including private-sector and civil society organisations, as well as government departments at local, regional and national levels. My ongoing participation between April 2016 and April 2018 in the ZF Mgcawu District Development Coordinating Forum, a multi-stakeholder governance structure in the Northern Cape where a large number of IPPs are located, was a grounded experience of the developmental dynamics of the REIPPPP (see Chapter 3.2 for critical reflections on that experience). To supplement the fieldwork, primary documentation and grey literature (such as government reports, media publications and working papers) were also analysed.

4.1.2 'SHALLOW' JUST TRANSITIONS: DISCOURSE IN SOUTH AFRICA

The just transitions discourse is connected with the restructuring of South Africa's electricity sector, the shaping of future electricity policies, and the general recognition that energy plays a central role in determining sustainable development pathways. A techno-economic rationale for the REIPPPP, albeit market-oriented, is well established, providing a strong business case for the role of RE in the future of South Africa's electricity sector (Bischof-Niemz & Creamer, 2018). This is ratified in the guiding national electricity policy, the Integrated Resource Plan (IRP) 2019-2030, which spells out South Africa's electricity pathway.

South Africa's National Development Plan (NDP) 2030, overseen by the National Planning Commission (NPC), operates as the overarching strategic framework for the country's development trajectory. It references a 'just transition' as part of addressing the triple challenge of reducing inequality, eradicating poverty and creating employment (National

Planning Commission, 2012). In the strategic pillar focusing on an 'equitable transition to a low-carbon economy', managing a just transition refers to strategies for mitigating the socio-economic costs of shifting towards an environmentally sustainable, low-carbon economy. The NPC's Just Transition Initiative to explore pathways to a just transition in South Africa took the form of a social dialogue process, integrating high-level stakeholder engagements among business, labour and government, with broad-based grassroot inputs (National Planning Commission, 2018, 2019).

Scholtz et al. (2019) present an instructive review of stakeholders across various sectors contributing towards the discourse of the just transition. Some of these diverse organisations include the Southern African Faith Communities' Environment Institute (SAFCEI), the World Wildlife Fund (WWF), Life After Coal, Project90by2030, Earthlife Africa, GroundWork, Alternative Information and Development Centre (AIDC), Greenpeace, the African Climate Reality Project, Sustainable Energy Africa and the Centre for Environmental Rights. Other movements include the Million Jobs Campaign, Fossil Free South Africa and 350.org.

As the procurement of utility-scale RE is set to be ramped up, grappling with the successes and shortcomings of the REIPPPP is vital. The programme has not been without strong criticism and pushback. As the dominant incumbent in South Africa's socio-technical energy regime, Eskom has executed various strategies to subvert and resist the expansion of a renewable energy niche (Ting & Byrne, 2020). Opposition has also been expressed by various constituencies in the country's labour and civil society movements (Räthzel, Cock & Uzzell, 2018; Scholtz et al., 2019). From among these diverse, and often ideologically incommensurate, vantage points, the widespread reference to a just transition has emerged as something of a commonality (Scholtz et al., 2019). These different vantage points represent a spectrum of normative orientations towards the role of energy policy and the transformation of the electricity sector, and the REIPPPP has certainly aided in crystallising these positions.

For labour unions connected to mining and energy-intensive industries, a key criticism of the REIPPPP has been in relation to significant job losses from industry decline and the alleged insufficiency of job opportunities within an electricity sector dominated by RE. For the labour movement, then, the just transition equates fairly narrowly to ameliorating the implications of job losses for affected industry workforces and communities (Munnik, 2019; Strambo, Burton & Atteridge, 2019). However, their criticisms of the REIPPPP have also been directed towards its market-oriented logic. The participation of international developers and investors has become a point of contention and national debate (Baker, 2015). Overall, opposition from the labour movement has called attention to the employment and ownership implications of the REIPPPP.

The National Union of Metalworkers of South Africa (NUMSA) has been ardently opposed to the REIPPPP, describing the procurement programme as "another capitalist grab to enrich a few and to commodify natural resources for profitable sake in the world-market" (NUMSA, 2016). Instead, NUMSA calls for a

"Just and democratic transition towards a socially-owned renewable energy that achieves cleaner forms of energy, develops the manufacturing base of our economy and avoids job losses and provides reskilling" (Cloete, 2018).

AMCU, the Association of Mineworkers and Construction Union, backs the call for a rapid move to a low-carbon economy, demanding that

"Government ensures a just transition to a wage-led low-carbon economy, where renewable energy both becomes the main energy source and the basis for affordable electricity for all. We demand an end to the privatised renewable energy programme known as the REIPPPP to be replaced by a state-driven and socially-owned renewable energy sector" (AMCU, 2018).

The mobilisation of South Africa's labour unions around the notion of a just transition, and their opposition to private-sector driven neoliberal energy transitions (Newell & Phillips, 2016; Erensü, 2018; Furnaro, 2019), is significant, given the important role played by unions in energy transitions throughout history (Mitchell, 2011; Stevis & Felli, 2014; Prinz & Pegels, 2018). Moreover, it resembles a similar framing of a just transition in the international labour movement (Olsen, 2010; Harrahill & Douglas, 2019).

As has been the case in in South Africa, the 'job-killing' argument has provided the impetus for just transition planning in other countries such as Germany (Abraham, 2017), Canada (Williams & Doyon, 2019), Australia (Della Bosca & Gillespie, 2018; Snell, 2018) and the United States (Stevis, 2018). There is no denying that the "political consequences of extreme distributional effects" (Vona, 2019: 525) resulting from policies aimed at transforming the energy sector must be taken seriously. Having said that, the pervasive 'job-killing' argument is by no means neutral or straightforward. For Vona (2019: 529) "the job-killing argument is just a weapon in the basket of brown lobbies" operating as "a gift to the true vested interests defending the status quo of lax carbon regulations: the companies in heavily polluting sectors". An uncritical deployment of this framing of the just transition might thus have perverse and undesirable outcomes; namely, an 'orderly retreat' from a coal-based electricity sector that prolongs the operations of incumbent actors. This would be carried out in the name of job protection but would be at the expense of wider structural transformation and decarbonisation.

"The just transitions discourse is trapped between two intersecting dynamics, where the prospects for renewable energy are equated with privatisation and pitted against job security."

A narrow, disproportionate focus on the precariousness of coal-sector jobs hijacks public attention and policy deliberation, inhibiting the collective ability to grasp the systemic inadequacies and structural injustices of a carbon economy that has exacerbated poverty, inequality and unemployment (Cock, 2019). Invoking a narrow conception 'captures' the just transitions discourse, benefits the incumbents, and holds to ransom much-needed wider structural transformation. However, considering the traction and political credibility that this framing has enjoyed in the South African consciousness, it is vital to ensure that the conversation is as empirically well-informed as possible. The extent of job losses across the coal sector and its associated value chains must be quantified. This must be done in conjunction with an assessment of the associated costs of mitigating these labour losses and a negotiation of the rate of change that the South African economy might be able to handle (see Chapter 4.2 for a first attempt at this calculation).

As it stands, the just transitions discourse in South Africa is trapped between these two intersecting dynamics. On the one hand, resistance from fossil-fuelled sectors punting the job losses argument, and on the other, the problematic possibility of a renewable economy reduced to private sector-led procurement. The resulting logjam presents a limited spectrum of options for the country's energy future, where the prospects for RE are equated with privatisation and pitted against job security and decent livelihoods. However, a closer consideration of the REIPPPP in particular might open up new generative lines of inquiry for the just transition discourse in South Africa.

4.1.3 TOWARDS 'DEEP' JUST TRANSITIONS: INSIGHTS FROM THE REIPPPP

The significance of the just transitions discourse is that it begins to consider the alliances that could move deep decarbonisation forward (White, 2019). The REIPPPP has played a key role in fostering an expanding discourse on just transitions, with energy and electricity policy taking centre stage. Following Avila,

"Rather than framing opposing voices as selfish expressions blocking the cultural change needed to move towards renewables, the political value of these movements resides in their capacity to expand the possibilities of imagining alternative energy futures" (Avila 2018: 613).

The introduction of the REIPPPP illuminates alternative energy futures for South Africa, the ways in which these might be configured through policies, and how they are contested, supported and undermined by various vested political and economic interests (Baker, Newell

& Phillips, 2014). This is thus a timely opportunity to unpack and interrogate distinctive features of the REIPPPP to consider the extent to which it creates the conditions for a just transition to energy democracy. Doing so might play a fruitful role in informing and shaping energy policies that support pathways towards a just, equitable and sustainable future for South Africa. Moreover, as a prominent exemplar of RE procurement in the global South more generally, the South African case has relevance for the wider challenge of how global South energy transitions can advance, rather than undermine, ongoing efforts to expand energy security and energy justice globally (Lacey-Barnacle, Robison & Foulds, 2020).

This section highlights four relevant dynamics within the REIPPPP, namely, (1) aligning energy policy and climate change, (2) integrating economic development into energy policy, (3) breaking with centralised energy governance, and (4) enhancing regional collaborative governance.

4.1.3.1 Aligning energy policy with climate change

The purposes of climate change and energy policies can be framed according to different development needs; doing so, particularly in a developing world context, runs the risk of yielding an incongruent pairing. In South Africa, the attempted coupling of climate change strategies with development priorities is reflected in broader integrated development plans, such as the guiding framework of the NDP (Ziervogel, New, Archer van Garderen, Midgley, Taylor, Hamann, Stuart-Hill, Myers & Warburton, 2014; Newell & Bulkeley, 2017). The REIPPPP demonstrates how the electricity sector can directly support economic development and how this might also align with climate change commitments. For emerging economies in the global South, the coupling of development and climate change commitments is imperative.

International climate change agreements, most significantly the 2015 Paris Agreement, require national governments to introduce policies to offset and reduce emissions in line with Nationally Determined Contributions (NDCs). South Africa is guided by the 2016 National Adaptation Strategy and the 2018 Draft Climate Change Bill, which outline the country's position on, and strategic response to, climate change. The National Adaptation Plan acts as a strategic reference point for aligning climate change adaptation strategies across key sectors, including energy. These key policies are informed by the 2011 National Climate Change Response White Paper, which presents the "South African Government's vision for an effective climate change response and the long-term, just transition to a climate-resilient and lower-carbon economy and society" (Republic of South Africa, 2011). The REIPPPP is positioned as one of eight Priority Flagship Programmes, and is an integral part of the mitigation and adaptation responses called for by the National Climate Change Response White Paper.

PART FOUR 4.1 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

Given the dominance of the coal-based electricity sector, South Africa's economy is extremely carbon-intensive and the country is one of the biggest contributors to greenhouse gas (GHG) emissions (Parr et al., 2018). South Africa has made a voluntary commitment to reduce GHG emissions below business-as-usual levels by 34% in 2020, and by 42% by 2025 (Parr et al., 2018). In reality, these commitments imply a significant transformation of the economy, and rapid, extensive decarbonisation of the electricity sector (Burton et al., 2018). The REIPPPP is the first energy procurement framework that responds directly to this climate agenda (Rennkamp, Haunss, Wongsa, Ortega & Casamadrid, 2017). The IPP Office in the Department of Energy (DoE) reports that the programme has generated 22 166GWh of clean energy from the 62 operational plants, and offset 22.5 million tons of CO_2 emissions (IPP Office, 2019). With the full realisation of the outstanding bid windows, an additional 8.1 million tonnes of CO_2 per annum will be offset, at which point RE will still only comprise approximately 5% of South Africa's energy mix.

"The REIPPPP is the first energy procurement framework that responds directly to the emissions reducing agenda of South Africa's global climate change commitments."

Simultaneous to the expansion of the REIPPPP, Eskom's own-build programme has continued with the construction of Medupi and Kusile, two of the world's largest coal-fired power plants, funded by the World Bank. These two mega-projects have been widely criticised, following major construction overruns resulting in exorbitant costs to the national economy, not to mention the implications for South Africa's climate commitments (Steyn et al., 2017; Ireland & Burton, 2018). Additionally, the IPP Office is also responsible for a procurement programme for gas and coal which have further negative impacts on South Africa's climate commitments (Baker & Burton, 2018).

While the REIPPPP's comparative contribution to realising climate change mitigation and adaptation targets seem undermined by the continued expansion of coal-fired power stations, the explicit alignment of some elements of South Africa's energy policy with climate change targets remains significant.

4.1.3.2 Integrating economic development into energy policy

The REIPPPP's contribution to South Africa's developmental agenda includes its mandate to provide adequate, reliable, flexible and affordable electricity generation capacity that also contributes to meeting climate change targets. This is demonstrated in the unique procurement design which integrates economic development (ED) requirements over and above price-competitiveness. Independent power producers (IPPs) are contractually obligated to meet ED thresholds and targets across seven aspects, namely job creation, local content, ownership, management control, preferential procurement, enterprise development (EnD) and socio-economic development (SED) (IPP Office, 2019b). These align with the NDP's orientation to the triple challenge of eradicating poverty, reducing inequality and stimulating employment. The IPP Office has made attempts to explicate which bid categories are congruent with the various NDP targets (IPP Office, 2019b).

The developmental implications of these substantial place-based investments has been the subject of much academic research (McEwan, Mawdsley, Banks & Scheyvens, 2017; Wlokas, Westoby & Soal, 2017). The emergent practices by IPPs to realise these community benefits have evolved since the beginning of the programme, and a diversity of approaches and institutional logics are evident (see Chapter 2.3 for an analysis of these). Having said that, it remains the case that the REIPPPP's ED contribution is underpinned by a stringent compliance-based framework overseen directly by the IPP Office (Mthembi, 2015). IPPs report quarterly on ED expenditure to the IPP Office and risk facing penalties if they do not fulfil these contractual obligations. The result of this preoccupation with demonstrating the financial extent of ED investments, within relatively short timeframes, is that expenditure drives development, rather than development driving expenditure. In reality, this means that ED activities by IPPs have tended towards a welfarist, or 'handout', approach to development, as opposed to a long-term one that builds individual and collective capabilities (Mthembi, 2015).

Legitimate criticisms of the implementation of this ED approach abound, and the inclusion of non-price factors in the procurement framework is itself also contested (Leigland & Eberhard, 2018). For Leigland and Eberhard (2018), the ED component of the REIPPPP – in particular its local content stipulations – amounts to a protectionist strategy by the South African government that might have detrimental effects for the financial performance and investment attractiveness of the industry. The justification for ensuring IPPs are responsive to national development priorities can be found in South Africa's political commitment to a developmental state agenda. That much is a fairly straightforward rebuttal. However, despite the progressiveness of this commitment in the constitution of the REIPPPP, what has not translated in practice is a coherent, long-term and transformative vision of development to inform the ED framework.

The REIPPPP contains a fundamental tension between its support of a price-competitive, investment-oriented economic logic, and its developmental commitment through the ED requirements. What becomes clear is that the development paradigm driving the ED requirements of the REIPPPP is, to a large extent, incongruent with its price-competitive market logic. The introduction of a procurement programme, which enables the participation of private-sector players and international investors, has the potential to encourage neoliberal energy reforms that would stand in strong contrast to the country's espoused developmental state commitment (Newell & Phillips, 2016).

In short, this is what distinguishes South Africa's REIPPPP procurement framework: its attempts to temper the impacts of the financial logic of RE procurement with an ED framework which favours localised investment, community ownership and job creation. This has proved challenging in practice.

4.1.3.3 Breaking with centralised energy governance

Electricity policy, planning and governance in South Africa has historically been a centralised and highly secretive activity, largely overseen by Eskom (Baker & Burton, 2018). Centralised governance is a feature of carbon-intensive economies and, in the South African case, has been locked in with the path-dependency of the mineral-energy complex (Goldthau, 2014; Bridge et al., 2018). The geographical concentration of South Africa's coal mines and coal-fired power stations in the Mpumalanga Province spatially mirrors this centralisation to some extent. Eskom operates 29 power stations, including a nuclear energy facility and a number of gas, hydro and pumped storage facilities. Off the 44 559MW of total national installed capacity, % of this relies on 15 coal-fired power stations, including the long overdue mega-projects, Medupi and Kusile (Kruger & Eberhard, 2018).
The REIPPPP was introduced into a centralised governance paradigm characterised by massive generation facilities and the dominance of Eskom in electricity policy. Following others (Bischof-Niemz & Creamer, 2018; Ting & Byrne, 2020), a clear argument that the REIPPPP was structured to assimilate into this centralised paradigm can be made. One marker of this is the choice of a competitive auction scheme as opposed to a feed-in tariff. The latter would have seen the National Electricity Regulator of South Africa (NERSA) playing a stronger role, while the former retains central and direct state leadership through the DoE (Montmasson-Clair & Ryan, 2014). Another marker is the creation of the IPP Office purely as a project management facility: it is mandated with operationalising the procurement of electricity from IPPs, but has no formal or legal function to execute strategic decisions.

Nonetheless, the REIPPPP cannot but signify a break with the historic paradigm of large-scale, centralised and state-owned electricity supply (Baker & Burton, 2018). The geographic location of IPPs is determined through a number of factors, most notably the prevalence of renewable sources of energy. The 92 grid-connected projects are of a much smaller capacity, compared to traditional coal-fired, gas, hydro or nuclear power stations. IPPs range from 5MW to 100MW and are dispersed across the country, with the majority of solar photovoltaic (PV) and concentrated solar power (CSP) projects located in the Northern Cape, due to its high levels of solar radiation (IPP Office, 2019b). Wind projects are located mainly along coastal regions in the Eastern Cape and Western Cape. While there are IPPs present in each of South Africa's nine provinces, the Northern Cape is host to the majority of projects, with a total of 59. The Eastern Cape follows with 17 projects, and the Western Cape has 14 (IPP Office, 2019b).

The changing energy geography of the electricity sector has brought into question the logics and efficacy of the prevailing energy governance regime. As mentioned, the REIPPPP is overseen by the IPP Office, which is mandated to oversee procurement from IPPs and various regulatory processes. IPPs spread across the country are connected to the national electricity grid, and through various contractual agreements, are ultimately accountable to the DoE, their lenders and Eskom. However, given their diverse geographic locations, IPPs also operate within various local and regional government regulatory frameworks, including those of local municipalities. With some exceptions, these municipalities tend to be rural municipalities, significant distances from major urban nodes and economic hubs, and chronically under-resourced to deliver on their local economic development (LED) mandates. To help, the establishment of IPPs in these localities is intended to stimulate positive socio-economic and developmental outcomes.

Yet, the place-based investments by IPPs are not required to align with local municipality development priorities, and IPPs are primarily accountable to the IPP Office. Unsurprisingly, this incongruence has been the source of tension among local and regional municipalities and IPPs. Things are a bit different in the long-established mining sector, which is governed by the Mining Charter. Unlike in the REIPPPP, this governance framework stipulates formal alignment between mines and the comparatively fewer municipalities that are affected by

the industry (Atkinson, 2016; Marais, McKenzie, Deacon, Nel, Rooyen & Cloete, 2018).
The spatiality of South Africa's unfolding energy transition has implications for the socio-spatial organisation of the political economy. The emergence of decentralised and dispersed RE infrastructures creates the material conditions for challenging South Africa's carbon-intensive electricity governance, planning and control regime. Moreover, it illuminates possibilities for a new wealth accumulation and distribution strategy. Already evident is that some rural, peri-urban and urbanising settlements are quickly becoming prominent economic nodes as sites for international investment and the deployment of cutting edge RE technologies.

"Decentralised and dispersed renewable energy infrastructures create the material conditions for challenging the prevailing electricity governance, planning and control regime."

4.1.3.4 Enhancing regional collaborative governance

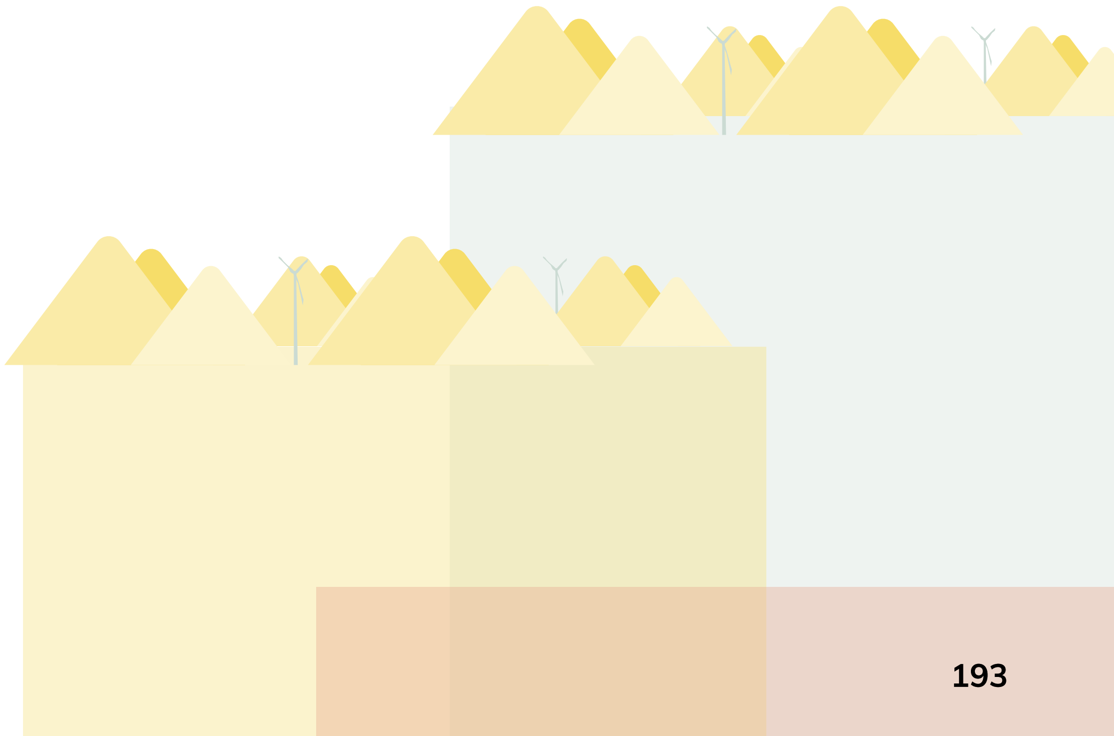
The REIPPPP has seen the emergence of novel initiatives in response to challenges related to implementation, alignment and coordination, and monitoring and evaluation. A number of formal and informal responses have been initiated in different parts of the country, with actors from the public, private and civil society sectors. Springing up in a variety of previously economically marginalised localities, such responses have been made possible only by the emergence of decentralised and dispersed IPPs.

One prominent example of an experimental and collaborative governance response is the ZF Mgcawu District Development Coordinating Forum in the Northern Cape, set up by the Industrial Development Corporation (IDC) in 2015. The Forum aimed to align the place-based investments and development activities of IPPs within and across local municipalities in the district municipality around Upington (ZF Mgcawu District Development Coordinating Forum, 2017). This forum, and others like it in the Western Cape and Eastern Cape, was not expressly intended as a space to explore alternative or decentralised forms of energy governance, yet it provides an opportunity to imagine them. While in its current form the Forum might not be able to fully realise its potential due to various institutional constraints, it is possible that such structures could experiment with institutional and financial arrangements to leverage the development commitment of the REIPPPP.

4.1.4 CONCLUSION

The REIPPPP has catapulted South Africa's energy transition to the front and centre of the global energy transition. This chapter undertook to explicate four distinctive features of the REIPPPP. Paying attention to the tensions and paradoxes therein is instrumental for considering the extent to which the programme creates the conditions for a just transition in South Africa. Such a transition was presented as the contested and ongoing (re)configuration of the socio-technical energy system that might couple the decarbonisation of South Africa's economy with the deeper structural transformation of the political economy in ways that are supportive of an energy democracy agenda.

In its current configuration, the REIPPPP is not sufficient for realising a just transition in South Africa. This has been shown. Yet to conclude thus and go no further would be to miss out on what can be yielded in a generative inquiry into what has been made possible by this novel, albeit somewhat problematic, procurement programme. It is vital to hold the tensions and build on the emergent opportunities presented by the REIPPPP. Only by doing so is it possible to learn how to configure better, more progressive alternatives that more strongly contend with the imperatives of decarbonisation and structural transformation.



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PART FOUR 4.1 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

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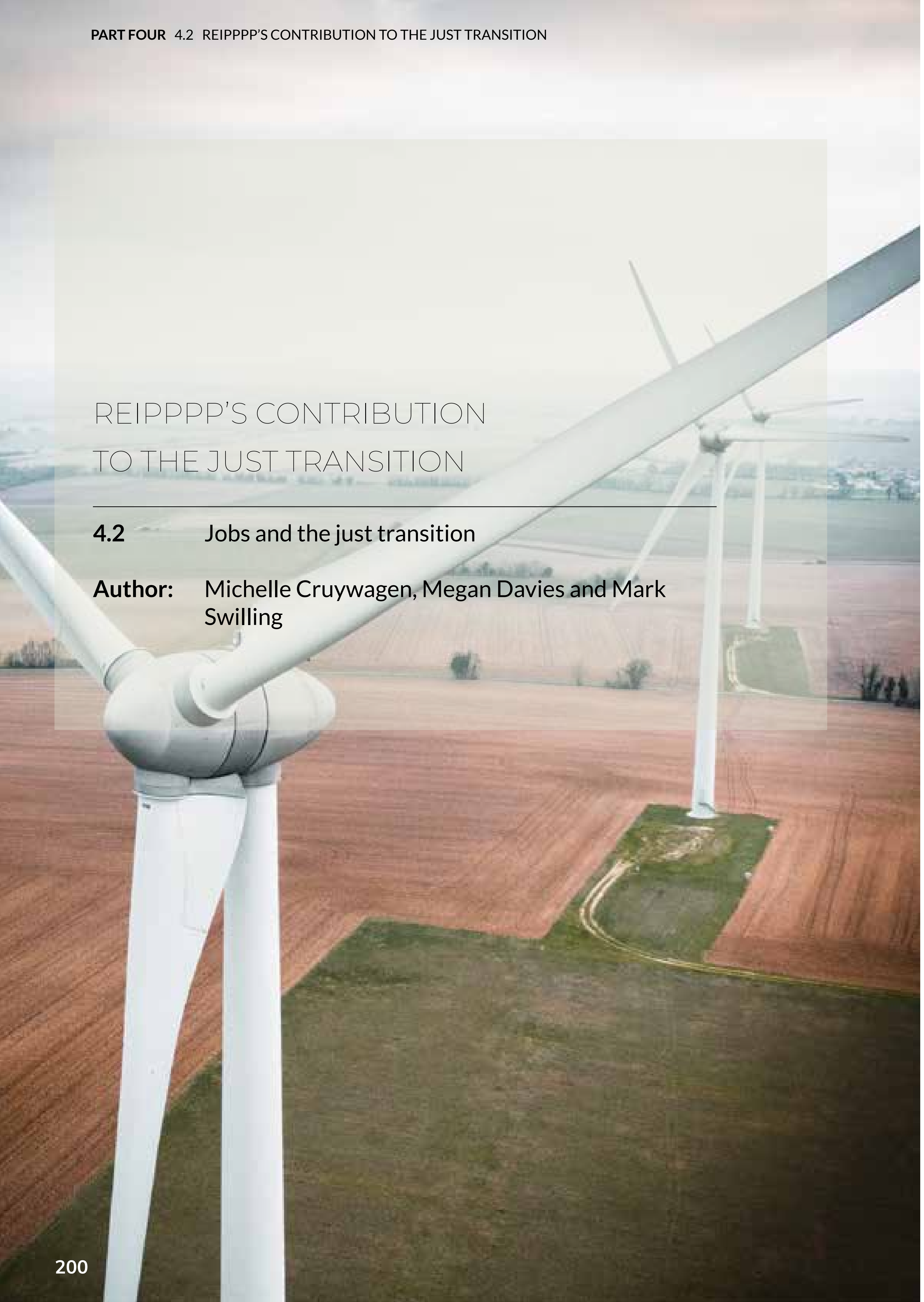
Protecting affected workers and vulnerable communities in the move away from a predominantly coalbased political economy is where the discourse around 'just transitions' begins. However, the term has come to represent much more. The just transition implies the shift in the country's socio-economic development trajectory away from the prevailing status quo.

Reconfiguring South Africa's development trajectory towards a more sustainable and inclusive future is part and parcel of what the just transition has come to signify. The just energy transition couples the energy transition with progressive developmental objectives.



REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.2 Jobs and the just transition

Author: Michelle Cruywagen, Megan Davies and Mark Swilling

4.2.1 INTRODUCTION

South Africa has a unique opportunity to be the first coal-based economy in the global South to successfully transition to renewable energy – the energy source of the 21st century. South Africa is also unique because it has an aging fleet of coal-fired power stations that must be decommissioned over the next 20 years (IRP, 2019). The country has no choice: it must build more energy generation capacity to offset the closures. But does this mean replacing coal-fired power with more coal-fired power?

The rationale for an energy transition from coal to renewables can be traced to South Africa's Nationally Determined Contributions (NDC) as part of the Paris Agreement (Burton et al., 2019). South Africa's international commitment to climate action spells out a peak-plateau-decline trajectory for its carbon emissions (Parr et al., 2018). In 2019, South Africa ratified its electricity roadmap to 2030 that commits the country to a decarbonisation pathway hinging on the decommissioning of coal-fired power stations and the rapid uptake of renewable energy (IRP, 2019). The contraction of labour- and carbon-intensive industries, together with the cultivation of low-carbon alternatives, will by no means be a seamless transition. It is within this context that the concept of the 'just transition' has emerged globally and found traction in South Africa. However, despite its widespread application, there is little clarity about its ramifications with respect to the cost of mitigating labour losses, specifically. This research aims to contribute towards narrowing this empirical gap.

In this chapter we present a methodology for estimating the cost of mitigating labour losses in South Africa's energy transition. This first empirical study to determine these costs aims to prioritise worker support, stimulate regional development and advance a transition to a low-carbon economy. National labour data for South Africa was applied to an international just transition framework developed by Pollin and Callaci (2019). The 20-year cost framework works according to identified rates of attrition (i.e. natural retirement) and contraction that would protect coal workers' livelihoods under various scenarios – this is why it is appropriate as a just transition model. Specifically, the cost estimate accounts for costs relating to compensation, retraining, relocation and regional development. Qualitative insights from community observations and informal interviews in Emalahleni in July 2019 complement the cost estimate, thus grounding the methodology in direct response to the perceptions and concerns of affected communities.

The research highlights that the empirical data, specifically relating to decommissioning, contraction and attrition rates, have significant implications for costing a just transition, and in turn, for strengthening the social compact to drive a just transition. Interrogating this methodological approach, along with the corresponding just transition scenarios it paints, has the potential to inform critical policy choices and implementation strategies to advance South Africa's energy transition.

4.2.2 JUST TRANSITION FRAMINGS IN SOUTH AFRICA

4.2.2.1 A broad concept of increasing importance

The 'just transition' means many things in South Africa, from radical visions of a post-capitalist socially just future powered by renewable energy, to a nuclear-driven mass industrialisation programme, to ensuring coal miners who lose their jobs are employed elsewhere. The use of the just transition concept has been on the increase in political discourse in South Africa, a trend which can be attributed to a heightened awareness of climate change and the urgent need to transition to a low-carbon economy (see Chapter 4.1 for more insight into the various framings of the term).

The National Planning Commission and local civil society organisations CSOs have hosted various social dialogues aimed at stakeholders and the wider public, to better understand perceptions of a just transition as well as energy needs. When South African government related policy-makers speak, what they usually have in mind is the future of Mpumalanga's coal-based economy, which supports the livelihoods of around 82 000 coal miners (Minerals Council, 2018). For their part, with the loss of 60 000 jobs in the declining gold sector over the past decade fresh in their minds, unions understandably refuse to consider any deviation from coal-fired power generation.

4.2.2.2 Community concerns and dilemmas

Newell & Mulvaney (2013: 1) define a just transition as: "Energy access for those who do not have it; justice for those who work within and are affected by the fossil fuel economy; and attempts to manage the potential contradictions that might flow from pursuing energy and climate justice simultaneously". This framing is closely aligned to the emerging understanding of a just transition in South Africa. Indeed, it is echoed in communities in Emalahleni and surrounding areas, who express their fears of job losses, a sense of disillusionment regarding government and union inaction, and concerns about the imminent detrimental health impacts from coal mining. As one community respondent noted,

"What they are introducing now is going to make sure that many workers will lose jobs, so we need to come with a solution as how are we going to move forward with this just transition working together so that at the end of the day our lives will not be in danger" (Community observations in Emalahleni, GroundWork, 2019).

The threat of job losses is exacerbated by frustration with government inaction, as another respondent commented, "Government knew long time ago to say we must have this just transition and they decided to sleep on duty but why must we pay the price?" (GroundWork, 2019). Reflecting a sense of being failed by the labour movement, a respondent commented,

"Because comrade you see that the unions they forgotten about the issues of wena [you and I], all the unions they are now focused on politics and the issues of the workers are forgotten. That's why the unions are losing momentum because the only time you will see the union comment is when they have removed one of the ministers" (GroundWork, 2019).

The Emalahleni community observations also showed that workers feel caught between the need for a job and the impacts of coal mining on their health, children, community and culture. In the Coal Kills report (GroundWork 2018), it is reported that pollution from Eskom's coal-fired plants kills 2 200 people per year. In addition, the report highlights 12 314 cases of bronchitis per year, of which 77% are in children aged between 6 and 12 years old. Further, 94 680 days of asthma is experienced by children between 5 and 19 years old (GroundWork 2018).

Capturing this contradiction, a community respondent reflected that "we are in a catch22 situation because, when the mine is operating, we could die, and when the mine is not working, people die" (Groundwork, 2019). Thinking about the possibility of alternatives, another stated, "Give us better jobs that are clean, that we are free from pollution, that we are free from sicknesses, that we are free from any kind of disease" (GroundWork, 2019). The community recalled various accounts of illness, including eye problems, respiratory diseases and asthma, especially among children. They further directed their anger towards mining companies to varying degrees of severity, the most visceral expression stating,

"When people die in the mines while people are enjoying the profits of our mines in Western countries, they are chewing our blood, they are eating our blood, we give birth to kids which are ill because of air pollution, and air pollution that somebody has bought a brand-new car. Somebody is living in a mansion because of that air pollution" (GroundWork, 2019).

4.2.2.3 Taking seriously the foregrounding of employment concerns

In light of these dynamics, urgent attention is required to activate a just transition that is supportive of workers and affected communities. This has become the dominant view of the just transition which has captured the attention of civil society, policy-makers, communities and the general public. It is within this 'shallow' framing that we explore the cost of a just transition, with a specific focus on mitigating labour losses in South Africa's coal sector. As such, it is the dominant framing of the just transition in South Africa that provided the rationale for pursuing this cost estimate exercise. Moreover, recent research indicates that the mitigation of labour losses has not been adequately scoped in South Africa and a lack of data makes it difficult to plan for or manage these risks (Steyn et al., 2017).

4.2.3 METHODOLOGY AND APPROACH: APPLYING A COST MODEL TO THE JUST TRANSITION

South Africa is well positioned to build on lessons learned from the implementation of just transition strategies elsewhere in the world. For example, countries such as Germany, Australia, the Netherlands, Spain, Poland, the United Kingdom and Ukraine, have each implemented extensive just transition programmes to protect workers in the move away from fossil fuels (Harrahill & Douglas, 2019). Importantly, each of these undertakings can demonstrate only limited success with respect to their intentions, thus holding many lessons for others. For South Africa, it will also be vital to shape these strategies according to the country's local context, policy commitments and developmental agenda. In support of these efforts, this research investigated an international just transition framework developed by Pollin and Callaci (2019). We applied local data from South Africa's coal sector to this framework in order to estimate the cost of mitigating labour losses in the energy transition.

Pollin and Callaci (2019) apply their framework to coal mining, oil and gas extraction, petroleum refining, electricity generation, natural gas distribution and the support/ancillary sectors of coal and oil and gas in the United States. The premise of the framework, which is based on a 20-year timeframe, is a supportive approach: protecting the income and livelihoods of fossil fuel workers affected by a transition to a low-carbon economy. Pollin and Callaci (2019:2) highlight the prerogative of climate stability and the need to provide "generous transitional support for workers and communities". They calculate the financial cost of the following key areas: (1) supporting workers facing retrenchments in areas of income, retraining, and relocation; (2) guaranteeing pensions for workers in affected industries; and (3) initiating transition programmes for fossil fuel-dependent communities.

The model's orientation to the protection of workers and affected communities resonates with the calls for a just transition in South Africa. There is also a strong focus on community support in the model, and their strategy is to leverage investment into low-carbon energy sectors to stimulate this. Accounting for the industry's and broader national economy's ability to provide the necessary support is also a key consideration in the model.

PART FOUR 4.2 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

The model's orientation to the protection of workers and affected communities resonates with the calls for a just transition in South Africa.

To apply this framework to the coal sector in South Africa, the research used empirical modelling to estimate the cost of mitigating labour losses in such a way that prioritises worker support and protection. The research relied on national labour data from Statistics South Africa (Stats SA), the Minerals Council and coal company data. It identified approaches, mechanisms and contraction rates that protect coal workers' livelihoods under various scenarios, as many of them are forced to exit this declining industry, either through retirement or the migration to other employment sectors.

4.2.4 KEY DIMENSIONS FOR MODELLING THE COST OF MITIGATING LABOUR LOSSES

Populating the model developed by Pollin and Callaci (2019) required detailed information on key dimensions of South Africa's coal sector. Calculating the costs related to mitigating labour losses requires, among other indicators, information about how the industry is forecast to contract, how many jobs will be affected, and the ages of affected workers. Another key dimension of the cost model is the attrition rate, which helps to describe the manner in which workers move out of the contracting industry.

The Pollin and Callaci (2019) model aims for an attrition rate of more than 80%, which is indicative of its supportive approach to workers and affected communities. The attrition rate is the percentage of workers between the ages of 45 and 65 nearing retirement, as a percentage of the number of workers that will be affected in the contraction of the industry. Contraction and attrition rates are inversely related: the faster an industry contracts, the fewer people will be exiting the industry as planned with their pension secured at roughly the age of 65. Put differently, the faster an industry contracts, the more jobs (and thus also livelihoods and wider communities) are at risk and will need to be accounted for through compensation mechanisms. Unplanned job losses are likely to lead to social unrest and have devastating consequences for dependents and communities. Hence the appropriateness of an approach that recommends benchmarks for pension guarantees and an attrition rate of more than 80%.

The attrition rate sheds light on the proportion of workers who will enter retirement as planned, compared to workers at earlier stages of their employment lifespan facing the loss of their job as the industry shuts down. Naturally, the pace and scale of industry contraction will have an impact on the extent of workers at risk. In other words, a more optimal scenario, indicated by a higher attrition rate, is to have older workers (in the 45 to 65 age group) retire naturally and have their livelihoods protected through secured pensions, rather than to lose their jobs prematurely and face unemployment. The lower the attrition rate, the more workers are unprotected and at risk as the industry shuts down, and, in turn, the higher the cost (financial, social, and political) to workers, communities, the economy and society at large.

Determining an appropriate attrition rate for any given industry is necessarily a context-depend, multi-faceted and highly politicised process that implies negotiation and deliberation. For the purpose of this first cost estimate in the South African context, the Pollin and Callaci (2019) model and attrition rate was used as a reference point.

4.2.5 RESULTS: FORECASTING THE COST OF COAL JOB LOSSES OVER 20 YEARS

Pollin and Callaci's (2019) model enabled various scenarios to be elaborated, two of which are detailed in **Table 10** below: (1) that of 'high attrition' as recommended by the model, and (2) that of 'decommissioning' at the contraction rate required in the Integrated Resource Plan (IRP).

The cost model was populated with various inputs, including **protective attrition rates**, the IRP, forecast contraction rates, the total number of people currently employed in the coal sector, and the number of workers between 45 and 65-years old. Table 10 is a comparison between scenarios that allow for worker protection over a 20-year period. Scenario one indicates a highly protective scenario (82%) while scenario two is contextualised within the SA reality of IRP decommissioning (46%).

		HIGH ATTRITION *Scenario one*	IRP DECOMMISSIONING *Scenario two*
A	Contraction rate	43 %	75 %
B	Total currently employed	82 248	82 248
C	Job losses over 20-year transition	35 367	61 686
D	Average job losses per annum	1 769	3 085
E	Workers between 45 and 65 (35%)	28 787	28 787
F	Workers per year reaching 65	1 439	1 439
G	Workers <45 p.a. requiring re-employment	330	1 646
H	Total <45 requiring re-employment over 20 years	6 600	32 920
I	Attrition as a % of job losses	82%	46%

TABLE TEN

Attrition by retirement and coal job losses among coal workers over 20 years (Source: Minerals Council; Mining Qualifications Authority & TIPS)

4.2.5.1 Scenario one – Achieving a high attrition rate

The application of the methodology highlights the point at which an 82% attrition rate is achieved (Row I) in relation to a corresponding contraction scenario at a rate of 43%. The high 82% attrition rate implies that, at most, 6 600 coal workers will require re-employment over 20 years, versus 32 920 in the IRP's accelerated decommissioning scenario. Even at an 82% attrition rate, 6 600 translates into 330 coal workers needing retraining per year.

Following Pollin and Callaci (2019), this 82% attrition rate scenario was used to calculate the costs of mitigating labour losses in the coal sector in South Africa (this calculation is outlined in Table 11 below). In effect, the model demonstrates that the ambition for an 82% attrition rate is in line with a least-cost scenario (CER, 2019). However, the picture changes radically if we take the decommissioning timeframes stipulated in the IRP seriously.

4.2.5.2 Scenario two – IRP decommissioning

The second, and most startling, scenario is that based on the contraction rate implied by the IRP's decommissioning timeframe. The IRP's decommissioning plans suggest that 75% of electricity from coal will be decommissioned by 2043. Following this plan, employment contraction rates will need to be established as part of the just transition plan.

Applying Pollin and Callaci's (2019) attrition approach to this scenario in Table 10, 1 646 workers would need to be retrained per annum (Row G), totalling 32 920 or a 46% attrition rate. This application demonstrates how the attrition approach in scenario one significantly softens the blow from 61 686 to 32 920 workers, thereby smoothing the impact of an accelerated scenario.

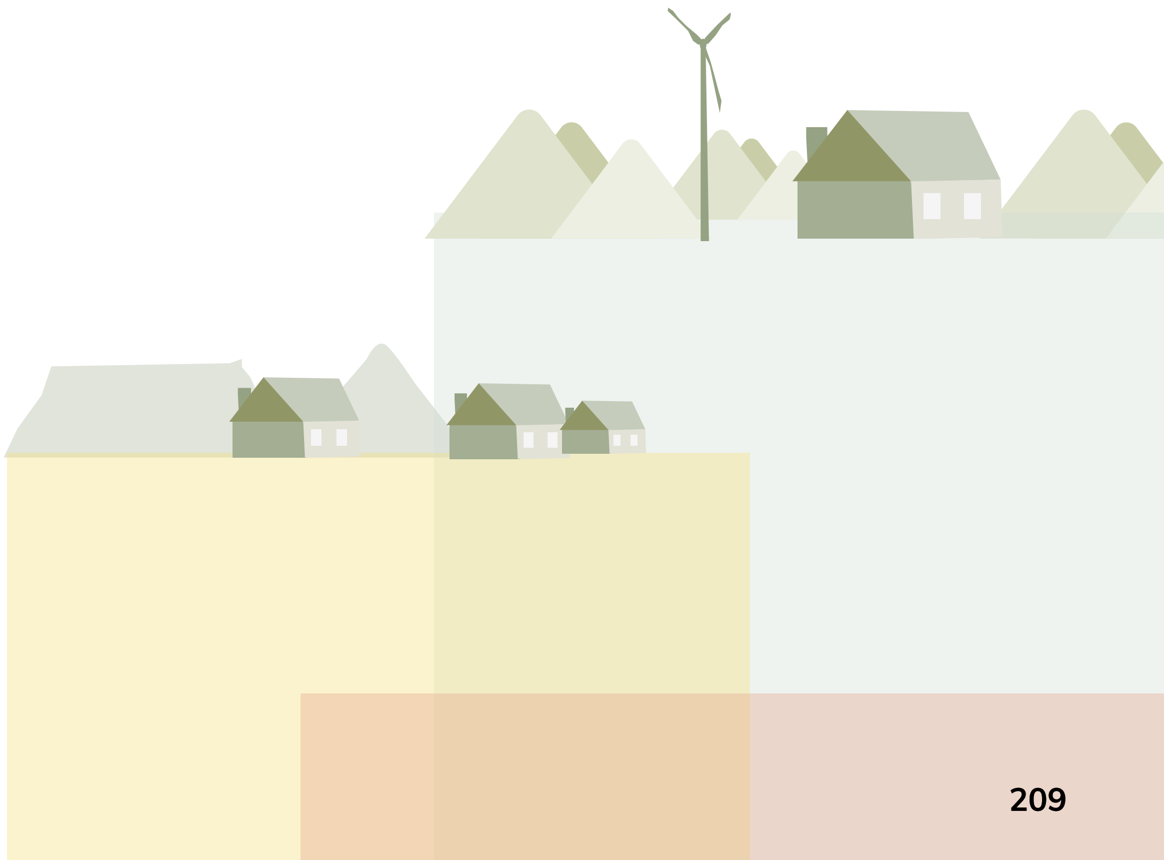
4.2.6 COMPLEX EMPLOYMENT DYNAMICS IN THE COAL SECTOR

As this research demonstrates, calculating the cost of mitigating labour losses in the energy transition requires accurate and comprehensive data. In the past five years, there have been shifts in employment within the coal sector. According to the Minerals Council, the annual downward shifts average around 4 000 workers per year, and peaked at a decrease of 8 355 in 2015 (Minerals Council, 2018). This implies that increments of shifts have been occurring historically. However, there is evidence to suggest that this will increase sharply in light of the IRP decommissioning plans and could be closer to the accelerated scenario two in the model above.

The information in Table 10 shows that the duration of the transition, as well as contraction and attrition rates, are crucial factors for determining how many jobs will need to be protected. The number of workers between 45 and 65 also has an impact on those needing re-employment. These key factors need to be negotiated and planned for when just transition implementation strategies are proposed.

According to local research, 90% of coal workers contribute to pension funds (TIPS, 2019 & Burton, 2019). However, while coal workers have historically held permanent positions, recent divestment in the coal sector has paved the way for the emergence of new market leaders who employ a significant proportion of contract workers. Until recently, major miners Anglo American and South32 held dominant positions in the market. However, according to an article by Kevin Davie (Mail & Guardian, 2019), these companies are divesting from coal.

This effectively restructures the coal mining industry and positions Exxaro and black-owned Seriti as market leaders. According to these coal companies' websites, both have a significant proportion of contract workers on their respective payrolls. Exxaro employs 6 500 permanent workers and 15 500 contractors, while Seriti employs 3 000 permanent staff and 3 000 contractors. This shifting landscape, and especially its impact on the number of workers with limited pension cover, has implications for social protection in the transition. Besides the estimated 10% (or more) of permanent workers who do not have pensions, the pension gap among contractors will also need to be considered when planning a just transition for all workers. Pollin and Callaci (2019) recommend that pension shortfalls be covered by government funding.



4.2.7 COST ESTIMATE

So, what is the estimated cost of mitigating coal labour losses in South Africa's just transition, according to a contraction rate for the coal industry in line with a high attrition rate? Using the data from Table 10 (i.e. the number of workers requiring reskilling and re-employment under an 82% attrition scenario), it is possible to calculate the cost of a just transition for coal workers in South Africa. Our research at the Centre for Sustainability Transitions (CST) estimated the annualised and total cost of a just transition in South Africa over a 20-year period in a high attrition scenario to be ZAR5 921 000 000, or approximately ZAR6 billion.

The total cost of a just transition for coal workers over 20 years is estimated at ZAR6 billion.

This is broadly within the range of just transitions in other countries, which are between ZAR1.2 billion and ZAR5 billion. The total cost of the just transition includes costs for compensation, retraining, relocation and rehabilitation, the calculation of which is presented in **Table 11**. The discussion which follows unpacks further detail related to scenario one, with its desirably high attrition rate, which is highlighted in the table.

	HIGH ATTRITION *Scenario one*		IRP DECOMMISSIONING *Scenario two*	
COSTS	TOTAL	PER ANNUM	TOTAL	PER ANNUM
Compensation	1 200 000 000	60 000 000	6 000 000 000	300 000 000
Retraining	621 000 000	31 050 000	3 200 000 000	160 000 000
Relocation	100 000 000	5 000 000	500 000 000	25 000 000
LED/ Rehabilitation	4 000 000 000	200 000 000	6 000 000 000	300 000 000
	5 921 000 000	**296 050 000**	**15 700 000 000**	**785 000 000**

TABLE **ELEVEN** *Summary of just transition costs in South Africa over 20 years (in Rand)*

PART FOUR 4.2 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.2.7.1 Compensation costs

Compensation accounts for ZAR1.2 billion. On average, coal salaries are ZAR23 000 per month. On the other hand, the average monthly salary of workers within the green economy is ZAR20 000. As such, the difference between these is ZAR3 000 per month. This was extrapolated over five years for 330 workers to reach ZAR1.2 billion. Note that compensation costs are recommended for a period of five years. The average salary of a job in the green economy is based on salaries in likely alternative careers, such as construction, manufacturing and tourism. Also note that, if salaries for the low-income agriculture sector are factored in, the cost of compensation will increase significantly.

4.2.7.2 Retraining

Retraining as part of the just transition is estimated to amount to ZAR621 million in total, and ZAR31 million per year.

TOTAL WORKERS	WORKERS PER ANNUM	%	TYPE OF COURSE	COST (ZAR)	TOTAL COST (ZAR)
1 056	53	16	Retraining (top-up for degree holders)	40 000	**43m**
3 564	178	54	Degree	140 000	**499m**
1 320	66	20	Vocational	50 000	**66m**
660	33	10	Solar/Wind turbine technician	20 000	**13m**
6 600	**330**	**100**			**621m in total 31m p.a.**

TABLE **TWELVE** *Retraining costs*

According to available Social and Labour Plans (SLPs), 16% of coal workers already have an undergraduate qualification; however, the retraining costs for them include top-up training (such as hydraulics and geography courses). The balance of the 330 workers per year was split between degrees, vocational training and solar/wind turbine technician training. The retraining costs exclude accommodation, food, transport and salaries/stipends while retraining.

4.2.7.3 Relocation costs

Relocation costs – in other words, the financial support provided to workers displaced from the shutting down of the facilities where they are employed – comes to ZAR100 million. Relocation costs were based on one month's rent, travel costs and sundries (such as legal costs for a lease) and averaged at ZAR15 000. This was multiplied by the number of workers (6 600) to arrive at the total. Not all workers will need to relocate, which will accommodate variances in the average cost.

4.2.7.4 Regional development and rehabilitation

By far the costliest aspect of initiating a just transition in South Africa will be the regional development required to rehabilitate communities and local economies that have thrived, and indeed also suffered, from their centrality in South Africa's coal-based economy.

Owing to a lack of transparency regarding coal companies' rehabilitation plans, further research is required to calculate this cost more accurately. The current estimate for regional development in this research study is based on average investments in Special Economic Zones (SEZs) in South Africa. Estimates for rehabilitation and regional development costs in other countries were also used.

The cost of rehabilitating a single coal mine is estimated to be ZAR4 billion in the Centre for Environmental Right's The Truth about Mining Rehabilitation report, published in 2018 (CER 2018). It follows that the cost of rehabilitation of the coal mining region as a whole would be significantly higher. It is likely that government will need to stimulate local economic development (LED) through innovative strategic partners from civil society and the business sector. It is important to distinguish between rehabilitation, land reclamation and regional development, and to further define these concepts in more detail.

While supportive attrition-based just transition approaches would likely increase income protection for coal workers, complementary sequenced sectoral and regional development strategies have proven to be effective ways to stimulate job creation.

4.2.8 DISCUSSION AND CRITICAL CONSIDERATIONS

This first attempt at estimating the cost of the just transition naturally does not account for all aspects of what these efforts will entail in reality, or indeed, the dynamics that they will trigger. Specifically, the cost model does not account for full programme costs (such as establishing and managing a just transition commission and the just transition 'model' development); travel, accommodation and stipends for workers being retrained; strengthening social institutions (CSOs and legal support networks); health compensation costs; community and family employment initiatives; and pre- and post-assessments, to mention a few. For this reason, the model and its resultant cost estimate must be positioned as a low-end rough estimate.

It is imperative that compensation, retraining, relocation, rehabilitation and pension security costs are adequately planned for in South Africa's strategic just transition plans. What this research does, for the first time in South Africa, is shed light on the extent of the costs involved with realising a just transition for the coal sector. Communicating this ZAR6 billion figure could prove instrumental in shaping the strategies employed to transform the country's economy. With increased support, this model has the potential to be deepened with more accurate figures and extended across the energy sector at large. This hinges on the participation of the mining sector in releasing accurate information about employment and rehabilitation.

The model shows clearly, for the first time, that compensation, retraining, relocation, rehabilitation and pension security costs must be adequately planned for.

Globally, there are examples of the cost of a just transition being administered through innovative institutional and financial arrangements facilitated by national governments. In some cases, a just transition commission is constituted to administer climate and development finance, underpinned by inclusive strategic planning. High-level buy-in and leadership from government is essential to unlock sufficient resources, provide appropriate incentives and enforce punitive measures to advance the energy transition.

4.2.9 CONCLUSION

If the decommissioning timeframes stipulated by the IRP are taken seriously, South Africa's coal sector will need to contract by two thirds. Correlating decommissioning with attrition will thus be an indispensable part of unlocking a just transition. This research provides a first effort in this direction.

No matter which way you look at it, a just transition in South Africa is going to be a costly affair. But, as the saying goes, there are no jobs on a dead planet. If our lowest-cost energy future depends on the finalisation of a just transition plan, the costing exercise initiated in this research could not come at a more urgent juncture in South Africa's future. While the focus of this study was specifically on the coal sector, this model has the potential to be applied to the energy sector more broadly; for example, it would be instructive for understanding the implications for auxiliary industries affected by the shrinking of the fossil fuel industry.

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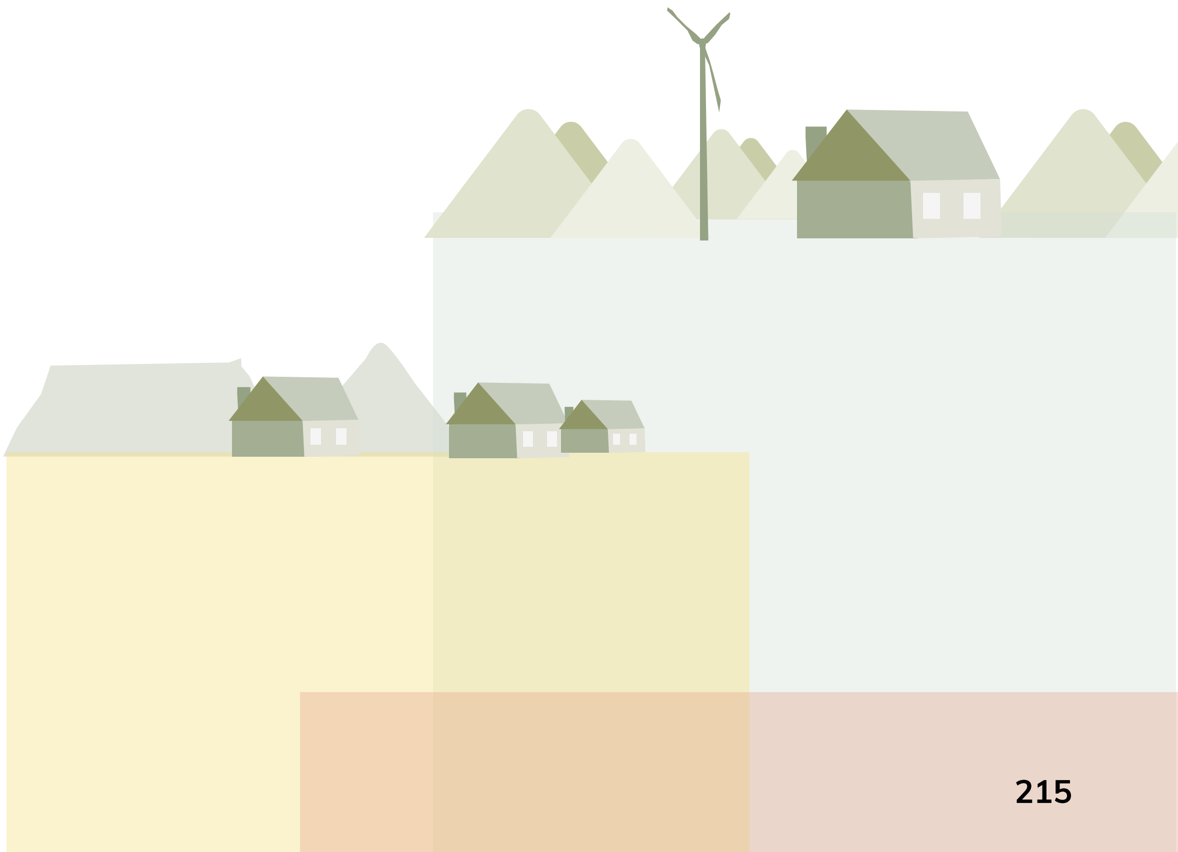

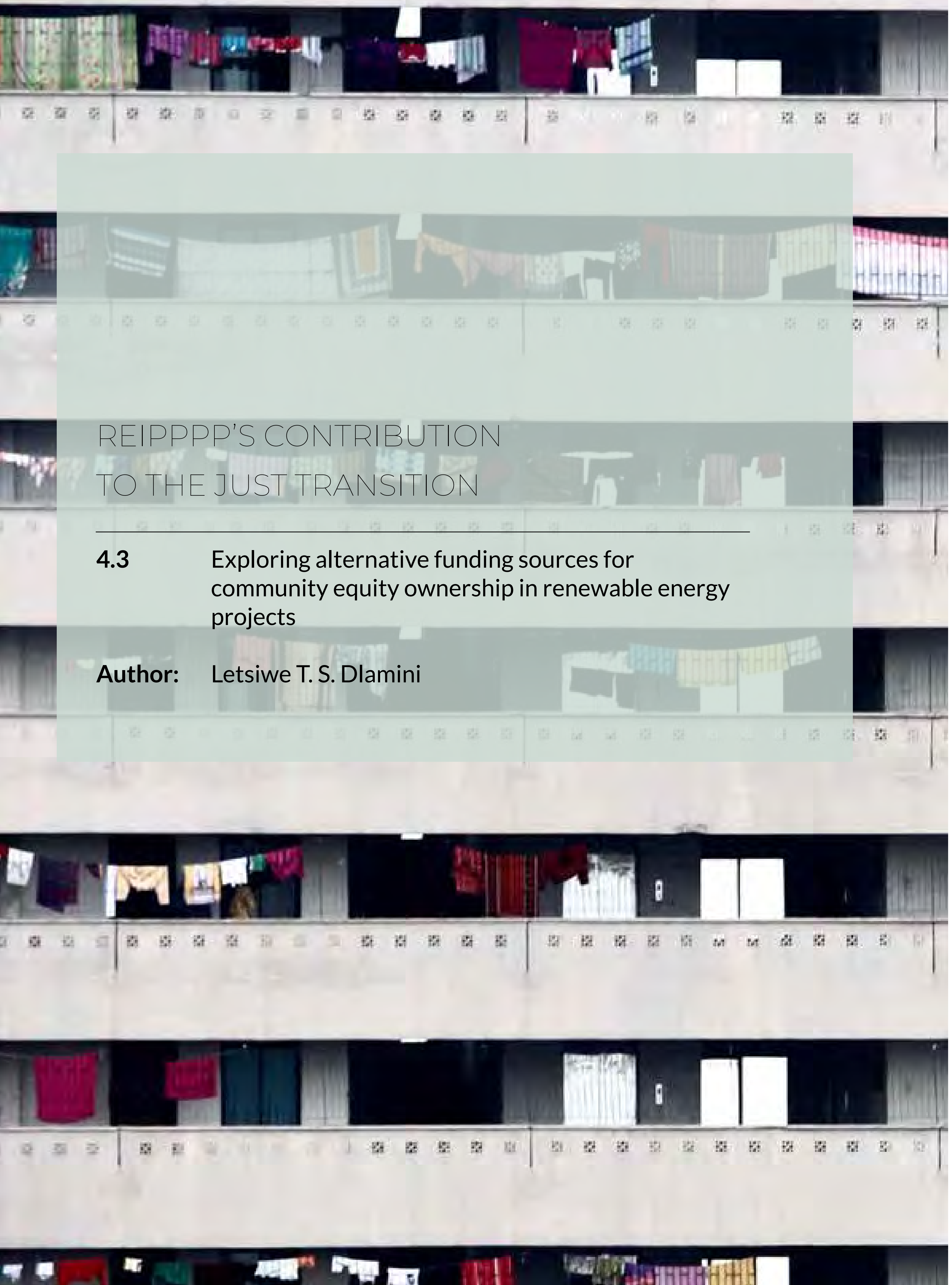

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.3 Exploring alternative funding sources for community equity ownership in renewable energy projects

Author: Letsiwe T. S. Dlamini

PART FOUR 4.3 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.3.1 INTRODUCTION

Community equity ownership, or local community ownership, is a unique feature of South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). It requires project companies – independent power producers, or IPPs – to offer a minimum of 2.5% shareholding[11] to local communities as a way of contributing to their socio-economic development. This feature can also be a means of enhancing IPPs' social licence to operate within these communities.

The community ownership requirement is likely to be replicated in the new IPP programmes, due to be launched via the Baseload IPP Programme and the Medium Term Risk Mitigation Project, and is therefore here to stay. Yet the demand for funds to finance it will likely outweigh current available sources. Given this background, it is worthwhile asking: What alternative funding sources can be identified to sustain the financing of community equity ownership in subsequent REIPPPP rounds, as well as in the new IPP programmes? Addressing this question was the goal of the research which is discussed in this chapter.

A survey approach was used to collect data from a group of five financial institutions and 10 IPPs, out of a combined total of 72 IPPs that were operational at the time (2015), selected using a purposive sampling technique. The study identified two primary approaches that would likely be instrumental in widening the pool of funding for community equity ownership: a grant scheme, and a guarantee and incentive programme, where government stands in as guarantor for communities to borrow the requisite funds. Increased vendor support, more 'preferential' loan terms and 'softer' loans from development finance institutions (DFIs) were also identified as critical to increasing funding sources. Other promising ideas – specifically, the use of the Government Employees Pension Fund (GEPF) to warehouse shares on behalf of communities, and utilising communal land as equity – require further research and are only mentioned briefly here.

Overall, the chapter makes the case that there is the potential, and a strong rationale, to draw in alternative funding for community equity ownership in the REIPPPP.

11 In Rounds 1 and 2, there was a maximum target of 5% community equity ownership. From Round 3, a floating target was introduced, allowing for a higher percentage.

4.3.2 WHY COMMUNITY EQUITY OWNERSHIP IN RENEWABLE ENERGY PROJECTS?

Renewable energy projects are scattered across various non-urban (usually) parts of the country. This means that the REIPPPP offers a very rare opportunity to situate projects with a commercial and economic emphasis not in cities but in rural areas, places which otherwise tend to present ill-favoured investment prospects (Eberhard et al., 2014). The associated economic opportunities can be, and indeed are in the REIPPPP, directed at local economic advancement objectives. Why? Both government on the one hand and private-sector energy companies on the other, have good reasons.

For government, the imperatives of broad-based black economic empowerment (B-BBEE) – to transform the economic landscape of South Africa by creating the conditions for more black people and disadvantaged communities to take the 'driver's seat' in the business sector – are key. It is within this framework that the government seeks to respond to the demand and cry for 'economic liberation' emanating from society. The provisions of the B-BBEE Act suggest that one of its main goals is to model the demographic ownership of small, medium and large businesses and economic resources on the demographics of the country at large. Further, that such ownership structures should include the poor and rural communities in which large business ventures are located, and be used as a means to lift them out of poverty. Hence, the opportunities for black people (particularly those in disadvantaged communities) to procure and manage existing and emerging business ventures, should consistently be improved under B-BBEE (DTI, 2003).

The private sector is also subject to pressure to include communities. Business generally is challenged to own to the track record of human rights infractions committed by various multinational companies in developing countries, often with state complicity. This has, over the past decade or so, heightened the sensitivity, awareness, monitoring and whistle-blowing roles of non-governmental organisations (NGOs) and other social interest and pressure groups. In order to salvage their honour and overturn negative publicity, many companies have since adopted a strategy of seeking to build positive relationships with the communities that host their operations. One such strategy is to implement projects that contribute towards the socio-economic development of local communities, with a view to securing the social licence and legitimacy required to operate in these locations (Gifford & Kestler, 2008). This transition, from the manipulative to the conciliatory (Bartlett et al., 2007), is the basic tenet of the concept of 'social licence to operate', a term that was first introduced in the late 1990s by Canadian mining executive, Jim Cooney (Prno, 2013). It refers to the "ongoing approval and acceptance of society [for a business operation] to conduct its activities [in a specific location]." (Thomson and Boutilier, 2011, as cited by Prno & Slocombe 2012: 346).

The notion of a social licence to operate offers fruitful common ground for the objectives of these two important stakeholders, namely government and the private sector. It can be seen as a bridge between the sustainable development origins of community ownership and development principles envisaged by government, and the approval and acceptance of local communities so sought after by companies. Being based on perceptions as it is, this 'social licence' is undoubtedly a fluid, non-static, unassured form of endorsement and consent, which may be gained or lost at any particular moment, unlike legal or official licences which remain unchanged for the most part (Hall et al., 2014). While legal licences to operate are dispensed by government entities, a social licence is awarded by a community and is worked for and earned in much the same way as trust is in a relationship (Hall et al., 2014).

Social licence to operate bridges the sustainable development origins of community ownership, as envisaged by government, and the approval and acceptance of local communities so sought after by companies.

In the case of the REIPPPP in South Africa, social licence to operate is a by-product of a conscientious socio-economic development agenda pursued by government, via the procurement process, to promote environmentally sustainable growth while offering uninterrupted access to clean energy (DoE, 2014a). The community ownership requirement, combined with the requisite enterprise development (EnD) and socio-economic development (SED) obligations of IPPs, pave the way for legitimacy and social acceptance of IPP projects at the local level.

In an ideal world, because the current funding of community equity ownership is intertwined with government's efforts to promote rural development and the B-BBEE agenda, it ought to 'guarantee' social licence to operate for IPPs. Yet that is not always the case in reality (see Chapters 3.1 & 3.3 for contrasting case studies). Social licence to operate may very well be one of the prerequisites for financing a potential REIPPPP project in a particular community where socio-political risk is high. Without a social licence to operate, there is a good chance that renewable energy financing may be rendered redundant, particularly in contexts where communities are not experiencing adequate participation in project planning and implementation. In the event that they are not effectively engaged, communities might object to, and even militantly reject, any renewable energy investment in the vicinity. In view of this, a key question must be asked: How can private financiers be sufficiently convinced of the value of a social licence to operate that they agree to support the empowerment of local communities by financing community equity ownership in South Africa?

4.3.3 CHALLENGES IN CURRENT FUNDING ARRANGEMENTS

Challenges experienced by IPPs with regard to existing community equity ownership funding arrangements include:

- Long vesting periods and the high cost of borrowing.
- Difficulties associated with accessing and obtaining funding for B-BBEE developers.
- Long loan repayment terms before communities realise the benefits of being equity shareholders in REIPPPP projects.
- Changing the community structures in order to maximise the developmental impact of community equity ownership can make bid levels more expensive, making it difficult to compete with more corporate-focused bids.
- The actual flow of funds to communities is very low in the early years due to servicing the equity funding mechanism.

The onerous and uncompetitive lending terms and conditions offered by DFIs are, by far, the most significant constraint faced by IPPs in accessing funding for community equity ownership. This means that there is scope for commercial banks and private equity entities to structure unique deals directed at funding community shareholding in REIPPPP projects.

3.1 Prevalence of financiers in providing funds for community equity ownership

Four out of the five financial institutions surveyed stated that they had funded community equity ownership since the commencement of the REIPPPP. In other words, they had, at one time or another, extended a loan for the purpose of enabling communities to become shareholders in REIPPPP project companies. Although this may appear to be a high proportion of respondents, three of these financial institutions are, in fact, DFIs[12], and are therefore compelled to do so by their government-sanctioned development mandate. This essentially means that only one of the five is an independent, private-sector financial institution that had voluntarily extended a loan for the purpose of community equity investment in the REIPPPP. This gives credence to the earlier observation that there is limited funding for community equity investment in project companies that are participating in the REIPPPP.

12 Namely, the Industrial Development Corporation (IDC), the Development Bank of Southern Africa (DBSA) and the Public Investment Corporation (PIC).

3.2 Motivations for financing community equity ownership

The common denominator among DFIs supporting community equity ownership is the obligation to support the goals and programmes of government. While some commercial banks are starting to venture into financing beneficiary communities' shareholding in REIPPPP project companies, there are still high levels of risk aversion and discomfort in doing so. To address this, most survey respondents pointed out the need for guarantees, provided by government on behalf of communities, to make funding offered by commercial banks cheaper than is currently the case. As to project partners assuming the position of guarantor on behalf of communities, there is no doubt that this is not always possible or desirable. Firstly, they may not have the resources. Secondly, they may be unwilling, taking the view that, as a shareholder, communities 'should carry their own weight' and not over-burden others with whatever challenges they may be facing. It thus makes some sense that government would be the most suitable guarantor.

3.3 Challenges of funding tools for community equity ownership

Of the five financial institutions that were surveyed, three stated that they relied on commercial loans to finance community equity ownership applications and one institution indicated that a Special B-BBEE Fund had been established. The fifth institution did not provide any funding.

While DFIs may be available to extend funds to the various beneficiary communities, they do so via terms and conditions similar to those offered by private lending institutions in the commercial market. In fact, DFIs have increasingly relied upon more commercial lending terms, rather than more preferential ones, as the REIPPPP's bidding windows have evolved from the first to the fourth. This is despite their development mandate and the socio-economic status of their clients who are, in this case, disadvantaged communities in rural South Africa. It would seem that not even the fact that the REIPPPP is currently one of the flagship infrastructural programmes of government can inspire grant and/or preferential terms for poor communities.

So, on average, the cost of finance for funding communities' shares in REIPPPP project companies is similar across the market, whether one approaches a DFI or a commercial bank. In fact, the surveyed IPPs complained that the financing terms and conditions of DFIs are more expensive and onerous than those offered by some commercial banks. This refutes the widely held notion that DFIs offer more 'friendly' financing terms and conditions than commercial banks.

Of greater significance is the bearing that this high cost of finance has on the developmental goals of instituting community shareholding in the first place. Because the loans for funding community equity ownership have to be paid and settled first, before any dividends can be realised by communities, the dividend flows that should accrue to communities for their development are back-ended and only realised after the loans have been fully repaid. This can take anywhere between eight and 12 years from project commencement (DoE, 2014b). In an effort to address this, some DFIs apply either an 80:20 or a 90:10 principle in terms of the dividend flow mechanism agreed between themselves and local communities at each distribution payment date (DoE, 2014b). Local communities are thus able to access approximately 20% or 10% of the dividend amount at each payment date, which can be used to initiate the implementation of socio-economic development programmes (DoE, 2014b). However, this has proven to be inadequate to launch community projects that bring about meaningful developmental gains.

This delayed beneficiation has the potential to disenfranchise communities and erode their trust in REIPPPP project companies. Owing to a lack of awareness and understanding of this background, communities may eventually lose hope of ever seeing the dividends from their share in project companies and may, as a result, grow impatient to see more tangible benefits. In turn, this may compromise the socio-political stability that project companies enjoy in the communities in which they operate, thereby eroding their social licences to operate. In the interests of avoiding these adverse outcomes, both the financial institutions and IPPs surveyed proposed that a mixed basket of commercial loans and outright grants be considered in the funding arrangements.

3.4 Perceived risks of funding community equity ownership

Financiers perceive funding community equity ownership in the REIPPPP as a high-risk and low-security type of investment. Therefore, they are not at ease with funding it. All responses but one confirmed this. The fact that community equity ownership governance structures are not, in and of themselves, necessarily income-generating, gives commercial banks pause. In short, there is some hesitancy because these structures are unable to demonstrate an ability to repay loans.

Communities, for their part, are unable to provide the necessary security or collateral or guarantees that, in the event that dividend flows do not materialise, would ensure financial institutions still have some recourse and avenue to recoup the monies advanced. This, indeed, lends further credence to the need for government to step in and provide the necessary guarantees. This could reassure those in the financial sector that there is some backstopping and contingency arrangement in place, in addition to the power purchase agreements (PPAs), to ensure that the renewable energy projects are sufficiently viable and therefore able to generate the anticipated dividend flows that will enable communities to repay their loans. The longer this need remains unresolved, the higher the likelihood that available funding for community shareholding will be constrained.

4.3.4 UNTAPPED FUNDING SOURCES TO FINANCE COMMUNITY EQUITY OWNERSHIP

The involvement of other financial institutions, such as life assurance companies, was recommended by survey respondents. In addition, vendor support is seen by most financiers as an option that holds considerable promise. Indeed, some project companies have already provided this type of support for community equity ownership, in the form of shareholder loans, free-carry or guarantees for bank-funded loans. Vendor support has emerged as a promising potential way to widen the pool of resources available for funding community shareholding in REIPPPP project companies. The message coming from survey respondents (both financiers and IPPs) is that more vendor support must be made available in order to facilitate the funding, such that it reaches a sufficiently substantial volume for finance to be funnelled into. Some of the shareholders may not have the necessary funding to finance even their own investment in these companies, let alone that of the community.

The use of communal land as equity may also be a vital tool in the quest to empower communities to 'bring something to the table' and address the concern of lack of security or collateral. In South Africa, the law permits individuals to own land or property jointly as a group by constituting a Communal Property Association (CPA) (ETU, 2015). What remains unclear is whether investors and financiers will accept communal land as security for loan applications, and/or as capital to facilitate community investment in project companies.

Equity warehousing – whereby the GEPF would retain the equity in the REIPPPP project companies in the name of the various community ownership structures, such as the community trusts – was also recommended by respondents. In other words, the GEPF could buy the shares in the project companies on behalf of communities under the assumption that it would, in turn, require repayment in more favourable terms.

Other alternatives proposed included bond issuance; greater involvement of commercial banks in funding community equity ownership; mobilising international donor finance for the establishment of a grant scheme; and identifying suitable guarantors to facilitate the securing of commercial bank loans.

The use of the SED and EnD contributions made by IPPs to communities was also proposed as a possible source of funding to buy shares on behalf of communities in project companies. The danger with this proposal is that it diminishes the mandate of project companies to contribute to the socio-economic upliftment of host communities, because it would reduce their responsibility from three broad categories (SED, EnD and local community ownership) to one (local community ownership only). It is unlikely that such a reduction would match the aims of the Department of Energy (DoE) in coming up with the three local development components in the first place.

4.3.5 CONCLUSIONS

Sustaining a social licence to operate is of paramount importance for the successful implementation of the REIPPPP projects in rural communities. Indeed, some REIPPPP project companies have had to learn this the hard way, where altercations with communities have led to friction, blockades to project company premises and, thus, undue delays in project completion and operation. The case is therefore strong for making 'social licence to operate' one of the critical factors for assessing the socio-political risk of renewable energy and other related resource development projects. It should be considered by financiers when performing the necessary due diligence to determine whether or not to fund any project – not only the community shareholding in the REIPPPP, but the entire swathe of infrastructural development programmes in South Africa going forward.

The REIPPPP has demonstrated that caring about communities can be legislated and that socio-economic development can be assigned a particular price and value.

On the whole, one of the greatest contributions of the REIPPPP is that it places something of a premium on the socio-economic development of communities and the whole culture of corporate social responsibility (CSR) and corporate social investment (CSI) in South Africa. The private sector can no longer afford to gloss over, ignore, or 'toss a few coins' in the direction of, poor communities. The REIPPPP has demonstrated that caring about and giving back to communities can be legislated and that socio-economic development can be assigned a particular price and value. The penalty system that is built into the programme is intended to ensure that SED and EnD benefits, as well as dividends arising from local community ownership, flow to poor communities for the duration of the renewable energy projects. If this works, it could usher in a new era of CSR and CSI, where businesses materially and meaningfully consider community interests. Indeed, such an approach should be replicated in other resource development infrastructural programmes.

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PART FOUR 4.3 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

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REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.4 At the CORE of the (democratic)(energy) transition: A township-based renewable energy project

Author: Janet Cherry

4.4.1 INTRODUCTION

When we think of the term 'core' in relation to energy, what generally comes to mind is the core of a nuclear reactor: that place where neutrons multiply, a chain reaction occurs and a vast amount of energy is generated. The CORE of the energy transition, it is argued here, is quite another kind of core, namely, community-owned renewable energy. This CORE is at the heart (or the core) of the positive transition to a zero-carbon economy, in order to respond to the imperative of drastically reducing our carbon emissions and avoiding devastating global warming.

This chapter shares insights from the Kwazakhele Transition Township project in Nelson Mandela Bay, where we (the team on whose behalf this is written) are experimenting with a transition that is not only about responding to the overriding imperative of climate change. It is also about responding to the other, more urgently felt, imperative in South Africa, that of reducing poverty, inequality and unemployment; or, framed in more positive terms, of creating an economy based on sustainable livelihoods for everybody. Some term this the 'just transition'. It is argued here that it is possible to meet both imperatives simultaneously. Not only is it possible, it is also necessary. And the only way to do so is to start with testing out community-owned renewable energy systems. If we can get them to work at local level, there is a good chance that, like in the core of a reactor, a chain reaction will occur, they will multiply and a vast amount of renewable energy will be generated.

Over the past five years, members of the Transition Township research team have attended a number of colloquia and conferences on the transition to a low-carbon or zero-carbon future, where pilot projects are often showcased. Yet surprisingly, and somewhat disappointingly, we have not come across an example of community-owned renewable energy in South Africa. The renewable energy (RE) projects that exist are either providing electricity to remote or off-grid rural areas or informal settlements, or using mini-grids, or supplying shack-dwellers with rooftop photovoltaic (PV) panels or communal solar 'charging points' (see Part 5 for details of such innovations that go 'beyond' utility-scale, grid-connected technology). Other examples are institutionally based PV solar-generation systems, often in schools or old-age homes, where the contribution of solar assists in reducing the cost of electricity for the institution.

While these are all admirable uses of PV solar, they are premised on either providing electricity to areas with no access to the grid, or on reducing the cost of electricity to an institution while providing a reliable and renewable source of electricity. None are based on the premise of ownership by the residents of the power supply; in other words, cooperative or social ownership of the means of energy production is absent in all.

Naomi Klein's influential book This Changes Everything (2014:131) suggests that a cooperatively-owned and decentralised model of energy production is the solution to the transition from fossil fuels. Taking the example of Germany, Klein argues that this has not only decentralised electrical power, it has also decentralised political power and wealth in that country. In Germany, a feed-in tariff allowed many local community cooperatives to own the energy facility and sell the electricity produced to the municipal grid. In South African townships, it seems an obvious solution: providing RE while at the same time creating sustainable livelihoods. And yet in reality, the situation is far from straightforward.

4.4.2 A SOCIALIST AGENDA FOR THE ENERGY TRANSITION

The initiative for the Transition Township project came in 2015 from a student who went on to become an organiser for the National Union of Metalworkers of South Africa (NUMSA), Nko Jikeka. Jikeka argued that a viable cooperative needed to be established which would own the means of energy production in a working-class township. This cooperative would sell the energy, generating income for its members. At the same time as replacing coal-based electricity (which is transported thousands of kilometres to Nelson Mandela Bay) with renewable energy, it was envisaged that such an initiative would decentralise economic power and distribute it among the working class.

Thus a socialist agenda, framed sometimes as promoting the solidarity economy or social enterprise, was to be tested within the context of the highly centralised, neoliberal capitalism of South Africa. This agenda argues explicitly that the working class should benefit from the transition to renewable energy; in addition, the localisation and decentralisation of the economy are considered integral. This is in contrast to the dominant economic energy models which rely on the unsustainable export of primary products, including coal and offshore oil and gas. Localisation involves massive indirect reductions in the carbon costs of meeting people's needs for food and consumer goods, thanks to direct reductions in the cost of transport, refrigeration and packaging.

A viable cooperative needed to be established which would own the means of energy production in a working-class township.

Shuman (2010: 1) has explored the concept of a "local living economy" as a "pragmatic approach to localisation". He outlines the following arguments for localised community economies:

- The wealthiest communities are those with the highest percentage of jobs in businesses that are locally-owned. A growing body of evidence suggests that local ownership in businesses pumps up the multiplier effect of every local dollar spent, which increases local income, wealth, jobs, taxes, charitable contributions, economic development, tourism and entrepreneurship.

- The wealthiest communities are those that maximise local self-reliance. This doesn't mean they cut themselves off from global trade. But they rely on trade only for the diminishing universe of goods and services that they cannot competitively provide for themselves (2010: 1).

4.4.3 REGULATION AND INSTITUTIONAL OPPORTUNITIES IN NELSON MANDELA BAY

If the model of localised and cooperatively-owned energy production is to work in South Africa, it will require some government regulation, at both national and local level. Klein writes that:

"The rapid rise of renewables in Germany makes a powerful case for this [cooperative] model. The transition has occurred, first of all, within the context of a sweeping, national feed-in tariff programme that includes a mix of incentives designed to ensure that anyone who wants to get into renewable power generation can do so in a way that is simple, stable and profitable. Providers are guaranteed priority access to the grid and offered a guaranteed price so the risk of losing money is low. This has encouraged small, non-corporate players to become renewable energy providers – farms, municipalities and hundreds of newly formed co-ops" (Klein 2014: 130).

It is independent power producers (IPPs) (private companies which are highly capitalised and have access to investment finance) that are profiting most from the government's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). Yet this constitutes only a very small number of companies, because few are able to obtain a licence to buy and sell, or 'wheel', power. Indeed none of the projects we have been exposed to – some of which involve small RE companies working with communities and universities to experiment with PV solar energy generation at local level – were feeding into the grid and getting paid for their electricity.

The Nelson Mandela Bay municipality has been innovative in the RE sector in a number of ways. Firstly, it was the first city to introduce solar-powered hot-water heaters on every RDP house (government subsidised low-cost housing for the poor). Secondly, it introduced a form of feed-in tariff, which allows individual households and businesses to put up PV panels and connect to the grid, feeding in the energy they create and obtaining credit on their municipal bills. Small-scale embedded generation of less than 100kW, or SSEG, is also part of the municipality's policy and encourages homeowners who buy electricity from the municipality to install PV panels. Not only does this keep the cost of electricity down, but if they create a surplus of electricity, they can see a reduction in their municipal rates.

This system has very high potential, but has so far been curtailed by slow take-up. A few institutions, such as schools, and a few middle-class households, participate. For most working-class households, who are buying electricity on a prepaid voucher system, the initial outlay on PV solar is simply unthinkable, though Arndt et al. (2019) report that the levelised cost of energy (LCOE) from solar PV and wind decreased by 81% and 62% respectively between 2010 and 2017. It is still the understanding of township residents that electricity (and whatever infrastructure is involved) is supplied by the municipality. Free basic electricity (an amount between 30 and 60 kW/h) is provided to households below a certain monthly income; in Nelson Mandela Bay, this is termed ATTP (Assistance to the Poor). All households that we surveyed were accessing this free basic amount of electricity and, in addition, were spending around ZAR165 per month on prepaid electricity.

4.4.4 COMMUNITY-OWNED RENEWABLE ENERGY (CORE) IN KWAZAKHELE TRANSITION TOWNSHIP

4.4.4.1 Key questions and inspiration

The questions that we are trying to answer in the CORE pilot project are the following:

- Why is it not possible for working-class communities to benefit from the municipality's feed-in tariff?
- Accepting that individual households are not wealthy enough, would it not be possible for a cooperative of residents to use their existing infrastructure to sell electricity to the grid?
- Why should big companies and wealthy households be the ones to benefit from the transition to renewable energy?
- How will Eskom be affected?
- Will municipal revenue be affected if residents produce and sell more electricity?
- Can working-class communities be producers rather than just consumers of electricity?

- Can working-class communities produce enough to sell to industry?

While the technological transition is a good thing in itself, and the cost of RE is coming down rapidly, and some new jobs are being created, these things have done little to change the relations of economic power in our society – the 'relations of production', to put it in Marxist terms. The poor should be able to 'own' the wind and sunlight and channel them into energy sources to generate income in the same way that big corporates can. And the residents of working-class townships should own the means of production, and control the production of energy, in order to generate income and create sustainable livelihoods.

The Transition Township project thus goes beyond localised, small, or self-sufficient projects. Its aim is to test the institutional parameters of RE provision and to cultivate a local economy of independent power producers – which includes cooperatives in working-class townships – who will benefit from the production and sale of electricity to the grid.

4.4.4.2 Exploring and imagining an alternative idea

Everyone agrees on the importance of sustainability, yet the urban residential areas in which the majority of South Africans live are categorically unsustainable settlements: one in five households nationally live in an informal dwelling (SERI, 2018). These urban townships are unsustainable in all respects: economically, socially and environmentally. Premised on a mid-twentieth century model of modernisation and industrialisation, such townships were built to provide housing and services for workers in the nearby factories. Both the factories and the homes were dependent on coal-fired power stations, and on global demand for the motor cars and other products of these factories. With de-industrialisation leading to massive structural unemployment, and climate change creating the imperative of moving away from fossil-fuel based development, a new model of sustainable local economic development has yet to be tested.

Everyone agrees on the importance of sustainability, yet the residential areas in which the majority of South Africans live are categorically unsustainable settlements.

The idea of this project is to pilot a sustainable localised economy in the 'old' townships of Nelson Mandela Bay. It is not a single project, but rather an action research project involving residents. In five wards of Kwazakhele, a densely-populated old formal township, a team of community researchers documented the economic activity and conducted a household survey to find out how much residents spend on electricity and other energy sources, and on food, in particular fresh vegetables. The project envisions residents creating jobs and livelihoods from producing energy, producing food, and recycling waste, instead of being dependent on the municipality for energy and on the government for social grants. Instead of grant money being spent at supermarkets 'in town', this grant money would be spent within the Kwazakhele solidarity economy. Food, energy, culture and waste cooperatives would be formed by residents to control existing resources and manage the income that is generated from these resources.

In Kwazakhele township alone, there are 120 'gaptaps' or public open spaces between the houses. The possibilities for the use of these 120 gaptaps include food and energy production, waste recycling and waste-to-energy and/or waste-to-plastics facilities, fresh produce markets, locally-owned restaurants, food outlets and entertainment facilities. All such initiatives would be owned and managed by residents of the area, in an interlocking set of neighbourhood cooperatives. In addition, the decommissioned Swartkops coal-fired power station (a striking piece of modernist infrastructure on the edge of Kwazakhele) and Pond 6 (a wetland which forms part of the Swartkops estuary) could potentially form part of a hub of green industry and eco-tourism. The highly visible power station could become a powerful symbol of the transition from fossil fuel economies to sustainable economies. Such initiatives could transform an old and poverty-stricken township into a vibrant and productive residential area, with a high quality of life for all who live there and own its resources.

The first phase of the Transition Township research project saw the community research team – a diverse group of energetic and committed community activists – produce a detailed feasibility study for implementing renewable energy and food production on one of the gaptaps in the heart of Kwazakhele. Unlike other RE projects, which are premised on self-sufficiency, the gaptap pilot is testing the institutional parameters of community-owned renewable energy (CORE) in the township context. The municipal systems and procedures are being tested for ways of adapting them to allow for CORE cooperatives to sell energy to the grid. This must be replicable, not only across Kwazakhele, but in all townships in Nelson Mandela Bay; and indeed, in townships across South Africa.

4.4.4.3 Bringing the idea to life: The gaptap pilot project

After much debate, it was concluded that the objective of CORE is not to reduce household or institutional expenditure on electricity. Instead, it is to generate electricity – through renewable energy – to feed into the grid, and to be paid as other independent power producers are paid. Of course, any model based on this premise is dependent on the governmental policies and institutions which govern the production and sale of energy. This reinforces the importance of the pilot in demonstrating the value of the concept. Significantly, the pilot is testing not the use of solar energy in providing for household self-sufficiency, but rather the use of existing infrastructure to create a local economy around renewable energy.

The Transition Township project began in 2016 (and is ongoing) with the creation of a community research team, drawn from Kwazakhele, who conducted baseline studies into household consumption of energy, use of free basic services and expenditure on energy. The areas of the rooftops of large institutions in the area were also measured, and the potential for rooftop PV solar generation estimated. A decision was made in 2017 to pilot the PV solar installation through a 'gaptap cooperative'. This would be a neighbourhood cooperative within a public open space in a working-class township (see **Image 1**).

IMAGE
ONE

The location of the 'gaptap' neighbourhood cooperative pilot (before implementation) (Source: Google Maps)

PART FOUR 4.4 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

The second stage of the project saw the mobilisation of the residents of the selected gaptap into a cooperative, which was ultimately registered with the Department of Social Development in November 2018 as the SalTuba MultiPurpose Energy Cooperative. Twenty-five households (out of a total of 36 households located around that gaptap) joined the cooperative, elected their own committee, and were trained in the principles of cooperative management. During 2017, they participated in an exciting design process to decide what they wanted to see happen on the gaptap, the outcome of which included solar energy produced through PV solar panels on the roof of a shipping container, food gardens, a waste recycling depot, and a kitchen and public space for cooking and serving food. The design was submitted to the municipality.

When it came to the structure and placement of PV solar panels, however, using a shipping container proved to be more difficult than imagined. The design for the container-mounted PV solar had been submitted to the municipality, with no response. Yet it turned out that the containers, which had already been sourced, had not been refurbished by March 2019, due to a lack of working space. The project then explored other options for PV solar structures, including a prefabricated container with a PV solar roof, a rotating PV structure, and a combined PV solar and vegetable garden structure. Ground-mounted solar was also offered by one of the local RE suppliers, but this would not have been appropriate on the gaptap, for two reasons: it would have removed the entire 'public space' of the gaptap for communal use, and would have been vulnerable to theft and vandalism. The solution was a 'carport' structure – in other words, a metal frame mounting for the PV panels. This would keep the PV panels safely above the level of interference and allow the space underneath to be used for meetings, a market for fresh vegetables, or any other purpose that the residents decide upon.

The size of the installation was determined by the budget for the purchase of PV panels. From an additional grant from the Nelson Mandela University Trust, a relatively small sum of ZAR50 000 (subsequently increased to ZAR100 000) was allocated to the PV solar installation. The position of the installation on the gaptap was decided upon with the participation of residents, taking into account the relation of the installation to houses and to the electricity box, as well as the security of the panels. A company (EnergyWorx), experienced in renewable energy and fully sympathetic to the objectives of the pilot, was employed to assist with the technical and institutional implementation of the project; they worked together with Rubicon, another company which supplied the component parts of the installation. As captured in **Image 2**, the installation of the 'carport' structure (in inverted commas as it has no intention of sheltering a car) and the mounting of the PV panels took place in October 2019.

IMAGE
TWO

Installation of the 'carport' structure' (Source: Khaled Eljabi, 2019)

One particularly surprising element in the process was discovering that the PV installation would not be connected to the substation after all, but rather to a local electricity box situated on the other side of the gaptap, and which required the construction and mounting of an electricity 'box'.

The final challenge was to connect to the municipal grid.

4.4.4.4 Institutional obstacles to connecting and selling electricity

It was at this stage, where the institutional parameters of this new, even revolutionary, model were tested, that the major challenges emerged. The municipality would provide a meter but, given that this was not a rate-paying household, the feed-in tariff did not apply, and they required that the electricity be bought through a licensed 'wheeler' of energy. This wheeler of energy was PowerX, which in turn required the registration and application of some 'producer of energy' as the IPP. The question was, who was to register as the producer of energy? Would that the SalTuba Cooperative, a cooperative of indigent households, could be the IPP. Unfortunately, given that SalTuba could not open a bank account (thanks largely to South Africa's highly monopolised and anti-poor banking system), the decision was made to register Kwazakhele Development Agency (KDA) as the power producer. KDA Amandla (or

'KDA Power' in isiXhosa), which did have a bank account, had already been established as a non-profit organisation (NPO) to formalise the community research team as an independent development agency, one that could extend the work to the whole of Kwazakhele and replicate the lessons of the research project going forward.

KDA was advised to register as a power producer on the website of PowerX, the company with the wheeler licence to buy and sell energy in Nelson Mandela Bay. The terms of the contract would have to be explained to the SalTuba cooperative, and both KDA and SalTuba would need to understand exactly who would be paid, and for what. When KDA did register with PowerX, which had been involved in numerous discussions with the Transition Township project up to that point, PowerX responded that the size of the PV array (under 50kW) was too small to be economically viable.

While the baseline research for the gaptap pilot had estimated the amount of electricity that could be produced by covering the surface area of an entire gaptap (1 000m^2), the carport structure only takes up a fraction of this area (5m x 5m) and contains 15 PV panels which can produce 5kW of electricity. **Image 3** illustrates the placement of the carport on the gaptap in relation to the vegetable tunnel and neighbouring houses, and gives an indication of its size.

IMAGE
THREE

Placement of the carport on the gaptap (Source: Anelise Swartbooi, 2019

The plan of registering as an IPP had to give way in the face of this obstacle, and an alternative arrangement found. Munelek (the Electricity and Energy Directorate of the municipality) responded to the challenge positively, in that they agreed to provide a meter for the PV array. Even so, there is currently no mechanism in place to allow payment to the SalTuba cooperative (or the KDA), as they are not registered through a licensed 'wheeler' of electricity such as PowerX. The installation is too small, or the institutional logjam is too big, depending on how one looks at it.

4.4.4.5 Early days: Reflections and questions for the pilot

The institutional problems are clear from the experience of the SalTuba pilot project. While the municipality is willing to buy renewable energy from IPPs, these IPPs have to be formally registered; and, while they are also innovative with the feed-in tariff, those who benefit from it are affluent rate-payers. Any intervention for a community-owned renewable energy project needs significant capital outlay from 'outside' and, moreover, needs to overcome a range of institutional hurdles in order to benefit.

In December 2019, three years after the idea for a 'gaptap energy cooperative' was mooted, the first CORE installation was connected to the grid in Nelson Mandela Bay. A 'smart meter' installed by Munelek allows for the transparent monitoring and accurate measurement of the electricity produced by the gaptap PV array. Residents of the houses surrounding the gaptap, who are members of the SalTuba Cooperative, can therefore see the value of the electricity that their installation is producing, even if they are not actually receiving any of it yet. The first six months of operation will test a number of important things:

- The amount and value of the electricity produced.
- The business model for selling electricity to the municipality, whether through a wheeler such as PowerX, or directly through the feed-in tariff.
- The institutional mechanism for the cooperative to be paid for what they produce.
- The willingness of the residents to take ownership of the installation, to maintain it and secure it against vandalism or theft.

The outcome of these aspects of the pilot project will determine whether it is possible to replicate the model in neighbouring gaptaps and, from there, to the 120 other gap taps in Kwazakhele, and ultimately to all townships in Nelson Mandela Bay.

4.4.5 CONCLUSION

It does not really matter whether one frames this project ideologically as 'eco-socialism', or as 'solidarity economy' or, in a more social-democratic sense, as 'social enterprise', or simply as 'democratised', 'decentralised' or 'localised' economy. It is, in effect, testing a socialist alternative within a capitalist economy.

Hahnel and Wright (2016) put forward the case for participatory economics in answer to the need for "an economic system that promotes economic democracy, economic justice, and human solidarity, without sacrificing economic efficiency" (2016: 7). The 'big question' he is asking concerns the transition – not from fossil fuel to a zero-carbon economy – but the "transition from the economics of competition and greed to an economics of equitable cooperation" (ibid.). The transition strategy "necessarily consists of various ways to 'socialise' markets. In order to ameliorate their detrimental effects... supporters of participatory economics can work together with market socialists on many campaigns to 'tame' markets in the here and now" (ibid.). As market socialist Erik Olin Wright notes (Hahnel and Olin Wright, 2016: 46), "many of the ideas connected to participatory economics can be embodied in concrete projects of building alternative institutions inside of our existing socio-economic system".

The Transition Township project has as its premise certain principles: participatory economics, deep democracy, social justice and sustainable resource use. Much of this participation can take place at neighbourhood level, as advocated by Hahnel and Wright: "Participatory planning of public goods – at the neighbourhood level and beyond – will be a critical feature of a post-capitalist democratic egalitarian economy" (Hahnel and Wright, 2016 31). Further, if Klein (2014) and others are right, then the challenge of climate change 'changes everything', including capitalism. The Transition Township experiment is part of this transformation of the economic system, a practical alternative involving decentralised power, control of resources by ordinary people, and a sustainable way of meeting our real needs for food, water, energy and shelter. It is essentially about the democratising of resources, and about putting economic power in the hands of the people. If we do not build this alternative now, it may soon be too late.

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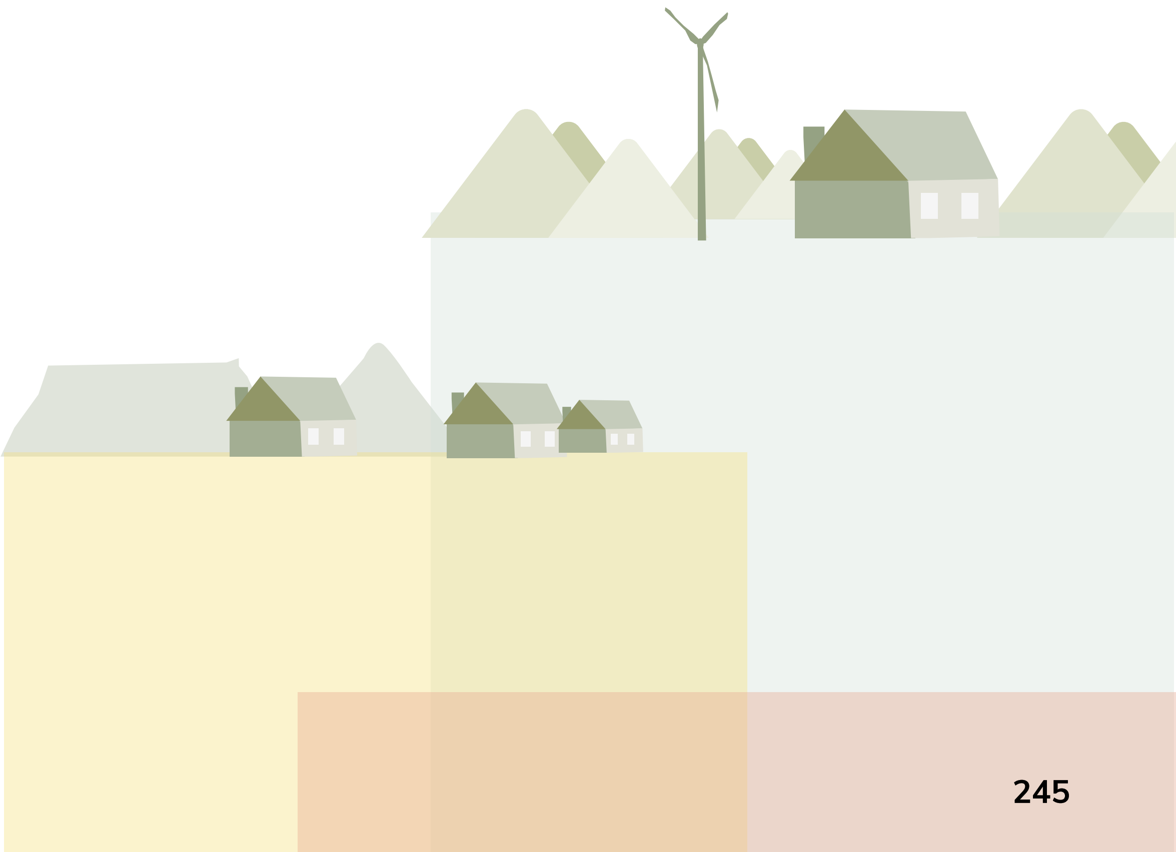

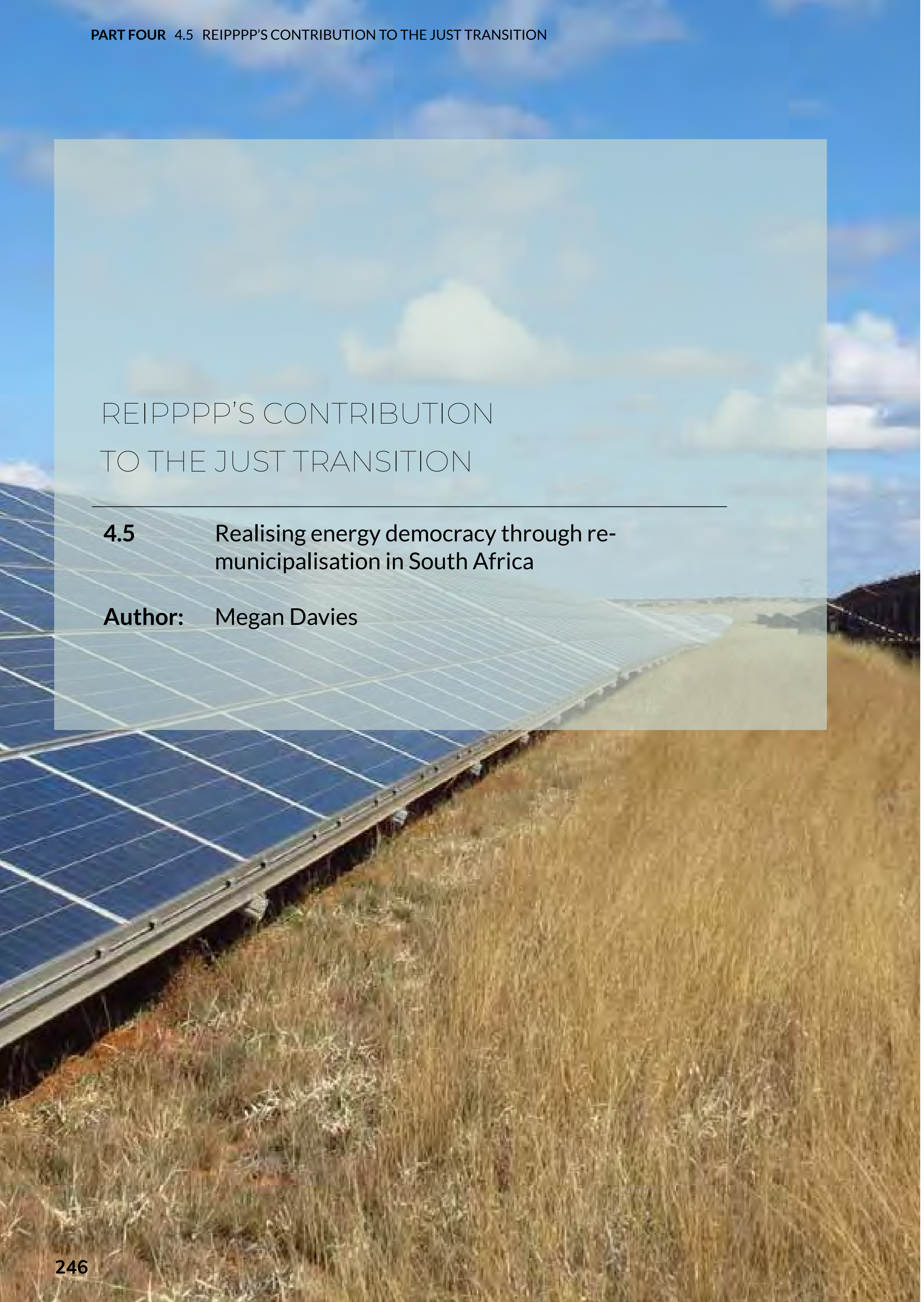

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.5 Realising energy democracy through re-municipalisation in South Africa

Author: Megan Davies

4.5.1 INTRODUCTION

As the energy transition unfolds, municipalities are emerging as nodes of technological experimentation and political contestation. Within the energy democracy movement, the notion of 're-municipalisation' is a powerful policy strategy for leveraging the transformative potential of renewable energy infrastructures. Accounts of re-municipalisation present it as a 're-scaling' of political governance that sees services such as energy and water provision reclaimed under public ownership and management.

This chapter unpacks these claims to articulate the view of 'energy democracy' as a strategic orientation to a transformed world, a view which is exemplified by the key dimensions of relatedness, resourcefulness and embeddedness-in-place. To do so, the argument integrates various strands of literature that claim it might be possible to imagine a democratic politics of renewable energy. Re-municipalisation emerges as one strategy among many that might help to rearrange prevailing socio-technical systems and bring to life a democratic politics of relatedness, resourcefulness and embeddedness-in-place.

Beginning with the sustainability transitions framing, I orientate towards urban politics and a relational state, taking seriously the opportunities opened up by decentralised renewable energy infrastructure. This strategic orientation is then encapsulated within a conceptualisation of energy democracy that advances "new forms of collective life" (Mitchell, 2011: 238). Finally, the re-municipalisation of energy is presented as a policy strategy that animates the ambitions of energy democracy. I conclude with a reflection about the prospects for re-municipalisation in South Africa given the current political economy of energy.

4.5.2 CONCEPTUAL BUILDING BLOCKS

4.5.2.1 Sustainability transitions, cities and energy

The notion of 'the urban' is an enduring focus of critical urban theory literature (Parnell, Elmqvist, McPhearson, Nagendra & Sörlin, 2018). Urbanity's multiple dimensions necessarily imply a diversity of possible entry points for making sense of the dynamics and impacts of our 'urban planet' (Parnell et al., 2018). An expansive view of urban places positions them as "unique spaces that connect a wide range of actors, networks, infrastructures, resource flows, cultures, social processes, and histories, within specific biophysical, ecological, and political contexts" (Hodson, Marvin, Robinson & Swilling, 2012: 789). As such, they offer significant potential as places for negotiating and navigating transitions.

The sustainability transitions community communicates its central aim as conceptualising and explaining how radical changes can occur in the way that societal functions are fulfilled (Köhler et al., 2019). The key focus therein are the socio-technical systems that fulfil these societal functions and which, because of their particular goals and configurations, have contributed to intersecting grand challenges such as climate change, economic inequality, biodiversity loss and so on. The transformation of socio-technical systems (such as energy, mobility and food systems) has the potential to contribute to more sustainable, resource efficient and equitable societies.

A transition is understood as a "fundamental social, technological, institutional and economic change from one societal regime or dynamic equilibrium to another" (Hölscher, Wittmayer & Loorbach, 2018: 3). Transition processes can be protracted, can involve disruptive shocks and shifts and do not unfold in a stepwise manner. Similarly, transitions are the outcome of nested processes, resulting from the interplay of dynamics at multiple levels (Loorbach et al., 2017).

Within the transitions literature, a 'geographic turn' emphasises the role of place and the socio-spatial aspects of sustainability transition processes (Binz, Coenen, Murphy & Truffer, 2020). With an increasing global contestation around loci of power and shifting territorial and governance dynamics resulting from globalisation, there is a stronger emphasis on the multi-scalar nature of socio-technical transitions (Jessop, 2016a; Agnew, 2017).

Closely connected to the broader sustainability transitions literature, the literature on energy transitions demonstrates the centrality of energy in the structural transformation of society (Mitchell, 2011; Fouquet & Pearson, 2012; Araújo, 2014). A socio-technical framing of energy transitions reveals that radically transforming the nature of energy systems, whether reducing or eliminating carbon-intensive energy systems, also implies a transformation and reconfiguration of social, institutional, political and economic structures (Geels, Sovacool, Schwanen & Sorrell, 2017).

The interrogation of the political implications of energy transitions has predominantly been taken up at the level of the nation state (Johnstone & Newell, 2017; Cherp, Vinichenko, Jewell, Brutschin & Sovacool, 2018). However, a politically aware analysis of a socio-technical transition highlights how choices around energy policies, and their accompanying energy infrastructures, become material tools of collective organisation at a variety of levels. These could be trans-national movements, those within the bounds of the nation state, right down to sub-national and local governments, and community-level organisations (Healy & Barry, 2017; Avila, 2018; Bridge et al., 2018; Rumpala, 2018).

A closer interrogation of the spatial manifestations of the energy transition has resulted in the recent energy geography literature. This strand of literature explicates the connection between energy infrastructure and the spatiality of socio-technical transitions (Huber, 2015; Calvert, 2016; Bridge et al., 2018). Building on this, the urban energy transitions literature develops interconnections between urban theory and the socio-spatial dynamics of energy transitions (Rutherford & Coutard, 2014; Silver & Marvin, 2016).

Seen together, this literature recognises transitions, such as experiments in reconfiguring socio-technical energy systems, as deeply political, multi-scalar and place-based processes, where visions of a desirable future and strategies for change are divergent and contested. An underlying premise, and equally empowering assertion, is that place matters in transformative politics. In the following section, I examine a perspective on urban politics that can potentially deepen the transitions literature's emphasis on the political and socio-spatial dynamics of transition processes.

4.5.2.2 New municipalism as a new urban politics

Throughout history, social movements, and indeed radical transitions, have been staged in urban centres. While the domains of social movements in the Internet Age have morphed, urban centres remain critical sites for social change (Castells, 2015). The new municipalist movement exemplifies this claim and captures a situated and locally grounded politics (Russell, 2019). New municipalism demonstrates that the municipality is a strategically crucial site for the organisation of transformative social change (Roth & Russell, 2018; Russell, 2019).

Moving 'beyond the local trap', the new municipalist movement "focuses on the municipality as a strategic site for developing a transformative and prefigurative politics" (Russell, 2019: 4). The new municipalist movement is also empowering in the way in which it moves beyond a dualistic framing of rural and urban, where the capacity to organise collectively builds on encounters in place. Criticism of the movement might frame new municipalism as a return to parochial politics. Instead, new municipalism has come to represent the idea of 'translocal solidarity' based on 'transversal identities'; the idea that being firmly rooted within local context is the hinge between navigating the world as it is, and the world we are trying to create (Roth & Russell, 2018).

Seeing new municipalism from this perspective, it is possible to avoid the inherently progressive assumptions about the local scale, and safeguard against valorising the capabilities of municipal governments (Russell, 2019). Instead, new municipalism captures two possibilities in the production of an "altogether new scale of politics" (Russell, 2019: 14). Firstly, the new municipalist movement builds on a unique potential of the urban – in a word, urban proximity – and the power of encounters in cultivating solidarity and transformation (Russell, 2019). Russell (2019) warns against the essentialisation or fetishisation of the 'local', urging instead an understanding of the politics of proximity "as being concerned with those forces that pull us together, as opposed to those forces that push us apart" (Russell, 2019: 14). The second dimension is the focus on transforming municipal institutions of governance and affirming them as spaces of political experimentation, rather than mere administrative units nested within a coherent form of the nation state (Russell, 2019). "Taken together, this effort to pursue a politics of proximity through the transformation of institutions has begun to be referred to, by some, as the 'feminisation of politics'" (Russell, 2019: 15).

The feminisation of politics is essentially a "challenge to the way politics is done" (Russell, 2019: 15). It inscribes new principles of justice, equity and sustainability into the formation of social and political alternatives. I argue that the new municipalist movement articulates a shift towards a relational politics that is rooted in place and advanced through complex socio-spatial arrangements.

4.5.2.3 A relational state and collabratory governance

The municipal scale can be seen as a starting point for the organisation of transformative experiments, but this necessitates forming a commensurate conception of the state, one that might cohere with the complex arrangements of an 'energetic society' (Hajer, 2011). Following Jessop (2016b),

> **"[The state] is a complex ensemble of institutions, organisations and interactions involved in the exercise of political leadership and in the implementation of decisions that are, in principle, collectively binding on its political subjects. These institutions, organisations, and interactions have varying spatiotemporal extensions and horizons of actions and mobilise a range of state capacities and other resources in pursuit of state objectives" (Jessop, 2016: 16).**

Accompanying Jessop's 'assemblage' orientation to the state, is a relational approach to governance in the face of growing societal complexity, namely 'collibration', or the governance of governance (Jessop, 2016). Swilling (2020: 63) explains that collibration "entails specific modes of intervention to harness the potential of governance for a particular political/state project adopted by a political leadership. It usually entails establishing a new generation of state agencies with high degrees of autonomy to facilitate governance arrangements". Jessop's relational state and collibratory governance, according to Swilling (2020), re-establish a central place for the state in sustainability transitions, not as a monolithic state, but as a "*primus inter pares* in a complex, heterogeneous, and multilevel network of social relations…. An interconnected, reinforcing series of symbolic and material state capacities" (Jessop, 2016b:173). "Political leadership in this context becomes a new kind of relational statecraft" (Swilling, 2020: 63) where, for example,

> **"Governments provide the ground rules for governance and the regulatory order through which governance partners can pursue their aims; they ensure the compatibility or coherence of different governance mechanisms and regimes; and they create forums for dialogue or act as primary organisers of the dialogue among policy communities" (Jessop, 2016: 172).**

Jessop's conception of the relational state emphasises context and "the embeddedness of the state as a complex ensemble of unevenly developed institutions" (Swilling, 2020: 63). An assemblage approach to understanding the state makes it possible to locate the new municipalist movement as an expression of a relational politics. Taking these ideas together – a politics of proximity, an orientation towards a relational state and collibratory governance – it might become possible to reconfigure socio-technical systems that cultivate "new forms of collective life" (Mitchell, 2011: 238).

4.5.3 ENERGY DEMOCRACY: MOVEMENT AND CONCEPT

The new municipalist movement makes the point that localisation or decentralisation must be engaged as a means to an end, as a strategic front for advancing transformative processes. In many explicit municipalist movements (Roth & Russell, 2018; Thompson, 2020), as well as in the abundance of sustainability transition experiments (Fuenfschilling, Frantzeskaki & Coenen, 2019), organising around urban infrastructure becomes the 'stuff' of politics. The energy democracy movement builds on the opportunities opened up by the divergent materiality of renewable energy infrastructures and asserts that decentralised infrastructure might also enhance democratic outcomes (Burke & Stephens, 2018). Perhaps put more modestly, energy decentralisation "introduce(s) disjunctures that may drive material and political change" (Pinker, 2018: 740). To elaborate upon this claim, this section foregrounds the profoundly political dimensions of the spatiality and material of these infrastructures, and then describes how the shift towards decentralised and dispersed renewable energy has invigorated and widened the political claims on the energy transition.

Infrastructures operate as the material artefacts for transition agendas; therefore, tinkering with socio-technical systems is fundamentally political. But infrastructures are also profoundly relational in that institutions and infrastructures are co-constitutive of one another, hence the continual unfolding of socio-technical systems. By way of illustration, for Pinker (2018: 717),

> **"It takes ongoing and extensive relational work between humans, elements and material artefacts to assemble, re-assemble and maintain the processes that constitute micro-wind energy as a functioning infrastructural system—in which neither human agency nor the demands of the material artefacts alone determines the outcome."**

The relationality of infrastructures manifests in the obduracy and lock-in of socio-technical systems, but equally their open-endedness and potential for reconfiguration.

The coupling of a democratic agenda with the shifting spatiality of the energy transition lies at the heart of the energy democracy movement.

Political claims on the energy transition foreground the materiality of renewable energy infrastructures. This coupling of a democratic agenda with the shifting spatiality of the energy transition lies at the heart of the energy democracy movement. It represents "a contemporary expression of ongoing struggles for social and environmental justice through engagement with technological systems" (Burke & Stephens, 2018: 90). Energy democracy claims that the shift from centralised energy systems towards decentralised and dispersed configurations might amplify the devolution and democratisation of political power (van Veelen & van der Horst, 2018).

As a movement, energy democracy has emerged predominantly in countries in the global North, used by grassroots activists and trade unions "to integrate, call for and justify integrations of policies linking social justice and economic equity with renewable energy transitions" (Burke & Stephens, 2017: 35).

Various authors have engaged with the concept of energy democracy to further elucidate the political dimensions of energy transitions. Rumpala (2018) introduces the concept of 'technological potentialism' to grapple with the reorganisation and reconfiguration of the various cultural, political, social, economic and political characteristics of societal structures. Burke and Stephens (2018) articulate an energy-politics lens to theorise the relationships between renewable energy and political power, and to explore the political possibilities for a renewable energy future. Thombs (2019: 159) offers a typology of envisaged potential energy futures, claiming that the "scale of energy system will also play a pivotal role in reinforcing and reproducing democratic and just social relations". Becker and Naumann (2017) engage with energy democracy from two angles; firstly, the political calls for a more just society, and secondly, "in the diverse forms of organisation that accentuate principles of collective control, participative decision-making, and a fair distribution of benefits" (Becker & Naumann, 2017: 2). Delina (2018) explores energy democracy as "active civic participation in the production and use of energy" in the way in which the energy transition shaped the remaking of public participation in Thailand. Szulecki's (2018) conceptualisation of energy democracy emphasises three main dimensions: popular sovereignty, participatory governance and civil ownership. Burke (2018) elaborates the way in which energy democracy provides "a socio-political counter narrative to mainstream political transition narratives that position renewable energy transitions within a broadly dominant neoliberal hegemony" (Burke, 2018: 2). Burke and Stephens (2017) argue that the energy democracy movement, particularly as it has evolved within the labour movement, provides "visionary organising principles" for the goals of 'resist, reclaim and restructure'. Specifically, these goals pertain to the shift towards a dominance of renewable energy sources that resists the prevailing fossil fuel industry, *reclaims* social and public control over the energy sector, and *restructures* the energy sector to better support democratic processes, social justice and inclusion, and environmental sustainability (Burke & Stephens, 2017).

These studies emphasise that politics needs to be at the centre of the debate on energy transitions and that the transformation of the energy sector will likely unfold through ongoing and long-term political power dynamics which involve differences in visions, alliances and political consequences (Burke & Stephens, 2018).

However, for many contributors to the energy democracy literature, the transition to a decarbonised society does not *necessarily* translate into the enhancement of democratic outcomes (Burke & Stephens, 2018; van Veelen & van der Horst, 2018). Put differently, the goals of the energy democracy movement – to see the advancement of democratic outcomes together with the acceleration of a low-carbon transition – are not a foregone conclusion. Even if this relationship is positive and reinforcing, van Veelen and van der Horst call for a better understanding of "what type of democratic future is being sought" by energy democracy, and how this concept can be deepened through a connection with political theory (2018: 19). Despite variations in its understanding and application, Burke and Stephens (2018: 90) conclude that "above all, energy democracy allows for a vision of renewable energy transitions as pathways for democratic development"

4.5.4 RE-MUNICIPALISATION AS A PATHWAY TO ENERGY DEMOCRACY

The strategic orientation towards energy democracy which I argue for in this chapter can be viewed through 're-municipalisation', a policy tool that contributes towards a broader transformative agenda. Re-municipalisation is significant for the way in which it might manifest and, perhaps more importantly, *institutionalise*, the qualities of relatedness, resourcefulness and embeddedness-in-place.

Burke and Stephens (2018) review a range of policy tools and instruments in accordance with the goals of 'resisting, reclaiming and re-structuring' the current fossil fuel energy system. Additionally, they categorise these according to what can be achieved within the regulatory context, through financial inclusion mechanisms, economic institutions and new energy system institutions. Burke and Stephens (2018) position re-municipalisation as one policy instrument, understood as an economic institution, that has the potential to support the energy democracy goals of reclaiming and restructuring the energy system.

The Transnational Institute (TNI) refers to re-municipalisation as "the process of bringing previously private or privatised services under public ownership and management at the local level" (Kishimoto, 2019: 52). Its report, *Reclaiming Public Services* in 2017, documents at least 835 cases of the re-municipalisation of public services between 2000 and 2016, involving more than 1 600 cities in 45 countries across the world (Transnational Institute, 2017). These cases are dominated by energy and water, but increasingly include a diversity of local government services.

The TNI has been instrumental in capturing insights from this global wave of re-municipalisation, not only in the energy sector, but also in other services relating to the local municipality. The list below captures the diverse goals that (re)municipalisation is aiming for, demonstrating that this strategy can realise multiple outcomes where it is implemented. The TNI's account of global efforts to reclaim public services describes a movement that "is fuelled by the aspiration of communities and local governments to reclaim democratic control over public services and local resources, in order to protect their common future" (2019: XX). Their 2019 report accounts for the growth in the number of successful re-unicipalisations, now at 924. The findings from their global review claim that:

1. Re-municipalisation is redefining public ownership and advancing a vision that centres democratic participation and ownership.
2. Re-municipalisation reduces costs and improves services, providing the best value for money to citizens.
3. Private management and ownership of public services risks bankruptcy for the private operators providing critical public services.
4. Re-municipalisation helps to uphold and promote human and social rights by holding these as clear policy objectives.
5. Re-municipalisation stops precarious work by providing stability and security for public servants.
6. Re-municipalisation can improve public health by ensuring the health sector caters for those most vulnerable in the public health system.
7. Re-municipalisation helps to build democratic public ownership by ensuring strong, high-quality public services with robust governance processes that prioritise collaboration and participation.
8. Re-municipalisation must engage and learn from workers to strengthen the alliance between trade unions, civil society organisations and public sectors.
9. Transforming public ownership for ecofeminist public services enables deeper levels of democratisation and ensures justice and equity.
10. Re-municipalisation can strengthen community wealth and local economies by creating anchor institutions that work to improve citizens' quality of life.

11. Re-municipalisation is a strategy to tackle the climate emergence by coordination of public policy.
12. Public-public cooperation can counter corporate power and limit the expansion of privatisation.

Together, these claims place re-municipalisation at the forefront of radical societal transformation. However, as further critical research demonstrates, the motives and outcomes of reclaiming public services are diverse and sometimes contradictory (McDonald, 2018a,b; Clifton, Warner, Gradus & Bel, 2019). Moreover, in practice, the term is employed in different and occasionally contradictory ways, which leads to conceptual confusion. Clifton et al. (2019: 5) elaborate on this confusion and note the conflation between the political project and the empirical trend, which means that "some of the literature on progressive re-municipalisation flips between descriptive and normative approaches – mixing expressions of a desire for change with observations about real, observed change on the ground". Their analysis demonstrates that re-municipalisation is primarily a pragmatic process of market management and that case studies show re-municipalisation has the potential to be politically transformative (Clifton *et al*., 2019). Recognising this cautionary insight, the following section explores re-municipalisation as a political strategy to advance energy democracy.

4.5.5 A PUSHBACK STRATEGY AGAINST NEOLIBERAL POLITICAL ECONOMY

As a decentralised form of collective action, re-municipalisation is part of a global movement reclaiming public services and pushing back against the privatisation of critical services such as water, waste and energy (Cumbers, 2016). "Theoretically, re-municipalisation can be viewed as part of the broader canvas of an unrolling and perhaps unravelling of a neoliberal political economy" (Cumbers & Becker, 2018: 2). Re-municipalisation must be viewed against the backdrop of a global political economy of neoliberalism and austerity which took root in many countries since the 1980s, and entailed the transfer of public services or assets to private-sector stakeholders (Cumbers, 2015; McDonald, 2018b; Weber, Cabras & Frahm, 2019).

While the features of a neoliberal political economy have manifested differently across the global North and South, what remains common across contexts is the hollowing out of the state and the encroachment of the private sector into multiple facets of public life. It is dissatisfaction with the consequences of global privatisation initiatives that has spurred its reversal, because, on the whole, these "have not delivered the cost efficiencies, performance improvements, and infrastructure investment and modernisation that their advocates had promised" (Cumbers, 2016: 275). In the face of deteriorating public finances, especially at the scale of local authorities, re-municipalisation offers pragmatic alternatives for bringing vital utilities and their associated revenue streams under public ownership and control.

In the context of the re-municipalisation of water services, McDonald (2018b) developed a typology of ideological forms which accounts for diverse motives and forms and demonstrates that it is by no means a coherent policy movement. McDonald clusters his review of the global water sector according to five categories: autocratic state capitalism, market managerialism, social democracy, anti-capitalism and autonomism.

The first category, autocratic state capitalism, denotes "instances where the reversal of privatisation is undertaken by relatively undemocratic, but market-oriented governments as part of a larger shift back towards state control of strategic sectors and enterprises in a capitalist economy" (McDonald, 2018b: 50). The second category is market managerialism and, like the first category, is designed to fit within the broad global market economy; however, its rationale is narrowly economic, intended largely to enhance the efficiency of service provision (McDonald, 2018b: 51). The third ideological driver for re-municipalisation in the water sector is social democracy, where more robust and extensive state intervention has the explicit aim of promoting social and economic justice (McDonald, 2018b). Finally, the fifth category, autonomism, accounts for advocates of re-municipalisation that are "leery of both capitalist and socialist forms of change" and is distinguished by an emphasis on community-driven water services (McDonald, 2018b: 53).

These categories, often overlapping and intersecting, shed light on the rationales that underpin re-municipalisation as a political process. While the drivers for re-municipalisation in the water sector might differ from the energy sector, the typology is a useful analytical tool, promoting the virtue (and necessity) of having a rich understanding of the re-municipalisation movement. And indeed, if re-municipalisation is to align with a strategic orientation to energy democracy, we need to be alive to the narratives being cultivated around public ownership, as well as to the way in which re-municipalisation might obfuscate less transformative agendas. As Cumbers et al. (2017: 84) warn, "given the widespread disaffection and alienation produced by neoliberalism and global capitalism, ideas for the reformulation of public ownership must be firmly embedded within a project for radical democracy and deepening public engagement".

4.5.5.1 Reimagining democratic public ownership

As much as re-municipalisation is motivated by the failings of a political economy that enabled the privatisation of critical public services, it also advocates for re-imagining democratic public ownership for the 21st century (Cumbers et al., 2017). Advocates for re-municipalisation

claim that it holds the potential to renew public engagement and democratic accountability in the economy (Cumbers, 2016). Similarly, the processes of decentralisation, which are inherent in re-municipalisation, can contest the power of vested interests and provide tools for local actors to cultivate more progressive forms of public policy (Cumbers, 2016).

Engaging with re-municipalisation as a strategy in service of a progressive political economy involves redefining democratic public ownership. This strategy's motivations are pragmatic in that they aim to strengthen weakened public authorities following a long-standing period of austerity, as well as to deepen and extend democracy, empowerment and social justice. Re-municipalisation contributes to a narrative of democratic public ownership that reframes its rationale in service of collective wellbeing, where wellbeing takes priority over private wealth accumulation (Cumbers et al., 2017). Re-municipalisation implies the re-scaling of political governance towards the local level in terms of ownership structures, and in terms of the overall responsibility for climate and energy policy (Kuzemko, 2019). Moreover, it calls for a broadened understanding of public and social ownership – towards diverse and hybrid forms of non-private, collective ownership at the local level which still involve significant state participation (Cumbers & Becker, 2018).

Re-municipalisation can take multiple forms in the energy sector, including the establishment of new utilities, buying back shares from private companies, extending business into energy, extending along the energy supply chain, and extending grid operations.

4.5.5.2 Lessons from Germany's *Rekommumalisierung*

The German energy sector has played a leading role in shaping wider re-municipalisation processes. Germany's long tradition of the 'municipal economy' was destabilised with the privatisation projects of the 1980s and 1990s (Becker, Beveridge & Naumann, 2015). The liberalisation of the energy market resulted in the sector being dominated by regional and largely privately-owned energy companies.

The German experience of '*Rekommunalisierung*' saw that the reclaiming of public services and advancing of the energy transition was made possible by a diversity of political strategies and institutional arrangements. As Cumbers (2016: 282) describes, "the country's re-municipalisation efforts range from big-city campaigns, to small town and rural district initiatives, to the takeover of large regional concerns". The wave of *Rekommunalisierung* began towards the end of the 2000s when a number of concession contracts came to an end, thus presenting a window of opportunity for change. A number of factors contributed towards this return to public ownership of various elements of the energy sector. A predominant factor was the ambition of many public authorities to strengthen their participation in the energy sector, which was, in turn, strengthened by an upsurge in citizen-driven campaigns opposing privatisation and supporting public and democratic control of public services. Other crucial factors included shifts in the energy policy sector (notably, the introduction of a feed-in tariff enabling wider participation in electricity generation), the availability of public finance for renewable energy, and disappointment with the private-sector players' response to the energy transition.

Re-municipalisation took two main forms: returning privatised utilities to public ownership and forming new utilities where a regional (often private) supplier was previously active (Cumbers & Becker, 2018). The strong place of local utilities in Germany, or '*stadtwerke*', meant that following privatisation, the notion of a *stadtwerk* remained important as a political option. Wagner and Berlo (2015) identified 72 new public energy companies established in Germany since 2005. "As impressive as the scale of new enterprises is the diversity and innovation in forms of collective ownership" (Cumbers, 2016: 242). This new generation of local, collectively-owned energy companies ranges from the creation of new local state-run entities, to smaller rural cooperatives. They demonstrate that grassroots mobilisations and state-led action need not be in opposition.

4.5.6 PROSPECTS FOR RE-MUNICIPALISATION IN SOUTH AFRICA'S ENERGY SECTOR

Re-municipalisation is an expression of an alternative political 'imaginary' (Cumbers & Becker, 2018). I follow Cumbers and Becker (2018) in their framing of re-municipalisation as enabling diverse and hybrid forms of non-private, collective ownership at the local level, which still involve significant state participation (Cumbers & Becker, 2018). As stated in the introduction to this book, renewable energy needs to be delivered via public utilities at the national and local level, via community-owned/social enterprise vehicles, as well as via investments made in privately-owned utility-scale renewable energy infrastructures in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

All three delivery mechanisms have a role to play in ensuring the effective implementation of South Africa's energy transition and, more importantly, in realising the possibilities for energy democracy. This approach implies a strong role for a relational state to facilitate diverse participation in the electricity sector through a suite of procurement strategies. With respect to broadening public participation and enhancing the capabilities of South Africa's developmental local municipalities, I see the role of the relational state as one of facilitating hybrid forms of public ownership of energy infrastructure at the municipal scale. In this way, re-municipalisation in the electricity sector is a strategic site for the cultivation of a democratic politics of renewable energy. The prospects for

re-municipalisation are located between two interconnected and emergent dynamics within the electricity sector: the first pertains to the generation market opening up, and the second to shifts within the distribution sector.

Much like in the German case, re-municipalisation is a viable option for South African municipalities for a number of reasons. From a national government perspective, South Africa is a committed developmental state, delivering public services across each of the three spheres of government, from national, to provincial and local. A meaningful role for local government within the developmental state is made explicit in the Constitution; indeed, electricity reticulation is a key function of municipal service delivery and the requisite municipal electricity grids are a public asset. South Africa also stands at an open window of opportunity regarding electricity policy, and the mounting financial, technical and governance crises within Eskom. The country's electricity roadmap, the Integrated Resource Plan 2019-2030, calls for the rapid decarbonisation of the economy by decommissioning the aged coal fleet and upscaling renewable energy. Seen together, this confluence of factors opens an avenue to shape municipalities' participation in a way that enhances rather than undermines their developmental capacities.

4.5.7 CONCLUSION

By taking these ideas together – a politics of proximity and an orientation towards a relational state and collibratory governance – it might become possible to reconfigure socio-technical systems that cultivate "new forms of collective life" (Mitchell, 2011: 238). Re-municipalisation is a strategy that cultivates and institutionalises the promising transformative dimensions of energy democracy.

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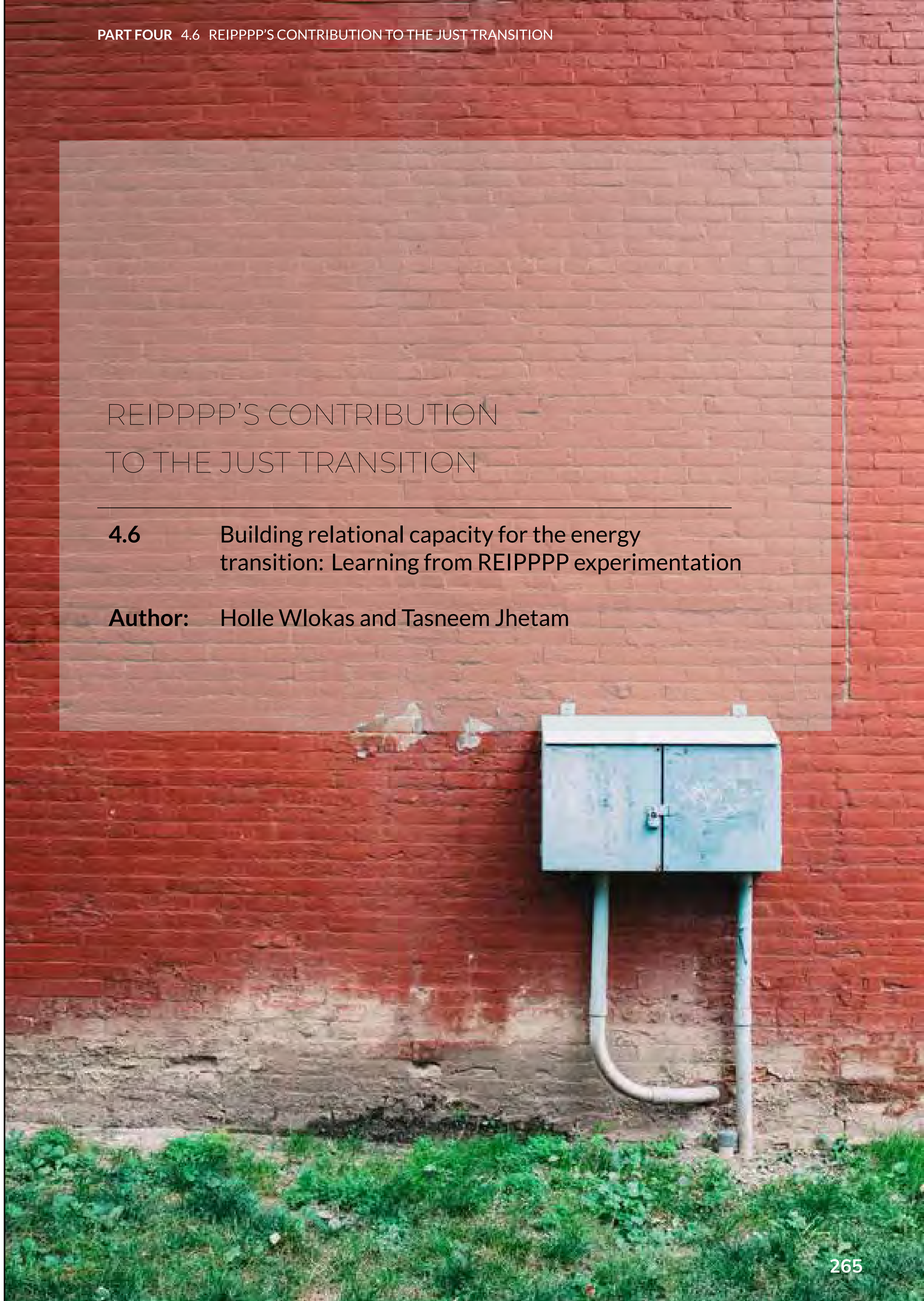

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.6 Building relational capacity for the energy transition: Learning from REIPPPP experimentation

Author: Holle Wlokas and Tasneem Jhetam

4.6.1 INTRODUCTION

Large-scale renewable energy in South Africa is a field of new opportunities, but also of new conflicts. New practice spaces are emerging, in which corporate professionals in renewable energy (RE) companies engage with communities to develop wind, solar, hydro and biomass projects, but also to 'do development', as prescribed by the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

Both sorts of intentions – technical as well as developmental – have been driving community engagement practices across natural resource-based industries for decades. Existing research dedicated to exploring these practices, as they are shaped and implemented by corporate employees, is primarily focused on the mining sector (Kemp, 2010; Coulson et al. 2017). What is evident from this body of knowledge is that effective engagement with external stakeholders requires individuals and teams to be empowered inside their companies (Kemp, 2010; Kemp & Owen 2013; Owen & Kemp 2014).

RE exists within a specific context. Compared to high impact and large budget mining operations, RE operations require low(er) capital expenditure and lower operational expenditure, and have generally less environmental and thus also social impact. Consequently, they also have smaller budgets for benefits and fewer opportunities to stimulate livelihood prospects through contracts and work during construction and operation. RE basically has a fairly 'light touch'. It does not 'lift up the land' but rather alights on its surface with minimal disturbance, and thus promises to be a better 'neighbour' to host communities. However, the infrastructural assets for utility-scale renewable energy developments, as discussed in this book, represent significant investment and value, and find themselves in communities that are, mostly, rural. Therefore, the manner in which utility-scale projects land, and the configuration of their ownership, should be negotiated and thoughtfully facilitated if any meaningful development impacts are to be achieved.

"Renewable energy has a 'light touch' on the land, with minimal disturbance, and thus promises to be a better 'neighbour' to host communities."

Project design is always a compromise of both local context and policy, and community relations practitioners are at the proverbial 'coal face' of design negotiations (or, if only brought on board later during construction, of the implications of those negotiations). Their skilled engagements with project internal and external stakeholders are oftentimes key to the social licence of the projects. As Chapters 2.2 and 4.3 argue, the cultivation of a viable social licence is critical for the functioning of a utility-scale RE project. This chapter takes the argument further by positioning the relational capacity of stakeholders implicated in the development of projects as the foundation of a social licence to operate. In short, we argue that building 'relational capacity' among project stakeholders is the key ingredient of a social licence to operate.

Research into the conditions for positive relationship work in the context of large-scale RE implementation in the global South is in its infancy. The international research project 'Tendering Sustainable Energy Transitions' (Tentrans), implemented between 2017 and 2020, represents a significant academic effort in this regard. Tentrans is investigating procurement design and the associated cost implications, local content and industrial development implications for the wind sector, as well as the practices applied in engaging with communities. The latter research on community engagement practices in the REIPPPP forms the core of this chapter. The chapter presents the theoretical orientation of the research, before exploring the three research arenas in the Tentrans project. We conclude with tentative reflections about the studied efforts to build relational capacity in the context of the energy transition.

4.6.2 THEORETICAL OVERVIEW, HYPOTHESIS AND RESEARCH QUESTION

The research applies an actor-oriented approach to studying institutional change and everyday governance (Lawrence et al., 2009; Cleaver and de Koning, 2015; de Herdt & Olivier de Sardan, 2015). It links this to related research on agency and power in public-private partnerships (de Schepper et al., 2014) and multi-stakeholder energy transitions (Avelino and Wittmayer, 2016). In doing so, the inquiry contributes to furthering the integration of institutional theory with studies of sustainability transitions (Fuenfschilling & Truffer, 2014). In particular, the focus on institutional work enhances the understanding of the role of actors and agency, which has been largely overlooked in innovation system studies (Geels, 2011). Further, by analysing how the interaction between project developers and local community actors takes place under the REIPPPP, the research aims to shed light on whether a transition toward large-scale RE in an emerging economy can proceed in a just and socially inclusive manner (Swilling, Musango & Wakeford, 2016).

The hypothesis of the research is that decision-making on community investments takes place through hybrid institutional practices that mix formal and informal procedures. The inclusion of communities and local governments therefore depends not only on their formal representation, but also on their ability to engage with private project developers and influence their decisions and decision-making practices. Owing to certain conditions in the tendering process, projects under the REIPPPP are required to fund community development projects as part of socio-economic (SED) and enterprise development (EnD) targets, and also to share ownership in the project company with local communities.

One might assume that, in the REIPPPP, these efforts are developed and decided upon through inclusive fora such as community trusts and collaborative arrangements with municipalities and local governments. But this assumption may not be correct. The literature on institutional change (Lawrence et al., 2009; Cleaver and de Koning, 2015) and everyday governance (de Herdt & Olivier de Sardan, 2015: 213) suggest that local institutions and decision-making processes rarely develop as designed, but are instead the product of the everyday interactions and 'institutional work' by project developers, communities, local governments and other actors. Is that the case with the REIPPPP? To find out, the research examines how wind project developers, communities and local governments interact in their decision-making around community development, and the implications of this for inclusive governance of sustainable energy transitions.

4.6.3 THREE RESEARCH ARENAS IN TENTRANS

The research design consists of three research arenas, which each allow for insights and reflections about the prevailing ways that REIPPPP stakeholders engage, build relationships and foster practice development. With a commitment to non-extractive and co-created research, which contributes to live conversations (in other words, a transdisciplinary research ambition), we studied three phases of activity in the REIPPPP:

1. The Department of Energy (DoE) IPP Office's dealings with community engagement – discussed in section 4 below.
2. A provincial government effort to foster relationships among district, local government and independent power producers (IPPs) – discussed in section 5 below.
3. An endeavour to assist in progressing practice reflection among economic development (ED) managers about their relational work with/in communities – discussed in section 6 below.

Research methods employed consisted of interviews with industry and government representatives; we were guided in this by ethnographic process studies of community development projects in order to trace decision-making and stakeholder interactions throughout the project cycle. Data were thus collected through qualitative interviews

(semi-structured and process interviews) with representatives of IPPs and government, and observations of meetings. This was supplemented by data from publicly-available IPP project-specific information.

4.6.4 THE EVOLVING RELATIONAL WORK OF THE IPP OFFICE

The IPP Office's involvement in the REIPPPP is manifold. Their primary role is to function as a procuring entity, which requires that they not be 'too prescriptive' or get 'too involved'.

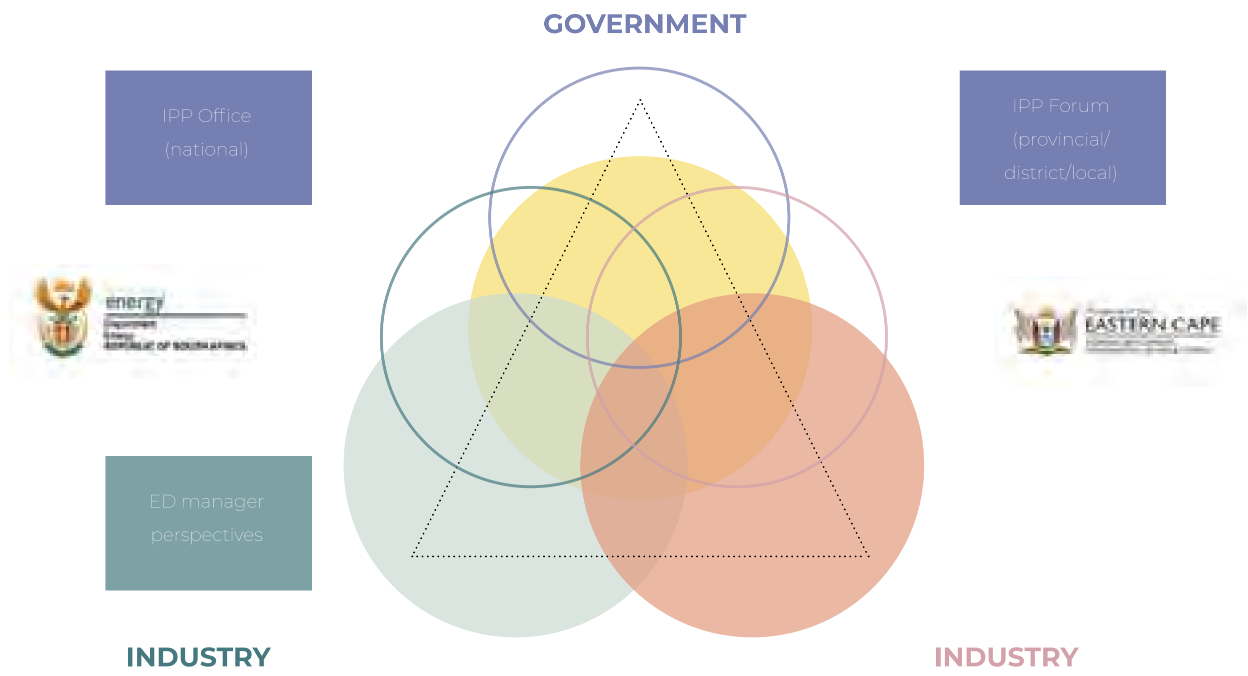

FIGURE **FIFTEEN** *Tentrans WP 2 research design (Source: Adapted from presentation given at Windaba Conference 2019)*

Soon after the programme started and projects were being constructed across the country, the IPP Office found themselves having to 'teach and educate' IPPs what was expected of them with regard to the management of stakeholder relationships, including those with local communities hosting projects. It was a key focus in these conversations, as well as in more intense mediation processes that were required at times, to raise awareness about the rules of the programme. Clarification on the roles and responsibilities of companies, communities and government (on all phases) was much needed. In 2015, the IPP Office hosted a workshop to this end, which was a once-off effort and not repeated.

Many of the IPPs experienced difficulties and conflicts, and requested mediation support. This required the IPP Office's staff to travel to project sites to assist construction teams in their conversations with local government and community stakeholders. While the IPP Office continued to sporadically host their own workshops or briefing meetings, they oftentimes acceded to requests to endorse the dialogue efforts of third parties. Allowing those efforts to be executed with the 'weight' of the IPP Office's supporting voice was critical to attract the attention of companies specifically, especially in the early years of the programme.

The IPP Office's role has morphed as the industry has matured over time and, in the process, the team has gained experience and capacity across all capabilities relevant to their performance, including the field of social performance. The IPP Office has learnt, and grown confidence in, ways to assist the private sector in navigating the more intricate relational dynamics that arise at the various stages of project construction and operation.

During the operational phase of projects, issues relating to community investments are foregrounded in the conversations with local government as well. Given local government's structural exclusion from any formal processes under the REIPPPP, these conversations differ a great deal across the REIPPPP landscape and frequently challenge IPPs and the IPP Office. This is a significant concern for the programme as whole, one that the Tentrans research took on in the second research arena (discussed in section 5 below).

The IPP Office has morphed as the industry has matured over time and, in the process, has gained experience in the field of social performance.

Tentrans' conversation with the IPP Office resulted in a feedback commitment, where it was agreed to exchange aggregated data from the IPP Office with feedback from Tentrans on their economic development (ED) reporting template. The ED reporting template, guiding IPPs' development of ED plans for 2019/20, asks projects to provide information about their community engagement efforts. To gauge the extent to which this is happening, Tentrans surveyed IPPs. Eleven anonymised responses revealed that projects make an effort to stay in conversation with communities. However, the level of detail provided differed vastly among IPPs, with some responses being very high level and thus not allowing for comparison or analysis of the quality of the said efforts.

An analysis of the ED template itself, which undergoes annual review and amendment, found that it poses open questions about community engagement, allowing IPPs to choose

the format and amount of detail they would like to share. The template is comprehensive (32 pages), and structured in four parts, including: (1) a recap of the SED and EnD project successes and shortcomings for 2018/19, (2) a situational analysis of the targeted beneficiary communities, (3) community consultation and identification of development needs, risks and opportunities and (4) a section outlining the expectations for the 2019/20 ED plan.

The research team made two recommendations for amending the ED template:

1. The template should enable IPPs to get feedback on the specific information provided by themselves (in the format of a summary report), as well as aggregated information provided by all IPPs. This would allow projects to compare their performance and would encourage the benchmarking of good practices.
2. The situational analysis of the targeted beneficiary communities should serve as a 'baseline' against which IPPs can check their impact and performance. Yet the data requested do not allow for such, for various reasons, which is further exacerbated by the fact that the quality of data provided for this template section is low.

Thus, we suggested a more direct way to assess ED performance towards community development: asking community stakeholders. A variety of methods exist to do this, including a formalised process being developed for assessing public service delivery in Kenya (Institute of Economic Affairs, 2017). Such processes allow information from communities to be considered in assessing ED performance, including any suggestions for improvement they might make. This information would be collected in a manner that ensures that community stakeholders can express themselves freely, even critically, without risking any personal (with the ED manager) or funding (with the seller) relationships. IPP projects would then be asked to review the community's feedback and comment on it in the ED plan they submit to the IPP Office.

An important aspect of the method is that it is designed to be constructive, not destructive. It provides a basis for inclusive dialogue about visions, achievements and challenges for the affected and involved stakeholders. This would empower communities in their interaction with IPP projects, ensuring that this becomes less of a one-sided, top-down relationship.

This suggestion, if it finds its way into policy, could be an opportunity for IPPs to deepen their engagement with local stakeholders. Currently, the relational work of the IPP Office – and this will be influenced and shaped by its own internal capacity in the future – is as uncertain as the future of the overall procurement programme. There are serious concerns about government's political will to see the REIPPPP succeed, which not only impacts the outlook of the IPP Office itself, but also the relationships in projects, as these are shaped to a large degree by the increasing contestation of political and economic interests in the energy transition debate nationally.

4.6.5 PROVINCIAL GOVERNMENT AGENCY IN SUPPORT OF TRANSPARENCY AND DIALOGUE

The team at the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) in the Eastern Cape Province has been proactive in supporting the successful implementation of the REIPPPP for many years, with Germany's international development agency (GIZ) working alongside them. In 2019, DEDEAT's working premise could be rendered thus: 'If there were an improvement in the information flow among the IPPs, public and municipalities, then there would be greater transparency resulting in more trust between communities and the REIPPPP'.

This was fuelled by their everyday experience in conversations with IPPs and local government, which painfully showed that local government's prevailing opinion of IPPs was negative, in particular regarding their 'alleged community investments' of which 'nothing was evident'. The DEDEAT feared the effect of losing political support for RE in the province and set out to achieve two things:

1. Facilitating the set-up of the Sarah Baartman District Municipality's Intergovernmental Regional Forum, bringing together IPPs and local government for regular exchange about community investments.
2. Developing a GIS-driven (geographic information system) approach to display the distribution of SED and EnD benefits among different communities and concurrently assisting municipalities and IPPs to coordinate their integrated development plans (IDPs) and ED plans.

The Tentrans team entered into a 'thought-partnership' with the DEDEAT team, allowing for information and ideas to be exchanged. Frequent conversations enabled the DEDEAT team to ask for advice, especially on issues relevant to the advancement of their objectives.

4.6.5.1 Sarah Baartman District Municipality's Intergovernmental Regional Forum

It was deemed important to ensure a comfortable means of convening for both IPPs and local municipalities, in order to prevent the spread of incorrect information, and to enable, upfront, effective coordination on any plans by IPPs to invest in projects that align with local government's constitutional mandate to promote 'social and economic development'. In June 2018, plans were formalised to establish an intergovernmental regional forum, a "technical platform for the local government and IPPs to work together on uplifting local communities and developing local economies supported by other stakeholders" (Province of the Eastern Cape 2018).

PART FOUR 4.6 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

DEDEAT's role in the Forum was defined as secretarial support. The Sarah Baartman District Municipality was made the convener of the Forum, with its members being local municipalities, and a permanent Forum member was assigned from each participating municipality. Those members were asked to commit to providing assistance to IPPs on any challenges they might experience in relation to local government. The IPP Office was invited and IPPs were asked to support the vision of the Forum. DEDEAT also reserved the right to invite any relevant ad hoc stakeholders, including development agencies; the Tentrans research collaboration fell under this category.

In this context, we suggested (among other things) that the Forum develop an 'engagement protocol' outlining roles and responsibilities, including timelines, that would guide the engagement between local government and IPPs in the planning, decision-making and implementation of community investments.

4.6.5.2 GIS-driven approach to displaying the distribution of benefits

With the same intention in mind (namely, to improve transparency and information flow), DEDEAT sought to capture all SED and EnD measures undertaken in the REIPPPP since it started in 2011. The ambition was to transform the data into a mapping programme to digitalise the spatial component of the SED and EnD measures (see Image 4 below).

The effort was riddled with difficulty and eventually discontinued. The DEDEAT team experienced significant challenges in developing an appropriate data collection template, and then in accessing the relevant data. IPPs referred them to the IPP Office, and the IPP Office was, in turn, unable to share project-level information with a third party, referencing their contractual arrangements with IPPs. A solution as to how to navigate data sensitivity and confidentiality was not found.

However, the team insists that, to give governmental planning the necessary perspective, it is critical to be cognisant of IPP community investments (planned and ongoing). Further, spatial awareness about the spending is important to allow for integration and coordination. Efforts to this effect are ongoing.

IMAGE **FOUR** *GIS map example developed by DEDEAT/GIZ in the Eastern Cape, depicting IPP community investments (Source: DEDEAT/GIZ, 2019)*

4.6.6 CORPORATE PERSONNEL AT THE COAL FACE OF IMPLEMENTATION

Our third research arena was inspired by the partnership of the Tentrans project with the South African Wind Energy Association (SAWEA), which has been convening a working group dedicated to furthering community development practices among IPPs.

Much of the literatures on RE projects and community engagement has focused on what goes on 'outside the fence', studying the experiences of external stakeholders such as local government and communities (Owen & Kemp 2014). Where more detailed studies have been conducted of community engagement practices in the broader natural resource-based literature, researchers have often focused on the ways in which such practices serve as forms of co-option and "governing from a distance" (Ingamells, 2006; Li, 2007; Rose, 1996). Such critique is important and real, yet tends to portray corporate community engagement practitioners simply as the extended arm of corporate or state interests.

Fewer studies have examined what goes on inside the fence: how practitioners are positioned intra-organisationally and what their perspectives are (as pointed out by Coulson et al. 2017; Bebbington et al., 2017; Owen & Kemp, 2014). Yet there is much to learn from the

internal workings and actors of companies, and from studying community engagement practitioners – as demonstrated by practice literature (Nicolini, 2012). Firstly, doing so can help us understand the 'why' of community engagement practices (why they develop as they do) and, secondly, can shed light on the challenges, opportunities and agency of the individual practitioners.

Owen and Kemp (2014) provide important insights through their heuristic framework for understanding the position of community engagement practitioners. While we do not apply their framework here directly, we draw two things from their work, namely, the internal dimensions and their relations to practices, and how the dynamics thereof may change over time for individual practitioners. We suggest that the subjectivities and agency of ED managers is also important to take into account, because their personal aspirations, professional experiences and perceptions matter, and because they have agency. Their roles, and indeed the very nature of community engagement, provides room for discretion and manoeuvring, including the piecing together of different forms of community engagement (Cleaver & de Koning, 2015), thereby performing institutional work (Lawrence et al., 2013; Nicolini, 2012).

Wlokas (2017) revealed that relationships among REIPPPP stakeholders are precarious and sensitive, especially on the ground. Thus, ED practitioners, being the 'human face' of these companies in communities, have a critical mission to build trusting relationships. These relationships need to not only stand the test of time – and oftentimes changing ownership structures and corporate cultures over time – but also need to provide answers to the pressing relational challenges between corporations and communities in post-Apartheid South Africa.

In this context, to kick-start the research process, we hosted a training and research workshop in April 2019, aiming to build the necessary capacity to strengthen company-community relations. The workshop combined technical training on community engagement and facilitation techniques with an exploration of initial research questions, which allowed the Tentrans team to further refine its working assumptions and interview protocol. For the interviews, Tentrans engaged with ED practitioners currently or formerly employed in IPPs. In respect to the sensitivities the research was navigating, all data were anonymised and, for some interviews, confidentiality agreements signed.

Four key messages stood out:

1. The opportunity and need to learn from one another, within and across industries, about community engagement is currently under-utilised in the South African renewables sector.

2. Awareness about relevant training and existing know-how on engagement needs to be improved to make it more accessible for practitioners.
3. There appears to be vastly under-explored potential for collaboration on engagement specifically, and among IPPs in 'hot-spot' areas particularly, to prevent and manage engagement fatigue in communities.
4. Lastly, it was recognised that value lies in reflecting on and growing a professional practice that is evidence-based and can be disseminated and applied elsewhere. This requires individual practice development and collective processes, to allow learnings to surface and be documented.

4.6.7 CONCLUSION

The community benefits of renewable energy IPPs is one (important) disputed element in the contested debate of South Africa's energy transition discourse. Local government, in particular, appears dissatisfied with the local economic development contributions of IPPs, but also lacks access to adequate information. Disinformation and lack of information, generally, is negatively impacting political support for RE and the sustainability of community benefit delivery.

The pace at which the industry's social performance practice is maturing, especially in the field of community development, is impressive.

The research found that the IPP Office's role changed over time as they increasingly observed the industry professionalising their social performance efforts. In response to challenges in the implementation of early round projects, the IPP Office implemented some rule changes (such as altering the beneficiary radius) and included community engagement questions in the annual ED template to further gather information about the social performance of the sector. Our advice to the IPP Office was to raise awareness and support industry learning by further utilising the (existing and ongoing accumulation of) ED data for public dissemination. It was recommended that the programme rules be further amended to incentivise greater multi-stakeholder collaboration.

Concluding, the pace at which the industry's social performance practice is maturing, especially in the field of community development, is impressive. This is fostered and supported by a growing 'community of practice' of personnel: economic development practitioners and community liaison officers especially. This gives reason to hope that increasing collaboration across IPPs is possible, and that these learnings will further professionalise community development practice. This is vital for enhancing the developmental impact of the programme

and influencing policy-making for a just energy transition.

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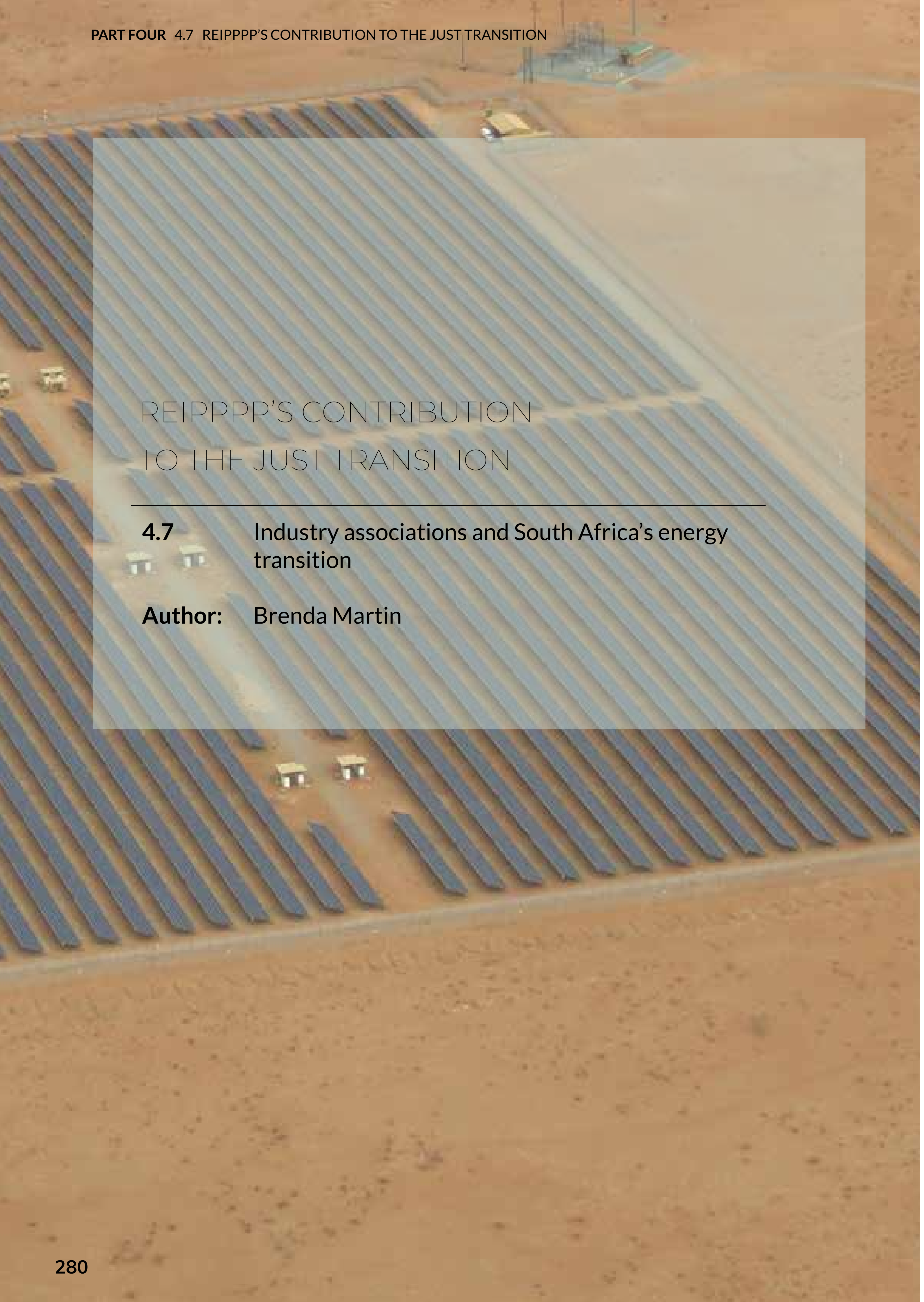

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.7 Industry associations and South Africa's energy transition

Author: Brenda Martin

4.7.1 INTRODUCTION

In this chapter, I reflect on a recent eventful period within South Africa's unfolding energy transition, in which a handful of new renewable energy industry associations have been established. The period was characterised by an extended delay in the public procurement programme for renewable energy (RE), a growing resistance to independent power producers (IPPs) by organised labour, and mounting public contestation of the pace and scale of the transition away from coal.

A particular event captures the dynamics I wish to highlight, when the South African Wind Energy Association (SAWEA) – of which I was chief executive officer (CEO) at the time – found itself involved in a tense legal matter brought by the Coal Transporters Forum (CTF). Industry associations seldom operate in a confrontational manner, preferring the approach of 'quiet diplomacy' and generally serving very narrow interests. In the CTF matter, however, SAWEA felt the need to depart slightly from this norm at the request of affected entities, and to represent members of the broader RE industry; and, further, to ensure that common concerns were addressed through an organised, resourced, and effective legal response.

Between mid-2017 and March 2019, millions had been spent on fees required for responding legal action. Throughout the protracted process leading up to a hearing in the North Gauteng High Court, SAWEA had spent many hours briefing counsel, liaising with affected members of industry, and generally ensuring that an organised response was possible. In the process, a substantial body of evidence had been collected, including the policy framework supporting the market introduction of utility-scale privately-owned renewables, the policy basis for coal-fired power station closures, data on employment created by the renewables industry, independent research on the energy transition and regulations relevant to all.

Finally, the SAWEA Chairperson and I headed for court. In the room with us were senior representatives from labour, one of the most vocal critics of independent power producers (also previously an acting CEO of Eskom), and a number of militant CTF members. The tension in the room was palpable. A few rows ahead, a total of 12 senior counsel were ready to present their arguments.

In its heads of argument, CTF claimed that the National Energy Regulator of South Africa (NERSA) had not followed due process in approving generation licences for preferred bidders from Round 4 of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), and that the addition of renewable power was directly threatening the jobs of coal transport employees. They asked that the court cancel the power purchase agreements (PPAs) for Round 4 and all previous bid winners. (Recall that projects from Round 1 to 3 had already been in operation for several years, and construction for Round 4 projects had already begun). The IPP respondents countered that all due processes had been followed in line with government policy, from procurement to selection of preferred bidders, including NERSA consultation and approval, and the eventual conclusion of PPAs.

Two full days had been allocated to the CTF matter in the court calendar. In the end, given the strength and clarity of the IPP case, which was supported substantively by co-respondents the Department of Energy (DoE), NERSA and Eskom, all was concluded within two hours. Judgement was reserved until about one week later, and the court found in favour of the respondents and issued a costs order. At the time of writing, this judgement was being appealed by the CTF.

Three other legal matters were underway in parallel to the CTF matter. A complaint was lodged by SAWEA with the Competition Commission and separately with NERSA, both pointing to the pitfalls of having a vertically integrated monopoly (Eskom) that was well placed to stall the successful procurement of power generated by IPPs. In these two cases, SAWEA was only acting on behalf of its own members. The third matter took the form of an urgent interdict brought by Transform RSA and the National Union of Metalworkers South Africa (NUMSA) on the eve of Round 4 PPAs being signed in March 2018. As in the CTF matter, SAWEA was asked by IPPs operating in the broader RE industry to represent their interests in this case.

As the legal and public representative of its own members and under a new mandate from the members of the broader renewables industry, the association was thus acting in fairly unchartered territory. Not only had it undertaken to coordinate the industry-wide work of ensuring adequate legal response via the nation's courts, it was also embroiled in the battle being waged against South Africa's private RE sector as a whole in 'the court of public opinion'.

4.7.2 WHY INDUSTRY ASSOCIATIONS ARE FORMED AND JOINED

While the legal cases described above were a significant facet of SAWEA's work over the course of two years, it was but one of many other services rendered to members during a period of heightened tension within South Africa's energy transition. As a bit of background, industry associations are non-profit organisations (NPOs) that are funded by businesses and individuals who typically join as founding members and set up a democratic operational structure. Members are invested in a particular industry and see the value in being part of an organised group with a common purpose and access to resources that can be applied in the collective interest.

In terms of the global wind industry, established associations exist in the United States, Ireland and Canada. In some cases, such as in Australia and the United Kingdom, technology-specific industry associations have started with a focus on wind power and then morphed into a broader spectrum of renewable energy. As wind power is a mature technology, the wind industry tends to have a large share of the global renewable power market, and is often better resourced than other technology associations. In South Africa, the wind industry produces more than 50% of all renewable power.

Generally speaking, industry associations are comprised of industry leaders who set out to work together to build a professional and sustainable industry and industry organisation. Members realise that, together, they have more impact and influence than working alone, and associations provide an ideal means through formally established structures. Much depends on the capacity of members to give time to the association. Large company members take a more organised approach, identifying a representative for each working group, while smaller companies are more selective about which working groups to be part of.

SAWEA imposes a few limits on participation, including the number of employees from any single company that can participate in any one working group, certain working groups being open only to a specific part of the industry, and certain categories of membership not allowing for participation in working groups. Associations generally work with a high awareness of contemporary anti-competitive rules of engagement and some working groups develop their own additional rules to avoid conflicts of interest.

The RE industry as a whole is made up of a diversity of actors, with a diversity of power relations, interests and resources. These are outlined in sum below:

- **Developers** are typically aggressive in their pursuit of policy positions favourable to market entry and optimal financial margins; some will be more proactive about socio-economic development innovation, others less so.

- **Original equipment manufacturers** (OEMs) who have invested significantly in setting up national operations are typically aggressive in their pursuit of policy positions favourable to local manufacture and/or imports – depending on the balance of local and offshore investments; some will see adherence to local supply as a competitive advantage, others will actively seek to prioritise imports and related returns on investment.

- **Operating IPPs** are mainly concerned with stable market conditions favourable to the smooth operation and maintenance of plants, satisfied shareholders and happy beneficiary communities; some will proactively engage with local socio-economic objectives, others will prioritise consistency with international priorities.

- **New market entrants** awaiting further rounds of procurement have to exercise great stores of patience and are required to demonstrate their long-term commitment to the South African market, while often receiving zero investment returns for several years; some are able to take a long view, others view South Africa as a market-entry base for the continent, and yet others set a tight time limit on their risk exposure.

- **Training, research, economic development consultancies and knowledge production groups** join the association in order to access information, influence practice and be in a position to grasp opportunities that align with their agendas; some set aside narrow interests and focus on matters of common concern, others retain a focus on narrow concerns.

During my tenure as CEO, SAWEA – like many other industry associations – had a small operational team, with six working groups made up of volunteers from among members, and a governing body elected from among members. As senior office bearer employed by the industry, I was the most consistent 'face' of the association: I was appointed on a three-year contract, worked with elected board members who were rotated from time-to-time, and was held accountable for consistent responses on behalf of the industry to the public, government and organised groups. In these circumstances, I worked with a keen awareness of the need to achieve a fair balance of member interests, powers and contributions, for the short and long term. In addition, given the country's unique socio-economic history, a major priority for me was to actively position the industry as a valuable contributor to ongoing development.

4.7.3 AN INDUSTRY ASSOCIATION NAVIGATING TRANSITION

Industry associations do not typically operate in contexts as politically thorny as the South African energy sector. Unemployment in South Africa stands at 29% (Statistics South Africa, 2019) and, 25 years into its democracy, the country remains one of the most unequal societies globally. The World Bank has concluded that inequality has in fact grown since the democratic transition (World Bank, 2018). The national economy has been shaped around a mineral-energy complex for decades. The poor quality, but numerous, job opportunities in the mining and power sectors have existed alongside a significantly changing political

landscape, which has seen the transfer of ownership of some coal interests to a small number of black industrialists, all while vibrant socio-political transition has been underway.

Industry associations do not typically operate in contexts as politically thorny as the South African energy sector.

It is therefore no surprise that the South African energy transition is highly contested. Rather than acknowledging that the transition as a whole is resulting in new levels of complexity, uncertainty and change for people, and making productive proposals from that place of acknowledgement, some vested interests actively propose that the introduction of utility-scale renewable power is directly to blame for job losses. This approach is taken particularly by those employed by the 'sunset' coal industry, and it has been particularly damaging for the national RE industry.

Given this context, SAWEA's work was performed with a keen awareness of what was at stake. Indeed, this led the association to take on a unique role: calling for the drafting of a comprehensively consulted industry charter on transformation. I elaborate further on this commitment below, and make the case for going beyond compliance, particularly in the context of the REIPPPP.

4.7.3.1 An industry association navigating transition

In early 2017, as part of our three-year plan and recognising the value of being proactive, SAWEA initiated the drafting of an industry-wide consulted charter. We selected a task team to undertake the work. Members of the industry contributed the additional funds required to ensure that the process was sufficiently consulted and managed and also provided support by hosting task team meetings. The task team was assisted by an external facilitator who took the responsibility for drafting the emerging text of the commitment statement.

The task team held four working meetings during the course of 2017, participated in group consultations and held small bilateral discussions with members. SAWEA working groups were each invited to produce a supporting statement relevant to the themes they worked on, including, for example, operating assets, economic development and policy. As working groups grappled with what they wanted to say, an important process of deep synthesis occurred. Because working groups are made up of member representatives, the conversations they were having extended back to their companies where issues were discussed in more detail and later filtered back to the working groups.

At SAWEA's annual general meeting (AGM), the sixth and final draft of the commitment statement was adopted unanimously and later launched in an open session at Windaba 2018. The preamble to the more detailed statement reads as follows:

As members of the South African Wind Energy Association (SAWEA) we commit to the South African public that, in all that we do, we will seek to contribute to improving the quality of life of all, especially those who have been systematically disadvantaged and those whom our industry touches directly through its operational practice.

The statement itself goes into more specific detail of action to be undertaken in particular areas, including management and employment, supply chain, local community development, access to finance, and ownership. It also specifies how working groups will contribute to both measurement of ongoing progress and ultimate achievement of commitments. The statement is available to the public via the SAWEA website.

4.7.3.2 Why go beyond compliance?

The REIPPPP is unique in that it explicitly requires the private sector to make commitments to achieving economic development benefits – beyond the core business of power supply. As a result, significant cumulative socio-economic benefits had already been realised through the programme by 2017, which seems to imply that there was no need for an industry association to introduce additional commitments. Members of the industry recognised, however, that change at scale was more likely to be achieved through considered, focused areas of priority action. They also hoped that the additional commitments would be recognised as a further demonstration of good faith from an industry with much to offer in South Africa's energy transition.

In practical terms, the transformation commitments hold major promise. They could result in faster, more goal-directed growth in the number of women employed in positions of industry leadership; accelerated, industry-wide career advancement opportunities for young professionals; more rapid transformation of the diversity profiles of shareholders and boards as part of an industry standard; and the introduction of province-specific interventions to include more local businesses in the RE supply chain. I was repeatedly heartened by the willingness of members – whether from local or international companies – to get behind the additional commitment, and to do so on a voluntary basis.

4.7.4 CONCLUSION AND RECOMMENDATIONS

It is common cause that between 2016 and 2019, momentum on the country's energy transition slowed down. Recent policy momentum suggests that early investment gains

may be salvaged. That said, industries operating within a developing economy cannot ignore contextual realities or hope to be judged solely on their potential to offer techno-economicvalue. Instead, they must recognise the need to act with a far broader sense of responsibility and accountability to national socio-economic agendas.

Industries operating within a developing economy cannot ignore contextual realities or hope to be judged solely on their potential to offer techno-economic value.

When entry to transition markets remain challenging for local investors, when transition will negatively impact entire sector value chains and when dynamics of power and money can very easily undermine the developmental agenda, formal bodies representing any growth industry will find themselves at the heart of important zones of contestation. How industry associations, as representatives of diverse market actors, manage their responsibilities within these zones of contestation matters a great deal.

I took on the role of industry office bearer with some awareness of the opportunities and pitfalls that present themselves to organised groups who seek to influence vested interests within a market taking shape in the context of a contested transition. The importance of that transition being driven by evidence and related policy is easily forgotten in the thick of what can often be a messy battle for what is at stake.

I left the Industry in the second quarter of 2019 with a much richer insight into the power and human dynamics at play, both within and around associations. My belief in the value of collectively organised and goal-directed action that addresses important historical failures while moving decisively toward a better energy future, is unmoved. Having said that, a deepened understanding of what can and should be achieved by an association in this complex context, brings with it an awareness of how much is well beyond the control of most organised groups. This is particularly true when the industry in question is – despite its best efforts to comply with additional requirements – at the mercy of the market effects of stop-start procurement, caught up in the growing trend of false facts and dwindling public confidence, at the receiving end of growing public dissatisfaction with slow access to opportunities, and so much more that falls well outside any one entity's locus of control.

The importance of driving the transition with evidence and policy is easily forgotten in the thick of what can be a messy battle for what is at stake.

IIt is my hope that industry associations working within the South African energy sector continue to pay attention to those areas of socio-economic development that are within their and their members' control and which are relevant to the successful achievement of the energy transition occurring at an important crossroads for our democracy. I highlight three areas for priority action below.

1. Setting clear, specific agendas and acting on these at every opportunity. For example, the objective of transforming the industry can be addressed through day-to-day employment practices, by improving the accountability and diversity of boards, strengthening community engagement processes, and achieving measurably transformative shareholding.
2. Actively working with stakeholders in allied industries who share common economic development concerns, whether in relation to growing visible community benefit at scale, designing transformational supply chain policy or identifying priority public-private economic opportunities within the energy transition.
3. Holding government to account and calling for the urgent strengthening of institutions and regulators concerned with market oversight. The South African energy transition requires far stronger institutional oversight to ensure that it is successfully achieved.

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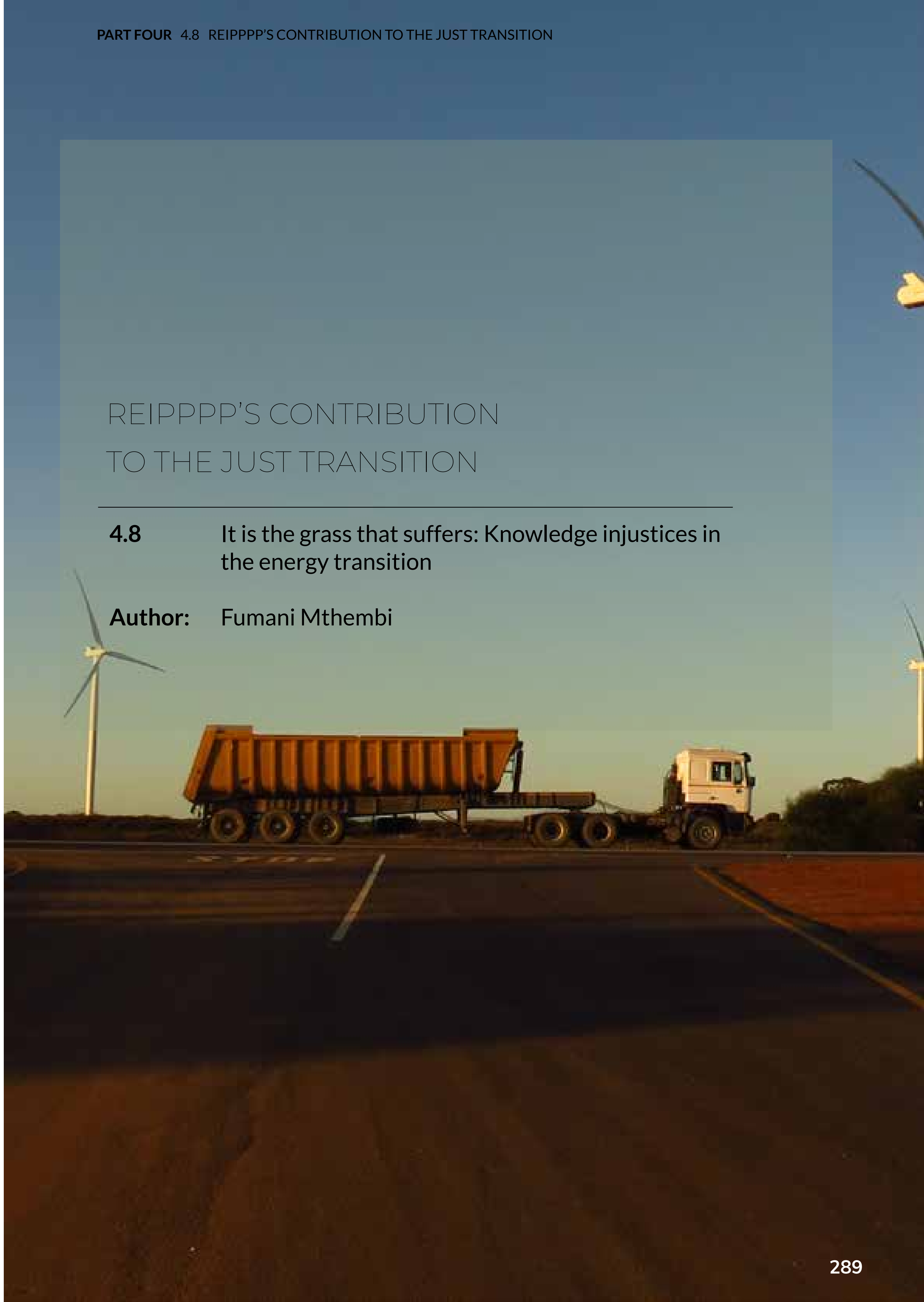

REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

4.8 It is the grass that suffers: Knowledge injustices in the energy transition

Author: Fumani Mthembi

4.8.1 A BRIEF NOTE ON POSITIONALITY

This paper is informed by my positionality as a co-founder and executive head of the Pele Energy Group. The Group, founded in 2009, operates along the full value chain of the renewable energy sector. We are, at once, energy investors and community development workers, having cultivated the capabilities to not only own and operate power plants, but to actively lead the development of the communities that host them. As a function of this, my identity is multi-layered: I am a black elite with access to investment capital for the financing of multi-billion Rand projects; a black entrepreneur without access to working capital for day-to-day business, struggling to keep the lights on; and a black development professional, working to find a sustainable response to the challenges of social and economic exclusion that continue to define black communities.

The thread connecting all of these facets is that the identity that I lead with, namely my being Black, is not one to which I can make an individual claim. My being Black is the product of a collective struggle. It therefore follows that any benefit derived from it should be expressed in ways that advance the collective from which it flows. It is for this reason that one must apply a critical lens, asking always whether the framing of black participation, from its most elite to its most communal incarnations, resonates with the project that so many died for, physically and spiritually. It is from this position that I reflect on the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) – its impact to date, and what I believe it can achieve – understanding that energy is but a part of a much larger journey of transition to a South Africa (and, indeed, a world) to which we can all claim genuine belonging.

4.8.2 INTRODUCTION

Beyond electricity supply, an over-arching goal of the state-managed transition to renewable energy is social progress, formally articulated as 'development' (IPP Office, 2019: 2). It is to produce an outcome for the people of South Africa that leaves them better off than they were before, across various development indicators. This goal is reiterated repeatedly by a key custodian of the transition, namely the Independent Power Producers Office (IPP Office), which introduces all of its reports with a reflection on the National Development Plan (NDP) (National Planning Commission, 2012).

Yet, almost a decade into the REIPPPP – the boldest of the state's energy transition programmes to date – there remains a lingering sense, supported by evidence, that the

transition is failing to progress society as envisaged and, in particular, that it is failing the most vulnerable communities (Adeleke et al., 2016). This chapter argues that this is a failing not only by the NDP's standards, but by the Constitution's highest aspiration, namely for South Africa to "belong to all who live in it" (DOJ, 1996: 1), a reference to development as the universal experience of ownership and participation in society.

To investigate the question of belonging, the analysis introduces the notion of 'epistemic participation' as central to the broader experiences of inclusion, equality, human dignity and development. This draws on theories of epistemology that argue that epistemic agency – the experience of the self as a valid knower – is a vital building block to the experience of the self as fully acknowledged in its humanity (McConkey, 2004: 200). To delve into the question of how it is that the REIPPPP intersects with the notion of belonging, this chapter frames the programme as a platform for epistemic participation and, by extension, contestation. Specifically, the theory of epistemic justice is employed. Seminally articulated by Fricker (1998, 2006, 2007), the theory considers not only what constitutes a 'justified true belief' (per the standard inquiry of the field of epistemology), but also the role of identity in mediating whose knowledge ultimately counts. This identity-centric approach is particularly appropriate in South Africa, given its history of segregation and the persistence of deep social stratification, most sharply along racial lines. In recognising the power of epistemic participation for validating human identity, the question 'Whose knowledge counts?' is asking not only which knowledge claim is validated, but which life is acknowledged (McConkey, 2004: 200). This is therefore an investigation into whether, in the epistemic contestations of the REIPPPP, some knowledge claims – and, critically, identities – are given more or less recognition than others and, by extension, whether the REIPPPP fosters more or less belonging in South African society.

Fricker's work fits with the tradition of Foucault and Gramsci, who critically theorise about the subjective underpinnings of knowledge production by drawing attention to the macro-level workings and implications of epistemic contestation. Foucault sees knowledge as dialectical to power, arguing that the powerful determine what is deemed 'knowledge' (Gordon, 1980). Per the Foucauldian framework, we learn that knowledge and power continually reproduce one another. Gramsci's theory of hegemony adds an important layer of meaning to the notion of a knowledge/power dialectic. It not only affirms the existence of discourse as framed by knowledge/power, but also shows that discourses are ranked in terms of the powers that shape them (Gordon, 1980). In this way, the powerful perpetuate their dominance by imposing their discourses. Furthermore, according to Foucault, the 'political economy' of the dominant discourse is defined through its insistence on scientism; its reliance on institutions that produce scientific knowledge; its large-scale diffusion through political and economic apparatuses; and its centrality to political debates and ideological struggles (Gordon, 1980).

Power, by virtue of its dialectical relationship with knowledge, has the potential to increasingly exclude the excluded.

What Foucault and Gramsci do successfully is draw attention to the devastating impact of power in the context of epistemic contestation, demonstrating that it has a compounding effect. Put simply, power, by virtue of its dialectical relationship with knowledge, has the potential to increasingly exclude the excluded. It is important to this analysis, and for the specific context of REIPPPP, that epistemic exclusion is not limited to discourse, but also speaks more fundamentally to the material aspects of human experience.

4.8.3 THE REIPPPP IMPASSE: GROUNDING THEORY IN CONTEXT

An analysis of epistemic justice is necessarily about actors and discourses (Fricker, 2006). For the contextual discussion which follows, the most public and impactful epistemic contestation within the REIPPPP thus far is considered, specifically the 'impasse' of 2016 to 2018, when progress virtually stalled and so-called 'policy uncertainty' reigned (Austin, 2017). While the REIPPPP is not the only state-led energy transition programme, and the state is not the only actor driving this process, the size and impact of the REIPPPP – including such impressive statistics as 6 328MW procured and USD20.5 billion invested (Eberhard & Naude, 2016) – make it a central piece of the country's overall transition story.

This chapter examines this key moment in the REIPPPP to illuminate the epistemic contestation that has occurred, the precise nature of the discourse and the actors behind it. It makes evident that battles, framed in terms of 'technological' and 'commercial' interests, ought also to be understood as epistemic challenges that connect fundamentally and inextricably with social progress, even if the language of 'societal' interests is not explicit in the discourse. The assigning of 'winners' and 'losers', and what that communicates about epistemic participation, is also important to the analysis of how the discourse actually unfolded in this context.

An under-explored phenomenon related to the REIPPPP impasse remains: the silence of REIPPPP host communities. Often referenced as key beneficiaries of the programme, these communities were eerily silent about the possibility of the programme's demise. These are the same communities that are due to receive ZAR26.9 billion through community trusts, as well as ZAR30.3 billion in enterprise and socio-economic development spending over the next two decades by virtue of existing within the beneficiary boundary of solar plants and wind farms (IPP Office, 2019). Isolated by history and geography from comprehensive social and economic participation, it is surely an uncontested truth that REIPPPP communities need the investment that renewable energy (RE) power plants promise. Why, then, would they not be ardent defenders of the REIPPPP? Through their silence, energy communities beckon us to reckon with a much deeper question about development: can people experience progress in the absence of epistemic participation?

4.8.3.1 Coal versus renewables versus nuclear

What eventually came to be understood as the impasse presented initially as tardiness and incompetence on the part of Eskom, South Africa's state-owned electricity utility, which seemed unable to commit to a date to sign the contracts for bids awarded in Round 4 of the REIPPPP in 2014 (Austin, 2017). What was not evident at first was that this was in fact a coordinated position – if not officially, then certainly by key protagonists within the utility – informed by a more fundamental reservation about RE as a technological, political and economic choice. Indeed, it was not clear that Eskom was positioning itself as the official counter-party until a fairly advanced stage.

Rather than make an explicit statement, Eskom withheld its signing powers to communicate its position. A 2017 parliamentary portfolio committee paper of the National Department of Energy (DoE) would eventually summarise the Eskom position as follows:

> *REIPPPP projects resulted in a higher cost to Eskom than it could recover through tariffs paid by its customers and thus had an adverse impact on its balance sheet.*
>
> *The REIPPPP would cost the South African consumer more than would otherwise be charged for electricity, adding 4.9% to tariffs.*
>
> *The REIPPPP is not needed as there is an oversupply of electricity and lower demand as a result of low GDP growth.*
>
> *Shutting down of five coal-fired power stations is as a consequence of the renewable IPPs. (Department of Energy, 2017)*

Thus, Eskom's position on RE was that it was unnecessary, expensive and job-destroying. This position would come to be shared by various stakeholders, including unions in the coal sector, and some political groupings such as Black First, Land First and Transform RSA (Booysen, 2018). In defence of RE, a loose lobby was formed, made up of academia (notably, the University of Cape Town's Energy Research Centre and the MIRA Programme at the Graduate School of Business), various independent power producers (IPPs), and their respective associations, the South African Wind Energy Association and the South African Photovoltaic Industry Association (SAWEA & SAPVIA).

The renewable energy lobby's argument was succinctly stated in a later article by Rod Crompton (2019), which articulated the problem with Eskom, although at that point not as a direct conversant in the impasse. Crompton stated that Eskom's financial troubles were rooted in a history of mismanagement that pre-dates the REIPPPP (Crompton, 2019). While conceding that earlier rounds of the REIPPPP were more expensive to procure than coal-fired power, the lobby contended that this was no longer the case in relation to the round of projects that was being blocked, and that these were in fact cheaper than coal (Crompton, 2019). The lobby also maintained that tariff increases, as experienced by the end-consumer, needed to be more transparently presented by Eskom and viewed in the light of the utility's broader financial management (particularly its failure to manage the construction costs of its most recent investments, Medupi and Kusile, which are delayed, budget-exceeding and malfunctioning (Crompton, 2019)). It was thus argued that it was Eskom's business model as a whole, and not renewable energy in particular, that would result in increased tariffs (Crompton, 2019). The only concession on the part of the RE lobby pertained to job creation. Still, they insisted that job losses at existing power plants should be articulated as a part of the natural cycle of retiring old power stations, rather than as a direct consequence of the REIPPPP (Ormajee, 2018).

In tandem with this contestation, the utility's long-term view on energy generation was starting to become known, with a parallel procurement process emerging for nuclear power (Cameron, 2016). David Mahlobo, the Minister of Energy in October 2017, pronounced that,

"South Africa has made a policy decision to pursue nuclear energy as part of the energy mix and recognises the role of nuclear as a base-load source of energy in ensuring security of supply and climate change mitigation (South African Government News Agency, 2017)."

Nuclear power, it was argued, would fulfil a more necessary purpose: base-load power. It would come onstream at a time when the economy had grown enough to warrant new electricity capacity and, unlike renewable energy, it would not suffer the problems of intermittence and variability (South African Government News Agency, 2017). Importantly, nuclear power would answer two key questions that neither coal nor renewables could simultaneously satisfy: job creation and no carbon emissions (South African Government News Agency, 2017). The steepest challenge with respect to nuclear power would turn out to be cost. Indeed, for a utility arguing that costs were at the heart of its reluctance to contract new renewable energy, it was difficult to believe in its financial readiness to contract a multi-year, mega-project for which it would be entirely liable (Booysen, 2018).

3.2 Winners and losers

What the above dynamics make evident is that the discourse of the REIPPPP impasse was dominated by the scientism of electrical technology and, for the most part, spearheaded by large, institutional actors. A statement from an Eskom executive in a 2017 article demonstrates this acutely: "It is a facts-based, scientific debate and, difficult as it is for anyone

PART FOUR 4.8 REIPPPP'S CONTRIBUTION TO THE JUST TRANSITION

to be truly objective, we should attempt to keep it within that space" (Joubert, 2017). This maps perfectly onto the Foucault/Gramsci epistemic contestation model of the knowledge/power dialectic among hegemonic institutions.

However, it is worth noting that the differences in technology preferences were not driven by a 'pure' commitment to the technology itself, but were also, perhaps more deeply, intertwined with commercial interests. As an illustration:

- Many of the IPPs who are invested in the REIPPPP are also pursuing opportunities in the coal IPP programme (EE Publishers, 2016).
- The National Union of Metalworkers of South Africa (NUMSA), among the unions who publicly fought against REIPPPP at first, reformulated its stance in favour of RE under conditions of a just transition (Dhlamini, 2018).
- One of the key faces of the anti-REIPPPP lobby, Koko Matshela (former acting chief executive officer of Eskom), now owns an energy firm, Matshela Energy, that intends to aggressively develop renewable energy projects (SAIEE, 2018).

In other words, the true driving power of the discourse was, arguably, who profits from, rather than the benefits of, the competing technologies.

Of greater concern to this analysis is that which was implied, but not explicitly fought for, in the contestation. Implicitly embedded in the epistemic contestation are fundamental differences in the vision for South Africa – not as an electricity producer, but as a society. 'Coal versus renewables versus nuclear' is also a debate about who works; what types of skills are developed; which businesses participate in the mega procurement chains; which communities earn the benefits of hosting power generation facilities; and what kind of role South Africa plays in the global fight against climate change. Yet these important issues remained mostly hidden. Save for the unsuccessful challenge of the Coal Transport Workers Union, which attempted to interdict the signing of REIPPPP contracts (Creamer, 2019), the debate lacked visible and organised actors fighting for the broader implications of whichever energy transition ultimately won out.

For their part, environmental groups have fought against the emergence of new coal-fired power plants under the IPP framework (Overy, 2018), advancing a position of environmental protection. However, their fight did not find a neat home in the context of the REIPPPP impasse, perhaps because of their purism among a cast of more complicated actors.

Ultimately, the impasse resulted in a complete quashing of the pursuit of nuclear power. As outlined in the state's national electricity plan, the draft Integrated Resource Plan (IRP) of August 2018, the DoE decided that a small allocation of new generation capacity ought to go to coal-fired power, while the bulk of what lies ahead is to go to RE (Department of

Energy, 2018: 41). The IRP claims that this outcome represents a 'least-cost' model; that is, the cheapest way to arrive at the projected demand for power supply. It makes no further reference to all the other societal meanings of electrical power. The next communication on the matter would be delivered by the president of the country in the first State of the Nation Address of 2019, where he announced that Eskom would be unbundled, and addressed the matter of the utility's financial and technical governance (Ramaphosa, 2019).

By privileging RE, we can deduce that the state holds a particular position on the societal implications of electrical power. However, the absence of specific references to the types of jobs, skills, entrepreneurs and communities we seek to develop by pursuing this path, leaves a gaping hole in planning and epistemic participation, which may very well undermine this choice in future.

4.8.4 RISING UP FROM THE GROUND

Couched in the context of the REIPPPP, this chapter has sought to explicate the nature of epistemic contestations at the heart of South Africa's energy transition. By identifying the lobby groups that produced the 2015 to 2017 renewable energy 'impasse' as visible actors in the discourse, the link between theory and context has been demonstrated, with large institutional players dominating discourse through a heavy reliance on scientism.

Drawing on the African proverb, 'when elephants fight, it is the grass that suffers', this chapter has also made evident that dominant actors have the power to silence the masses whose interests are implied by the outcomes of the contest, but not explicitly pursued as the purpose of contest. Here the societal implications of electricity – jobs, skills, enterprise and community development – took a backseat in the epistemic contest that was the REIPPPP impasse. And, true to the theory of epistemic justice, the identities of those whose testimonies were given voice – educated, wealthy, professional men – drove what became accepted as valid knowledge claims about the path forward. They were the proverbial elephants, while the communities, dissolved in silence into the background, were the grass.

At the core of this paper is a call for a deeper contemplation of this silence. The question remains: why would communities, made up of poverty-stricken households, present as indifferent to billions in potential investment? It is the ultimate argument of this chapter that what we deem as 'participation', manifest as consultation, is patently hollow. Rather, we should receive the silence of RE communities as a gift, an opportunity to listen to the

essence of their voice: so, not the voice coerced into agreement in community halls, but a voice in protest. In other words, though the 'elephants' were loud, large and visible in the contestations of the impasse, let us not be fooled into thinking that the 'grass' was not making its own kind of claim.

Why would communities, made up of poverty-stricken households, present as indifferent to billions in potential investment?

It is by assuming a radically democratic view of the world that we come to recognise that, while there may be inequality in discourse – epistemic injustice – there is never genuine absence from discourse. The epistemic is always in play, even among parties not participating in the mainstream discourse. The people are always thinking, interpreting and testifying, even if to unseen audiences, and it is on the basis of this view that silence, too, becomes a knowledge claim worthy of attention. A deeper reading of the notion of epistemic justice draws attention not only to the overt and literal contestants, but also to the silent and obscure.

As we contemplate the energy future of South Africa, we are called upon to read deeper into the silences, to draw the excluded into discourse, and to listen also, when they say nothing. Epistemic justice, the recognition, inclusion and affirmation of all actors, is not just a discursive imperative. The lesson of the billions that communities seem not to value is that, before 'development' can be experienced as material, it is an output of the mind – a knowledge claim of the imagined alternative. Put differently: without epistemic participation, there can be no justice, and without justice, no belonging. This is the story of the energy transition and the story of democracy and engagement in South Africa: that a freedom unimagined, is a freedom unexperienced.

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PART FIVE 5

BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.1 Blockchain: An enabling technology for a transition to a decentralised and decarbonised energy system in South Africa?

Author: Andrew Murray

5.1.1 INTRODUCTION

Driving towards Johannesburg from a westerly direction is like entering a post-apocalyptic landscape. The first thing one notices are plumes of smoke masking the clear blue sky. At first one might mistake them for clouds. Yet, when the coal power stations come into view, it becomes clear that they are vast dark clouds of smoke being blasted out of giant chimneys, as the plants work relentlessly to feed the hungry nation's electricity needs. The next noticeable blot on the landscape are vast areas of grassland that have been carved out by excavators. These open-cast mines excavate coal, which is essentially the fossils of trees buried millions of years ago. This fossil fuel is fed into furnaces to generate steam which, in turn, is used to rotate turbines, causing a flow of electrons which are then fed over thousands of kilometres – in the form of electricity – to the people of South Africa.

While it is an indisputably brilliant invention, technologically speaking, this system is environmentally catastrophic. Eighty-nine per cent of South Africa's electricity comes from coal-powered sources, making it the 13th highest carbon-emitting country in the world (Halsey et al., 2017). As such, South Africa needs to reduce its carbon emissions to meet targets set within the Paris Agreement (Parr, Swilling & Henry, 2018). The country's carbon-intensive electricity sector has also had significant economic impacts on municipalities and consumers. Electricity prices have increased by 408% between 2003 and 2016 (River et al., 2018). There is also a pressing need for municipalities to adopt new and profitable business models which embrace the uptake of private generation, while still providing citizens with affordable electricity (River et al., 2018). Another defining feature of South Africa's carbon-intensive economy is that it is highly centralised. When systems are centralised, their resilience is easily compromised because they often have single points of failure (Manson, 2001). In the context of the South African energy system, Eskom is the single point of failure, and because it is failing, the entire energy system is compromised (Montmasson-Clair, 2017). Considering these dynamics, the energy sector is experiencing considerable pressures, making it ripe for transformation.

Electricity trading between small-scale producers and consumers within localised municipal distribution networks is a model which municipalities can adopt in response to the changing energy system that renewables offer (River et al., 2018; SALGAa, 2018; Bronkhorst et al., 2019). There are, however, obstacles to realising and managing the decentralised systems that enable this sort of small-scale trading, mostly because of the increased system complexity (River et al., 2018). One technology that has the potential to resolve many of these obstacles is blockchain.

Blockchain, the software behind Bitcoin, has attracted considerable attention as a disruptive technology due to its ability to disintermediate and decentralise centralised systems (Ahl et al., 2020). There are an increasing number of organisations around the world developing blockchain-based solutions for the energy sector (Andoni, 2018). Most of these are designed to enable decentralised electricity trading within networks with distributed renewable energy (RE) technologies (Montemayor & Boersma, 2017; IRENA, 2019).

The chapter explores research conducted into the applicability of blockchain technology in the South African context, in order to determine what role it could play in the transition towards a decentralised and decarbonised energy system for the country. Through extensive research and interviews with energy and blockchain experts, an innovative blockchain-based electricity trade application in South Africa was developed. The following exploration thereof is informed by the sustainability transitions literature, with specific focus on the multi-level perspective and strategic niche management (Schot & Geels, 2008).

5.1.2 SYSTEM TRANSITIONS AND NICHE INNOVATIONS

The multi-level perspective (MLP) is useful for analysing socio-technical system transitions because it categorises system transitions into three levels: niches, regimes, and landscapes (Raven, van den Bosch & Weterings, 2010), as follows:

- ‘Niches’ refer to micro-level environments, separate from dominant regimes, where new innovations (such as blockchain-based applications), are free to develop.
- ‘Regimes’ refer to established system rules and institutions which constitute the dominant ways in which societal needs are met. The Eskom-owned coal power plants form part of the energy regime in South Africa.
- ‘Landscapes’ refer to sources of pressure, beyond the influence of regimes and niches, which can cause regimes to change.

The need to decarbonise human activity to avoid climate change could be classified as a landscape-level pressure on energy regimes. The MLP suggests that niche innovations have more potential to become integrated into regimes if those regimes are under pressure and require new ways to meet societal needs (Geels & Schot, 2007).

The strategic niche management (SNM) framework suggests approaches that can be used for developing niche innovations, recommending that innovations be developed in isolated niche environments before being introduced into dominant regimes (Raven et al., 2010). SNM best practices fall into three categories:

- The voicing and shaping of visions and expectations.
- The building of social networks.
- The use of constructive learning processes.

These frameworks are useful because they provide insights into methodologies that can be followed to maximise the potential for innovations to develop, mature, and integrate successfully into systems. These guiding principles can also enhance the potential for innovations to eventually replace the dominant ways in which societal needs are fulfilled within a given system.

5.1.3 OPPORTUNITIES IN THE SOUTH AFRICAN ENERGY TRANSITION

As mentioned, the dominant South African energy regime follows a centralised model whereby electricity is generated on a large scale, primarily by Eskom-owned, coal-based power plants (Elsässer et al., 2018). It is then transported via the Eskom-owned transmission network to distribution networks, and finally to end-users (National Treasury, 2011). Most of the South African distribution networks are owned by municipalities, which purchase electricity from Eskom and re-sell it to consumers for a profit (Bronkhorst et al., 2019). While the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has resulted in the development of distributed large-scale RE projects, which are owned by independent power producers (IPPs), the energy system remains largely centralised. These IPPs are required to sell their energy to Eskom, where it enters the Eskom transmission network – or ‘the grid’ – before it can reach municipalities and end-users (Fourie et al., 2015). On a national scale, the energy system will remain centralised as long as the transmission network is Eskom-owned and IPPs are prevented from selling electricity directly to municipalities and consumers.

Having said that, there are changes taking place within the municipal distribution networks which may enable a more decentralised energy system to be realised. There has been considerable growth in the uptake of private electricity generation in South Africa over the past decade, largely in the form of roof-mounted solar photovoltaic (PV) panels (Baker & Burton, 2017; Korsten, Brent, Sebitos & Kritzinger, 2017; SALGA, 2018b). This has decreased the demand for electricity from municipalities, negatively impacting their profitability and diminishing the revenue they rely on heavily for service delivery (National Treasury, 2011; River et al., 2018). Municipalities will face further revenue losses if they fail to adapt their electricity-related business models (Baker & Burton, 2017; Korsten et al., 2017; River et al., 2018).

The energy system will remain centralised for as long as independent power producers cannot sell electricity directly to municipalities and consumers.

Electricity trading within distribution networks represents a profitable and viable model that municipalities can adopt to mitigate the situation (SALGA, 2018a). This can be achieved via two methods:

- 'Wheeling', which entails municipalities allowing producers and consumers to use their distribution networks, for a fee, to trade electricity (Bronkhorst et al., 2019). It is expected that there will be widespread municipal adoption of wheeling by 2022, with the City of Tshwane, Nelson Mandela Bay Metropolitan Municipality and the City of Cape Town currently leading the adoption (Bronkhorst et al., 2019).
- 'Municipally managed electricity trading', which entails local producers being paid by the municipality for their excess private generation, which is then re-sold for a profit (Bronkhorst et al., 2019). Of the 165 municipal electricity utilities in South Africa, the number that have implemented municipally managed electricity trading has gone from five in 2016 to 25 in 2018, a 500% increase (SALGA, 2018b).

These electricity trading models are still in their infancy, yet are clearly gaining traction in South Africa. While they have the potential to overcome some of the challenges presented by the current regime – such as a high dependence on fossil fuels, high electricity prices, energy insecurity resulting from load-shedding, and threatened municipal profitability – they come with associated challenges that municipalities need to consider. Some of these include:

- Managing bi-directional energy flows (Alanne & Saari, 2006).
- Increased system complexity (SALGA, 2018b).
- Uncertainty regarding when and how to procure electricity (River et al., 2018).
- The lack of procurement experience and competence in many municipalities (River et al., 2018).
- Budget and capacity constraints (River et al., 2018).
- Matching local supply and demand (Alanne & Saari, 2006).
- Managing local energy being fed into networks (SALGA, 2018a).
- Managing many variable and intermittent energy resources – because most are RE technologies and therefore production varies with weather conditions (Alanne & Saari, 2006).

These challenges present opportunities for new innovations to be introduced. The research discussed in this chapter explores the potential for one such innovation, namely blockchain-based electricity trading, to overcome these challenges.

5.1.4 BLOCKCHAIN AS A DISRUPTIVE TECHNOLOGY

Often referred to as a 'disruptive' technology likely to contribute to a fourth industrial revolution, blockchain is increasingly being appreciated as much more than the software behind the Bitcoin cryptocurrency (Schwab, 2018). Since its introduction in 2009 by Satoshi Nakamoto, blockchain has become recognised for its ability to facilitate transparent, tamper-proof, peer-to-peer value exchange within decentralised networks (Crosby, 2016).

Some blockchain applications might be more disruptive than others, depending on how drastically the systems they are being integrated into are affected. While there is a lot of hype around blockchain and the transformational effects it will have on systems and on society at large, we are arguably yet to see any true large-scale societal disruption. Recall that the multi-level perspective suggests that niche innovations have more potential to integrate into dominant regimes if the regimes are unstable (Geels & Schot, 2007). To say that the South African energy regime is unstable is a gross understatement – one only has to refer to nationwide load-shedding as evidence (Bischof-Niemz & Creamer, 2018). There are, therefore, opportunities for niche innovations to develop and replace the dominant ways in which electricity needs are met. Blockchain-based electricity trading is one such niche opportunity.

5.1.5 THE BLOCKCHAIN–ENERGY SYSTEM NEXUS

Because of its capabilities in managing value exchange within decentralised networks, blockchain is well suited for managing transactions within decentralised energy systems comprised of distributed producers and consumers (Ahl et al., 2020; Hasse, von Perfall, Hillebrand, Smole, Lay & Charlet, 2016). The primary ways in which blockchain is currently being used in the energy sector are for electric vehicle charging, electricity trading, emission tracking and trading, smart-grid management, and energy infrastructure financing (Orlov & Bjørndal, 2017; Gustafsson, 2017). The dominant application type is electricity trading, though existing projects are still largely in their developmental stages and yet to be widely adopted (Donnerer & Lacassagne, 2018). Most organisations working on these applications were formed in the past three years and the majority of the projects remain in the proof-of-concept phase (Montemayor & Boersma, 2017; Donnerer & Lacassagne, 2018).

Blockchain is useful for the management of electricity trading in networks with distributed RE technologies because it enables real-time recording of energy flows and automated transaction management between producers and consumers in a secure and tamper-proof manner (Donnerer & Lacassagne, 2018). Blockchain-based electricity trading applications commonly incorporate automated dynamic pricing models which adjust tariffs based on local supply and demand, lowering consumption tariffs when supply is high, and increasing them when the system is constrained (Lavrijssen & Parra, 2017). These types of applications can have many positive implications, including increasing grid resilience and independence, automating the management of intermittent energy-generating resources, peak-load shifting, supply and demand matching, increasing system efficiency, and encouraging investments into RE technologies (Mengelkamp, 2017; Zhang et al., 2017; Andoni et al., 2019; Hoa Nguyen et al., 2018).

5.1.6 THE POTENTIAL VIABILITY OF BLOCKCHAIN-BASED ELECTRICITY TRADING IN SOUTH AFRICA

Given the preceding background, the remainder of this chapter reports on the interview selection, substantive findings and recommendations of the research in focus. The implications and challenges related to the blockchain application concept that was developed are also outlined.

5.1.6.1 Interview selection

This research focused on four primary questions:

1. Is blockchain-based electricity trading viable in South Africa?
2. What form of electricity trading could blockchain be applied to?
3. What would such an application look like?
4. What would the implications of the application be?

To seek possible answers, extensive interviews were conducted with energy system and

blockchain experts. Four forms of electricity trading were explored as potential applications for blockchain. The first two have already been identified above, namely, 'wheeling', and 'municipally managed electricity trading'. The second two, identified in the interview research, are 'third-party facilitated electricity trading', and 'trading within micro-grids'.

The interviewees included individuals from PowerX, Energy Exchange of Southern Africa, GreenCape, City of Cape Town Municipality, the Council for Scientific and Industrial Research (CSIR), and BridgIoT.

- PowerX was selected because it is the only organisation that has managed to acquire an electricity trading licence from the National Energy Regulator of South Africa (NERSA) and is therefore the only organisation in South Africa practising grid-tied third-party electricity trading (Radmore, 2018).
- Energy Exchange of Southern Africa was selected because it has been trying to acquire an energy trading licence from NERSA to implement third-party electricity trading (Greubel, 2018).
- GreenCape was selected because it is a non-profit organisation that works with government and the private sector to support a transition to a green economy (GreenCape, 2019). It also publishes research papers on the energy transition and advocates for electricity trading within South African municipal distribution networks (Bronkhorst et al., 2019).
- The City of Cape Town Municipality was selected because its emission reduction targets are considered progressive, it is supportive of legislation related to electricity trading, and because it has a high uptake of small-scale distributed RE technologies (Bronkhorst et al., 2019).
- The CSIR was selected because it has published papers on electricity trading and has identified blockchain as a technology that would benefit electricity trade management (River et al., 2018).
- BridgIoT was selected because its chief technology officer (CTO) has extensive experience with electrical engineering and blockchain technology. The CTO's research focus has been on the use of blockchain for managing energy trading within systems with distributed RE technologies.

5.1.6.2 Summary of findings

There are many barriers that independent organisations face in aiming to trade electricity via the national grid – The two organisations involved in third-party electricity trading, PowerX and Energy Exchange of Southern Africa, struggled considerably in trying to wheel electricity through municipal distribution networks. The barriers they encountered include municipal resistance, difficulty in obtaining use-of-grid agreements, and extremely lengthy and complicated administration (Greubel, 2018; Nel, 2018). Organisations wanting to act as third-party traders also face significant challenges associated with obtaining electricity trading licences from NERSA (Greubel, 2018; Radmore, 2018).

The City of Cape Town Municipality views blockchain as a tool with potential to address some of their trading and billing-related challenges – The City of Cape Town faces challenges associated with billing local small-scale producers of electricity and with getting owners of private electricity-generation technology to register their assets (Haw, 2018). It is optimistic about the potential for blockchain to manage localised electricity trading and is exploring how it could be applied (Haw, 2018).

Decentralised blockchain architectures are inappropriate for energy trading in South Africa – A highly decentralised blockchain design which aims to remove intermediaries altogether and enable strictly peer-to-peer energy trading between producers and consumers is not viable for grid-tied trading in South Africa because of the centralised nature of the incumbent energy system (Greubel, 2018; Haw, 2018; Radmore, 2018; Carter-Brown, 2019).

Municipalities have capacity to drive an energy transition, yet often lack the resources to do so – A blockchain application created and implemented by municipalities could be viable; however, many lack the capital and resources to do so (Radmore, 2018).

A relatively centralised blockchain architecture would be appropriate for energy trading within municipal distribution networks – An appropriate blockchain design to facilitate electricity trading within South African distribution networks would have to be a private, permissioned blockchain implemented by local municipal authorities (De Lange, 2019). Unlike the very decentralised Bitcoin blockchain – which is public, does not require permissions, and is not controlled by any centralised organisation – this blockchain type would be controlled by the municipal authority. This recommendation is supported by IRENA (2019), who argue that private permissioned blockchains are more suitable for energy utilities looking to implement electricity trading within regulated markets.

Smart-contracts have potential to overcome many of the barriers associated with grid-tied energy trading that independent organisations face – There is potential for a blockchain application to incorporate smart-contracts, which could facilitate use-of-grid agreements and power purchasing agreements (PPAs) and automate commissions payable to municipalities in a transparent and tamper-proof manner (De Lange, 2019).

Linking local production and consumption to variable tariff structures can assist with grid balancing – A blockchain application which utilises a dynamic pricing model, and which automatically adjusts electricity tariffs based on local supply and demand, could assist municipalities in matching local electricity supply and demand. This would assist them in balancing their grids and becoming more independent from Eskom (De Lange, 2018).

Micro-grids offer suitable incubation conditions for development and experimentation with energy trading models – An appropriate environment in which to develop a blockchain-based electricity trading application would be a micro-grid, isolated from a municipal distribution network (Greubel, 2018).

5.1.6.3 Recommendations for a viable blockchain-based electricity trading application

Considering the barriers faced by parties wanting to wheel electricity through municipal distribution networks, and the challenges faced by municipalities in managing electricity trading, there is clear potential for blockchain-based applications, especially given that their capabilities are particularly well suited to addressing these issues. The following application recommendations are based on insights from research findings.

1. ***A private, permissioned blockchain*** – This blockchain type would provide the municipality with a level of control over the application, while still enjoying the automation and transparency benefits of blockchain.

2. ***Features to connect producers and consumers wanting to wheel electricity*** – Considering the challenges associated with wheeling, there is potential for the application to act as a municipally provided platform that producers and consumers use to connect and trade electricity. This would give the municipality a transparent view of transactions taking place and ensure that they receive their due use-of-grid commissions. Smart-contracts built into the platform could facilitate PPAs and use-of-grid agreements, which would overcome many of the administrative barriers that parties wanting to wheel electricity currently face.

3. ***Automated municipally managed electricity trading*** – Considering the lack of municipal capacity and capital to implement and manage electricity trading, the application could automate the procurement and re-sale of locally-produced private electricity.

4. ***Feature for private generation system registration*** – Considering the challenges experienced by municipalities related to private generation system registrations, the application could enable generators to register their systems via the platform. This registration could integrate them into the localised electricity trading scheme.

5. ***Dynamic pricing*** – The implementation of dynamic pricing based on local supply and demand could assist grid managers with grid balancing and peak-load shifting, and could improve network independence.

5.1.6.4 Developing and integrating the blockchain application

It seems that there is potential for radical energy system transformation, were a blockchain-based electricity trading application to be effectively developed and integrated into the South African energy system. The following developmental recommendations are based on combining research findings with strategic niche management recommendations.

1. Develop the application within a micro-grid before it gets introduced and integrated into the dominant regime.
2. Create a collaborative public-private partnership. Raven et al. (2010) recommend the development of a diverse social network, which could include private companies, policy-makers, research groups and users of the application.
3. Foster a constructive learning process. Experimentation and the questioning of assumptions should be encouraged.

5.1.6.5 Implications, challenges and considerations

Based on the literature review and research insights, certain implications and challenges would need to be considered and addressed for such an application to be implemented. Firstly, regulations would likely need to be adjusted to recognise the digital smart-contracts within the application as legally-binding PPAs and use-of-grid agreements. Secondly, further research would be required to determine what the public-private collaboration, needed for the development of the application, would entail. Finally, smart meters, which can track real-time production and consumption, are a prerequisite for the implementation of the application. There may be accompanying challenges associated with costs, connectivity, compatibility and meter ownership.

5.1.7 CONCLUSION

Given the pressures that exist within the current South African energy system, it seems a real possibility that a blockchain-based energy trading application could provide a viable solution, in spite of the challenges outlined. There is undoubtedly significant potential for municipalities to adopt such an application within their distribution networks.

Applying blockchain to the South African energy system could be said to be one of the first truly disruptive applications of the technology.

The benefits of the application are predicted to include increased municipal profitability, increased network independence and resilience, a catalysed transition to low-carbon energy

systems, and lower electricity prices for consumers. Given the potential challenges to its development and integration, however, there is no doubt room for further research.

Applying blockchain to the South African energy system could be said to be one of the first truly disruptive applications of blockchain because of the potential it has to reduce emissions, decentralise a highly centralised system, improve energy security and municipal profitability, enhance local economic development, and lower the electricity prices which are becoming increasingly unaffordable for people in South Africa.

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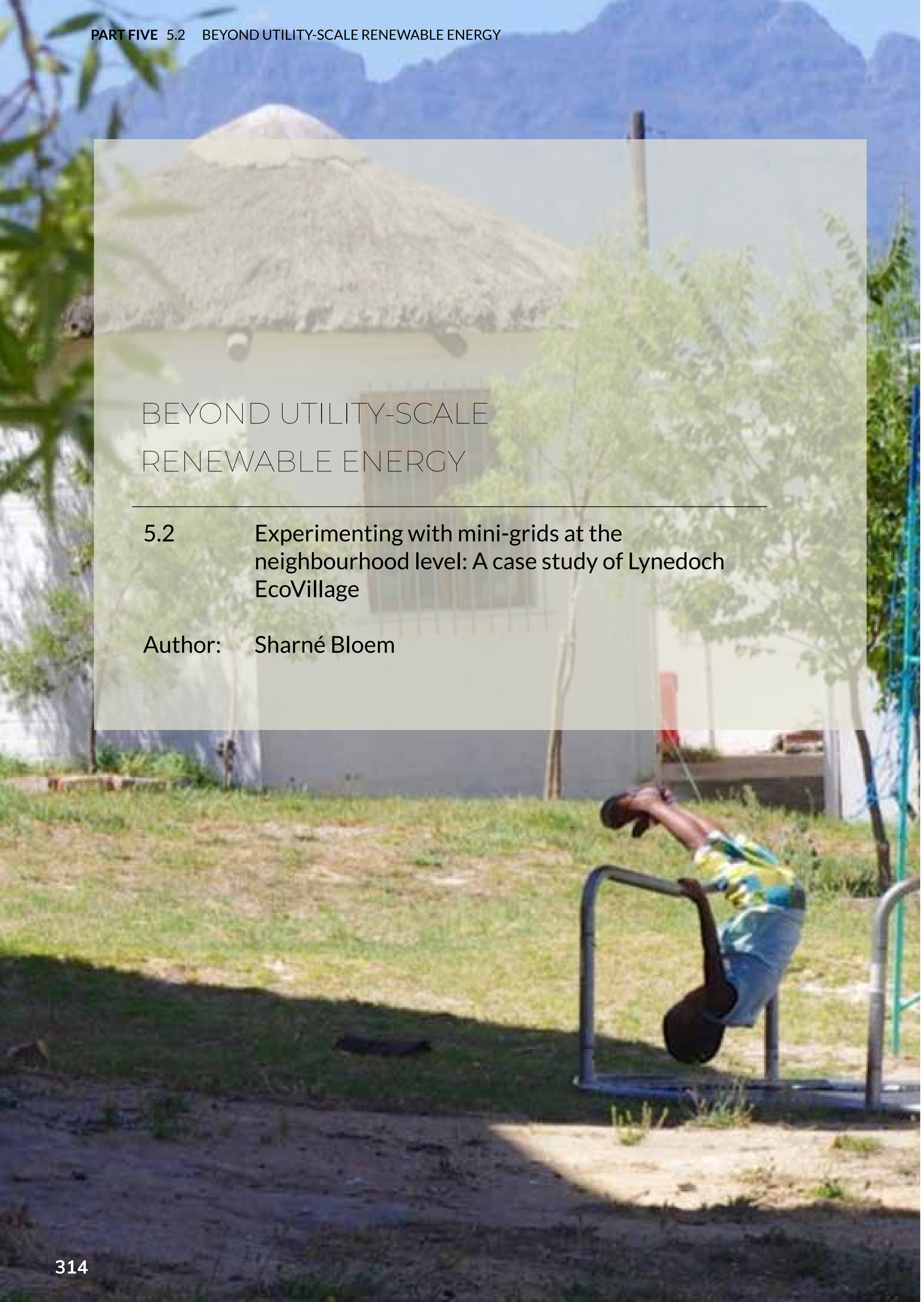

BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.2 Experimenting with mini-grids at the neighbourhood level: A case study of Lynedoch EcoVillage

Author: Sharné Bloem

PART FIVE 5.2 BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.2.1 INTRODUCTION

Energy democracy is a new idea and an emergent social movement. It is particularly useful as an instrument for understanding and therefore assessing the energy transition as a socio-technical process; in other words, as a co-evolving interaction between the users and the technology. Given the low levels of energy access across most of Africa, a super-grid solution to the current energy challenges makes little sense. In order to achieve the shift to energy democracy in Africa, a neighbourhood-level energy transition will arguably have to involve decentralised, efficient, low-carbon and equitable solutions. The move from utility-scale distribution networks to small-scale solar photovoltaic (PV) mini-grids partly contributes to this goal. One such mini-grid is a pilot project initiated by Eskom in Lynedoch EcoVillage, near Stellenbosch in the Western Cape. This socio-technical experiment sheds light on the complexities of realising energy democracy in practice in the South African context. It is presented in this chapter as an illuminating case study of an emergent community-based renewable energy system that shows how global processes affect local actors within different energy futures.

5.2.2 RESTRUCTURING ENERGY REGIMES: SMART-GRID SYSTEMS

Regardless of the source of generation, large centralised power plants have one prominent disadvantage: long distances between point-of-generation and point-of-consumption result in significant energy losses (McKenna, 2018). A smart-grid energy system is a popular alternative (Hojčková et al., 2018). The smart-grid is a decentralised interconnected electricity production system, something like the 'internet of electricity', where peer-to-peer energy trading can take place (Hojčková et al., 2018). The resultant micro-grid energy markets bridge the volatility and non-controllable generation challenges extant in current energy systems, ensuring a reliable balance of energy generation and consumption (Mengelkamp, Notheisen, Beer, Dauer & Weinhardt, 2018). Even with the uncertainties and fluctuations of renewable energy sources, small-scale peer-to-peer energy systems allow consumers and prosumers to actively trade energy in real time, ensuring that profits stay within communities (Mengelkamp et al., 2018). The case study that follows contains smart-grid and off-grid solutions; it is argued that both are decentralised systems with the potential to become good examples of energy democracy in practice.

5.2.3 OTHER SOUTH AFRICAN RENEWABLE ENERGY INITIATIVES

Before turning to the Lynedoch EcoVillage, it is worth briefly glancing at another example of renewable energy experimentation in South Africa. The Eskom Research, Testing and Development Laboratory in Johannesburg has been experimenting with different grid-connected and off-grid renewable energy technologies. They commissioned the first centralised rural mini-grid system in 2018 in Ficksburg in the Free State (Eskom Representative 2, 2019). This community of 120 people is completely off-grid, using gas for cooking and solar for heating water. The system capacity is 35kWp, with 90kWh of lithium-ion battery storage, and a state-of-the-art distributed energy resource management system developed by Eskom. It can dynamically control, supply and demand energy in real time for the community. The demand aspect is monitored by a smart-metering infrastructure installed in the home, which performs load-limiting based on weather conditions, cloud cover, and stored battery power. Eskom claims that this system has been running for 28 months without interruption, making it the first real-time Eskom-managed active distributed energy resources (DER) system in the country (Eskom Representative 2, 2019).

5.2.4 CASE STUDY: LYNEDOCH MINI-GRID SYSTEM

A mini-grid is a small-scale electricity-generation network (below 10MW) that supplies a small number of consumers through a distribution grid that can function as a so-called ‘grid-tied system’ or in isolation from the national grid. A grid-tied mini-grid is a semi-autonomous energy-generating network that can feed excess capacity back into the main grid and draw energy off the main grid. Within the mini-grid network, peer-to-peer energy trading is also possible. Energy trading is a new way of operating within a power system, where ‘prosumers’ generate their own power and sell excess energy to network members.

5.2.4.1 Background

About 12km from Stellenbosch, in the heart of the rural Boland in the Western Cape Province (see **Figure 16**), Lynedoch EcoVillage was established in 2000, with the Sustainability Institute (SI) and the on-site primary school shortly thereafter. This ecological, intentional community is culturally and socio-economically mixed, has a diverse living standards measurement (LSM) profile within the community, and is environmentally aware.

FIGURE **SIXTEEN** Location of Lynedoch EcoVillage (Source: Sharné Bloem)

The Lynedoch EcoVillage has recently become an experimental site for an Eskom pilot project; the mini-grid network comes in the form of an embedded renewable energy system. Originally, 27 households were included in an array of embedded photovoltaic (PV) solar systems (see **Image 5**), inclusive of smart meters, with the aim of improving energy efficiency and potentially enabling energy trading. This grid-tied mini-grid system was installed in 2016 by Eskom’s Research, Testing and Development Laboratory, and is the first of its kind in South Africa. The Eskom budget for the installation was ZAR4 million.

IMAGE FIVE

Lynedoch EcoVillage: a view of some mini-grid panels (Source: Sharné Bloem)

On paper, the total installed capacity of the mini-grid is 51.3 kW at peak, inclusive of the 27 households (Anderson, 2018). However, as not all roofs face north, the peak of individual systems is reached at different times of the day (Van der Westhuizen, 2018). The installed capacity of power that was supplied to the village by the Eskom grid prior to the PV installation was 103kVa, inclusive of the SI and the school (Eskom Representative 1, 2018).

5.2.4.2 Technical configuration

Every solar home system has the same solar PV system configuration installed, which includes an array of six Trina solar PV panels, at 320W per panel and a lifespan of 20 to 25 years (Van der Westhuizen, 2018). The system of six panels has a joint capacity of 1 920W. The panels mostly face north to north-west, at an angle of 20 to 25 degrees on the roof structures (Anderson, 2018). Direct Current (DC) from the panels feeds into the inverter (**Image 6**) via the charge controller (**Image 7**) (Van der Westhuizen, 2018). Alternating Current (AC) from the national grid feeds into the main breaker in the distribution box in the house, where the selector switch supplies either the house or the inverter with AC power (Van der Westhuizen, 2018). The inverter can also run 'backwards', taking AC in as input and outputting DC, to charge the batteries when the solar energy is inadequate. The charge controller sends a signal to the communications box (**Image 8**), which sends the information from the inverter and charge controller through a wireless signal to a central point in the village.

Currently, the load first draws energy from the solar PV panels, then from the grid if the solar PV energy is inadequate, and then from the batteries if both solar power and grid power are not adequate (Eskom Representative 2, 2019). The surplus energy gets regulated by the charge controller and stored in four lead-acid batteries (**Image 6 8kW Schneider Electric Conext XW+ Inverter**
Image 7 Schneider Electric Conext MPPT 60 150 charge controller
Image 8 Schneider Electric Conext ComBox (communications box)
Image 9) (Anderson, 2018). These batteries have a limit of 600 cycles; under load-shedding intensive conditions, when they need to charge a cycle every day, they last two to three years before needing to be replaced (Van der Westhuizen, 2020). The batteries are installed inside a water- and weatherproof steel IP65 box (**Image 10**) (Eskom Representative 1, 2018). These boxes have little to no ventilation, whereas lead-acid batteries need lower temperatures for optimal performance and lifespan. Indeed, some boxes have been installed in full sunlight and, as a result of damage in the high temperatures, the batteries have had to be replaced in less than two years (Van der Westhuizen, 2020).

The DC cabling is protected inside a special fire-resistant conduit (**Image 11**). A Sabre Contour ED Cyber E Smart Meter sits inside each house and measures the units used and units available in the micro-grid; currently, this information and data is monitored by Eskom's Research, Testing and Development Laboratory only. However, by the end of 2019, the billing of each household was still being measured by a meter owned by a third-party vendor (Engelbrecht, 2019) (reasons for this arrangement are explored further below).

IMAGE SIX

160A/h Maze VRLA AGM deep-cycle valve-regulated lead-acid batteries

IMAGE
SEVEN

Weatherproof but poorly ventilated IP65 box for battery storage

IMAGE
EIGHT

Fire-resistant conduits to protect DC cabling (Source for images 6-11: Sharné Bloem)

5.2.4.3 Maintenance plan

Making use of a maintenance plan to monitor the performance of a technical system is key. Clean panels are an important part of achieving the best efficiency levels for any solar PV system. Since installation of the pilot project in 2017 until mid-2019, panel cleaning had been outsourced to a local subcontractor. Every three months, any bird droppings and dust

were washed off the panels with a standard cleaning tool and tap water (**Image 12**) (Van der Westhuizen, 2018).

Preventative maintenance on the system was also done every three months. The most important aspects of this maintenance is to see that the batteries are in step (they should all have the same voltage); to inspect all components, terminations and wiring systems; to evaluate structural attachments and weather seals; and to conduct electrical performance tests and verify these against the original baseline (Van der Westhuizen, 2020). If these are all according to specification, the system is working properly. It took two to three days for the local subcontractor to do this maintenance (Eskom Representative 2, 2019; Van der Westhuizen, 2018).

In the months leading up to mid-2019, Eskom in general had had to cut costs, and the contract with the local subcontractor was, consequently, ended. The maintenance was thereafter replaced by Eskom Distribution; in other words, the utility now does the maintenance themselves. Since this move to maintenance as an internal responsibility, more challenges with batteries and systems have been reported (Engelbrecht, 2019). In a particularly dramatic example, the batteries in the box in direct sunlight became so hot that they caught fire. Whether this was the price to pay for the uncertainties of the 2019 load-shedding period, or whether maintenance was not done properly by Eskom, the fact remains that Eskom tried to handle the maintenance in-house despite its financial pressures, and the process has not been entirely smooth.

IMAGE
TWELVE

Solar PV panels being cleaned by a local subcontractor (Source: Sharné Bloem)

5.2.4.4 Socio-technical interaction

Any socio-technical system will encounter some challenges in the interaction between system users and the intended technical design. It was no different for the Lynedoch mini-grid system pilot project installations process. Some challenges were technical, while others were a symptom of the socio-technical transition itself.

Any socio-technical system will encounter some challenges in the interaction between system users and the intended technical design.

According to the households taking part in the pilot project, their experiences of the installation process were not always positive. Some felt that the installation had affected the wiring, causing them to spend money on electrician call-out fees. Most felt that the progress was slower than promised. Others felt there were no benefits for them; they had given their cooperation during the initial process but, after two years, were still paying the same amount per unit for Eskom power and for energy from the solar PV panels. In response, Eskom representatives claimed that they had experienced conflict with partner organisations, such as the National Energy Regulator of South Africa, NERSA. These challenges are discussed in more detail below.

1. Bottom-up or top-down?

The original 27 households had many questions for Eskom at a dedicated Home Owners' Association meeting, mostly about the timeframe of the already delayed process, the details of the contract, and what would happen after the two-year contract expired. Eskom representatives answered most, but not all, of their questions. This brought some peace of mind but concern remained, to the point that one household cancelled their involvement in the pilot project. When asked to give their reasons, the household explained that they felt that Eskom was neither listening nor considering important concerns. When Eskom was questioned about this development, the employees responded that they felt that some households asked too many questions, and that they ought to be more grateful for having energy while load-shedding happens in their district.

Throughout this period when its relationship with the community became more strained, Eskom still felt that the project represented a 'bottom-up approach'. Although this might have been Eskom's intention, in practice, real bottom-up co-designing involves creating solutions with stakeholders, rather than for them. The approach could be more accurately described as a top-down, consulting exercise, and not a co-design exercise. Furthermore, throughout this period, Eskom has been unilaterally gathering data from all the participating households, causing disgruntlement. Many of the households have changed their opinion about the project and are of the view that Eskom is not keeping their side of the agreement.

A. Setting the tariff

Before the installation of the mini-grid system, each household bought tokens from a third-party vendor, CyberVentIT (Engelbrecht, 2019). In 2018, the households paid ZAR2 per unit of electricity. After the technical installations, still in 2018, Eskom representatives suggested that CyberVentIT be taken out of the value chain and that all households become Eskom Direct clients, at ZAR1.27 per unit. Yet the meters belonged to the vendor, not to Eskom, so new Eskom meters would need to be purchased and installed. Eskom's budgetary challenges stalled the process, and the 26 households continued paying ZAR2 per unit until the end of 2019, by which time the installation of new Eskom Direct customer meters was still not completed (Engelbrecht, 2019).

Although paying an Eskom Direct tariff could benefit the households involved, a special renewable energy tariff would be the most appropriate way forward (Eskom Representative 2, 2019). Yet there is currently no agreed upon renewable energy tariff. According to an Eskom representative, negotiations between Eskom and NERSA had stalled; hence the delay with the pilot project tariff. Again, this is evidence, in the eyes of the community, of Eskom not following through on commitments made.

B. Net-metering mechanism

Increasing numbers of existing Eskom customers are interested in generating their own energy from renewable energy sources. In many cases, the surplus energy they generate could be available for selling back into the grid through a market mechanism called 'net-metering'. This could have a direct bearing on the participation of residential neighbourhoods in the energy transition. Indeed, when Eskom's Research, Testing and Development Laboratory initiated partnering with Lynedoch EcoVillage on this pilot project, a key goal was to contribute towards overcoming some of the challenges with renewable energy in residential areas in South Africa. It is important to note that, even though this mini-grid system was installed on the roof structures of the 26 participating households, it is the property of Eskom Holdings and will remain so even after the end of the pilot period (Eskom Representative 2, 2019).

Eskom sought to experiment with 'metering both ends[13], while staying true to one of its core values of being 'customer-centric' (Eskom, 2019). This involves metering the consumer on the one side and metering the prosumer on the other, and adding an income flow from the infrastructure by charging the consumer using the surplus energy (Eskom Representative 2, 2019). If this transition could be managed successfully, the 'middleman' could be cut out and cost could be lowered for the users (see **Figure 17**). In a nutshell, a net-metering mechanism would allow for the efficient trade of energy between consumers and prosumers, provided with a feasible tariff.

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13 To meter both ends means to meter the consumer and the prosumer. Eskom will thus make money twice on the same energy unit.

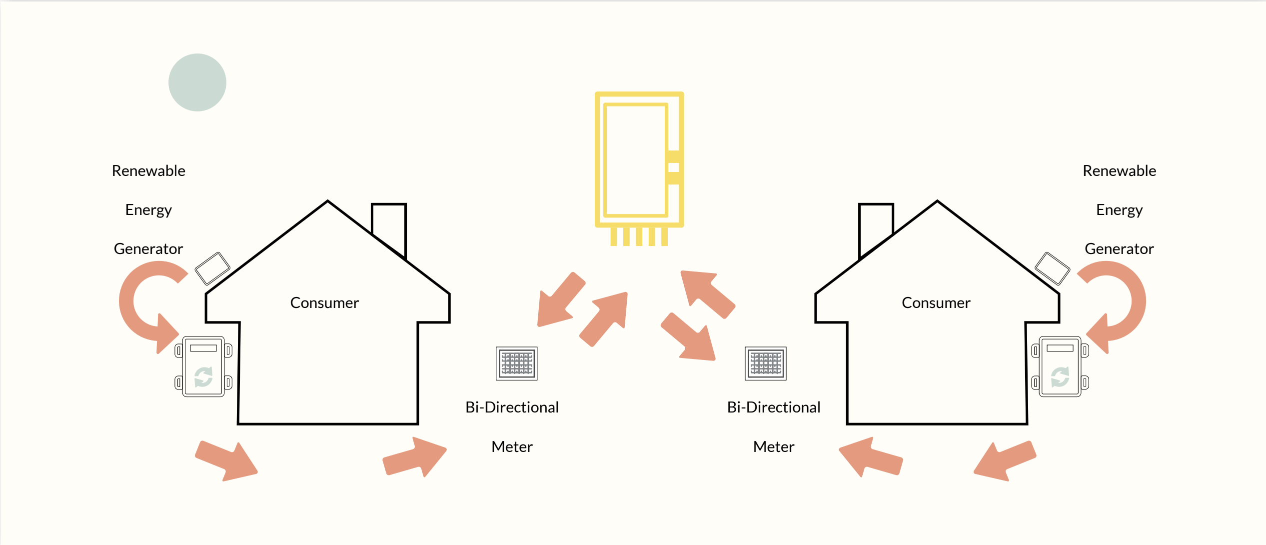

FIGURE SEVENTEEN *Metering both ends (Source: Sharné Bloem)*

Regardless of Eskom's goal to meter both ends, as a result of the delays in the installation and NERSA's delay in setting an appropriate renewable energy tariff, the net-metering mechanism has not materialised. The current standard industry norm is to install two meters, one for metering inflow and the other for metering outflow, with two different charges; normally, the outflow price is higher, thus creating the incentive. Throughout the delay in the Lynedoch EcoVillage project, there has only been one meter per household and, as mentioned, the households are still paying the same amount per unit, irrespective of the source of energy (Engelbrecht, 2019). The only real benefit realised so far is that the households use less grid energy, though without a financial incentive for doing so. At the time of writing, it is doubtful that the participants in this pilot project feel as if they are experiencing customer-centricity. In light of these three points, it is worth briefly comparing 'business-as-usual' conditions in South Africa – which are in many ways responsible for creating the hold-ups described above – to the 'Gold Standard' used by many countries, including Germany, The Netherlands, United Kingdom and Australia.

5.2.4.5 Comparison with the Gold Standard

In general, regulation is a big challenge in South Africa. According to Duby (2019), a mini-grid

specialist, the outdated regulatory system neither lends itself to dynamic tariffs, nor has it the ability to buy and sell power locally, therefore leading to a lack of independent energy brokers. A dynamic tariff structure includes a frequency-based tariff component, as well as a pre-announced time-of-day tariff, which charges higher prices for peak load periods based on historical data. Dynamic tariffs and independent energy brokers are emblematic of many energy-leading countries around the world. However, micro-grids have been proposed as a promising concept for an Integrated Energy System (IES) to reduce system uncertainties and improve performance (Wang, et al, 2018).

The ideal arrangement (the 'Gold Standard') would be a rooftop PV array feeding into a cheap inverter and using the grid as a battery, thereby allowing dynamic buying and selling into the grid (Duby, 2019). A separate grid-tied system would then allow the household to access national grid electricity via a dedicated prepaid metering system. In this way, each household would have two meters: one for renewable energy, the other for grid electricity. These elements would be much cheaper and much better for the infrastructure because there would be independent nodes of generation feeding in, putting less pressure on the infrastructure (Duby, 2019; Shahsavari & Akbari, 2018). According to Duby (2019), the Gold Standard in the rest of the world does not include battery back-up, charge controllers or expensive inverters (of the like at Lynedoch EcoVillage), but it does include smart meters, which could be used by independent power brokers to trade energy efficiently by knowing the pricing, surplus, supply and demand.

When presented with the comparison with the Gold Standard, Eskom blamed NERSA for delays and complications, rather than proposing a solution. Duby (2019) suggested that Eskom ought to give up on a special renewable energy tariff by NERSA and rather charge a flat rate for equipment use that is not related to selling energy. All in all, the lack of an effective tariff has not only delayed the progress of the pilot but has had other ripple effects. Notably, that the households in the EcoVillage are still paying more per unit than the Direct Eskom client tariff, and this has shaken user confidence.

5.2.4.6 Energy efficiency and carbon saving

A consulting engineering firm, Energyneering, which was responsible for the design of the Lynedoch EcoVillage mini-grid system, compared it to other systems of similar sized units in conventional neighbourhoods. The comparison of energy uses in these different systems revealed that Lynedoch EcoVillage was 60 to 70% more energy efficient (Anderson, 2018). One difference between these neighbourhoods and the pilot project was the bioclimatic design principles used in Lynedoch EcoVillage, which could explain its superior energy efficiency (Bloem, 2019). Briefly, bioclimatic design principles aim at constructing buildings that are in harmony with the natural surroundings and local climate, ensuring conditions of thermal comfort inside.

South Africa is known to use some of the dirtiest coal in the world. By switching to a renewable energy source, carbon dioxide (CO2) saving for the environment is achieved. Indicative data on the Lynedoch EcoVillage mini-grid system has been collected since the installation in October 2017. Of the 26 participating solar home systems, about five have been experiencing ongoing communication challenges with the wireless central data capturing programme. Fortunately, the other 21 systems were functional and could be analysed. Therefore, the calculation presented here covers the period from 1 October 2017 until 1 July 2018. Based on the data, the total amount of energy used from the solar PV system was 18.8MWh. This can be multiplied by the comparable carbon emissions of coal – 1 001g CO2/kWh – yielding a product of 18 898 079.2g, or 188.9 tonnes, of CO2 that has been prevented from being spewed into the environment over a period of nine months. This equates roughly to 8 680 adult trees sequestrating[14] this same amount of CO2 over one year.

5.2.5 CONCLUSION

Traditional electricity distribution networks in Africa are not solving the problem of a lack of electricity on the continent; alternative energy generation approaches, based on renewable energy sources and technologies, have the potential to do better. Further, decentralised renewable energy systems are far more likely to realise the goals of energy democracy – namely, the alignment of environmental benefits (decarbonisation) with social justice – than their centralised fossil-fuel based forerunners.

This case study suggests that emergent alternatives are already realising some of the goals of energy democracy, yet are facing substantial obstacles in South Africa. The technical challenges facing the Lynedoch EcoVillage mini-grid are overdesign and therefore overpricing. These aspects should not be replicated in any other projects going forward. The possible solutions would be to downscale the system to a cheap inverter and to remove battery storage. However, for this to work, the dual net-metering system will be required. There is also a disconnect between the social and technical dimensions at the institutional level, with the lack of dynamic tariffs. Energy trading was one of the goals of this pilot, but the low rates for net-metering make this unrealistic. A flat rate plus metered grid electricity might be a good interim solution.

The case study suggests that emergent alternatives are already realising some of the goals of energy democracy, yet they face substantial obstacles.

14 *Trees remove (sequestrate) CO2 from the atmosphere during photosynthesis to form carbohydrates, which are used by the plant, and in return release oxygen back into the atmosphere as a by-product.*

In sum, Lynedoch EcoVillage is a top-down decentralised system implemented by Eskom in recognition of the fact that adapting to the energy transition is imperative. The system achieves the decarbonisation goal of energy democracy but, to achieve the social justice goal, the tariff system will need to be adjusted to ensure households benefit financially from the use of renewable energy.

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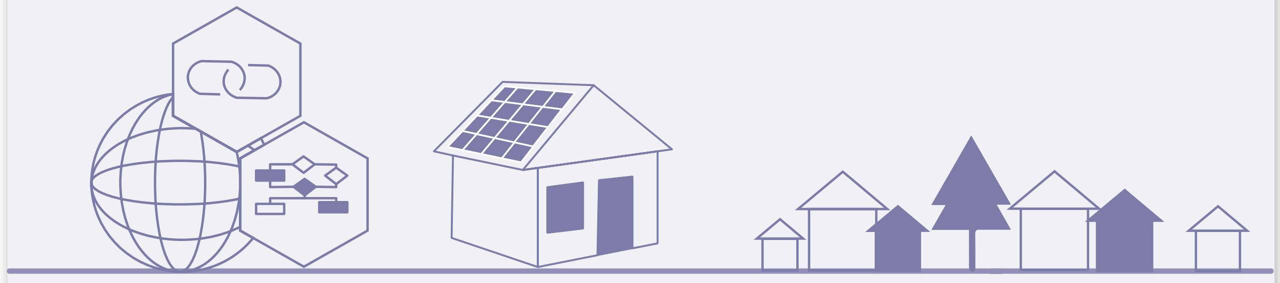


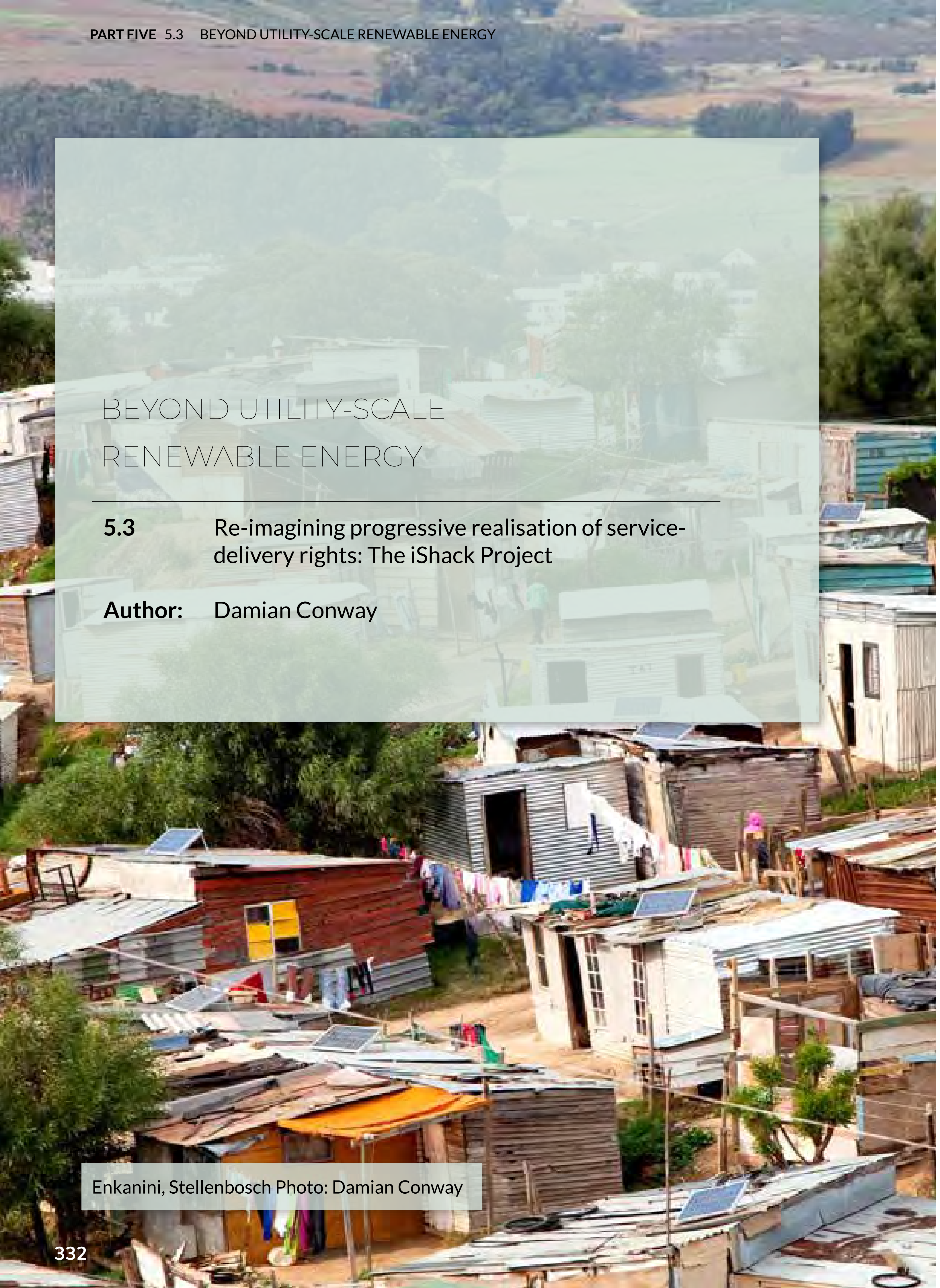
Beyond utility-scale renewable energy, all sorts of innovations are taking place. Micro -, mini- and off-grid applications have offered the appropriate experimental conditions for the advancement of context-appropriate RE systems.

The use of new technologies in distributed RE, progressive realisation of service delivery, alternative realisation of service delivery, alternative building design, and bottom-up socio-economic development systems are all amongst the ways projects are re-imagining the just transition for non-utility scale RE.

BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.3 Re-imagining progressive realisation of service-delivery rights: The iShack Project

Author: Damian Conway



Enkanini, Stellenbosch Photo: Damian Conway

5.3.1 INCREMENTAL (ENERGY) SERVICE DELIVERY: THE CASE IN POLICY AND LAW

It may be surprising to many that South Africa's progressive Constitution (1996) says nothing about a right to energy. To be fair, the global community only adopted the Sustainable Development Goals (SDGs) in 2015, which include SDG #7: 'Ensure access to affordable, reliable, sustainable and modern energy for all. It is now widely accepted that energy is a fundamental prerequisite for development; indeed, the World Bank's 2017 State of Electricity Access Report singled out SDG #7 as the cornerstone of all other development goals.

Notwithstanding our Constitution's initial silence on energy, in the roughly 10 years following South Africa's transition to democracy, the government enacted several progressive laws and adopted policies that recognise the state's obligation to prioritise the provision of (free) basic energy to the poorest citizens of the country. These are summarised below. Further, in 2010, the Constitutional Court clarified that electricity is indeed an important basic municipal service and ruled that local government therefore has a constitutional and statutory obligation to provide electricity to its residents (Joseph v the City of Johannesburg, 2010 (4) SA 55 (CC)).

SOUTH AFRICAN LAWS AND POLICIES IN SUPPORT OF FREE BASIC ELECTRICITY

(Source: Conway and Euston-Brown, 2018:4).

The Municipal Systems Act (Act 32 of 2000) (MSA) requires that all members of the local community have access to at least the minimum level of basic municipal services (Section 73). Section 74(2c&e) provides, inter alia, for direct or indirect subsidisation of poor households in order that they have access to at least basic services, and that this subsidisation can come from sources other than revenues generated from the service provided.

The National Framework for Municipal Indigent Policies (2005) (NFMIP) identifies 'basic energy' as one of a suite of essential services falling within a 'social safety net' that the municipality is obliged to provide for free to indigent households, as a priority.

The National Energy Act (Act 34 of 2008) (NEA) requires that the Department of Energy provide universal access to appropriate forms of energy or energy services, taking into account, inter alia, the state's commitment to provide free basic electricity to poor households (Sections 5(1) & 5(2)).

The Free Basic Electricity (FBE) Policy (2003) (Electricity Basic Services Support Tariff Policy) provides for municipalities to give 50kWh or more of free electricity to indigent residents each month.

5.3.2 THE CASE IN POLICY AND LAW: RE-IMAGINING IMPLEMENTATION

Given the phenomenal progress that was made in electrifying urban areas in the early years of South Africa's democracy, the expectation among policy- and law-makers was that all urban residents would receive their basic energy entitlement straightforwardly in the form of subsidised grid electricity. However, by the 20th year of its democracy, South Africa's electrification programme – hampered as it was by a recessionary economy and a failing electricity utility – was no longer keeping up with the pace of urbanisation and the proliferation of informal settlements in cities and towns throughout the country. And yet, the political commitment and the legal obligation of the state to prioritise the provision of free basic electricity to poor households remained. Meanwhile, a growing number of indigent households have been left waiting, in indefinite limbo, for the grid to arrive. This limbo has been characterised by a vicious circle of service-delivery protests (often violent) and promises by government (often broken).

In 2009, a programme of transdisciplinary research was undertaken by the Sustainability Institute and Stellenbosch University to explore this problem. Students worked with residents in an informal settlement called Enkanini in Stellenbosch to explore and test technical alternatives to service delivery that might speed up access. The project aimed to re-imagine South Africa's national housing policy for the upgrading of informal settlements, which was called 'Breaking New Ground' (BNG) (Department of Human Settlements, 2004). It prescribes 'phased, in situ, upgrading' using conventional infrastructures and services. But the researchers proposed a more radical 'phasing', namely, an incremental (rather than an all-or-nothing) approach in terms of the delivery of individual services (housing, energy, water, sanitation, waste management). They experimented with affordable, green materials, passive design, and off-grid modular technologies that could drastically truncate the intolerable waiting that so many communities suffer and, by extension, give renewed expression to the Constitution's call for the 'progressive realisation' of rights to basic services.

This research culminated, inter alia, in the design and building of an 'Improved Shack' (which later came to be called the 'iShack'). In addition to a range of affordable materials and design elements to make the dwelling safer, healthier and more comfortable, the design included an off-grid solar home system (SHS) to provide a small amount of safe, clean electricity for lighting and media devices.

The iShack concept soon attracted widespread interest and significant funding was secured from the South African Green Fund[15] (administered by the Development Bank of Southern

15 *The project also received early seed funding from the Bill & Melinda Gates Foundation.*

Africa), with a mandate to develop and demonstrate – at scale – a service-delivery model for off-grid solar electricity. The model needed to be a viable interim energy service that could be adopted for selected urban informal settlements facing unavoidable, extended grid electrification delays.

5.3.3 RE-IMAGINING IMPLEMENTATION: THE ISHACK PROJECT

The iShack Project was launched in 2013 in Enkanini. At the time of writing, over 1 600 households within the settlement are now using the iShack solar service as an interim free basic electricity (FBE) provision while they wait for grid electrification. Households voluntarily sign up, pay a modest deposit and installation fee, and then formally contract with the project. They then have free use of a standalone SHS, installed in their dwelling, which can generate sufficient daily electricity to power lights and low-energy media devices such as televisions, radios, tablets and smartphones.

Initially, it was necessary to charge a fixed monthly service fee while the project lobbied Stellenbosch Municipality to amend their Indigent Policy to allow for the subsidisation of the solar service. Finally, in 2015, a contract was negotiated with the municipality, following an open tender process, which allocated an FBE subsidy for each household, and this goes towards the running costs of the utility. At that point, the monthly fees were discontinued, and clients now only make co-payments toward maintenance or system upgrades if and when needed. With these arrangements, the service is financially sustainable.

The iShack Project has been set up as a not-for-profit social enterprise; it is a separate legal entity owned by the Sustainability Institute Trust. In keeping with the broad ethic of the institute, the sustainability objectives go beyond financial self-sufficiency and climate-friendly technology. The project also pursues inclusive green economic multipliers by ensuring that skills development and job creation are focused within the target community. The project embraces the tenets of learning-while-doing, meaningful livelihoods and impactful work – all with a view to scalability and replication.

A small team of iShack 'agents', recruited from the community, run the daily operations of the utility in Enkanini. Their work ranges from marketing and client contracting, to installing and maintaining hardware, and ongoing client management. Supported by a small management team, the iShack agents help to co-produce systems and policies as part of the project's continuous improvement strategy. As a social enterprise, the utility is run on business principles with an emphasis on cost-efficiency and quality management. Bespoke client-management systems and databases have evolved over the years. Together with increasingly

PART FIVE 5.3 BEYOND UTILITY-SCALE RENEWABLE ENERGY

sophisticated SHS technology, these operating systems provide rich data that have enabled an efficient and fit-for-purpose utility management programme.

Although this all adds up to a durable energy service, the energy capacity of an affordable off-grid SHS remains modest and excludes the ability to cook or heat water. Of course, an SHS can be 'bundled' together with an affordable gas service for cooking and a solar water heater. Such a technology bundle, together with other energy efficiency solutions (such as dwelling insulation and energy-saving cooking methods) could comfortably meet the threshold for a 'basic energy' – enough for lighting, access to media and cooking – as described in the service-delivery demands (NFMIP).

But until such time as this idea of energy bundles is seriously entertained, the provision of an SHS will remain a temporary intervention prior to grid electrification. Thus, the complete lifecycle of the iShack model needs to include a workable decommissioning phase. This is now being demonstrated in certain sections of Enkanini where the municipality has started a limited electrification program. The project has formulated a protocol for removing systems in a staged manner, in consultation with the affected households, the municipality, and the contractor that then installs the grid connections. This process aims to maximise cooperation so that the transition limits the disruption for each household and so that the project is able to successfully retrieve the used SHS. These re-claimed SHS units are then cleaned, checked and, where necessary, refurbished for redeployment elsewhere.

5.3.4 REPLICATING THE MODEL: OVERCOMING INERTIA

The iShack Project's public-private partnership model for incremental service delivery has evolved over a period of six years. It is financially viable and affordable, and technically and financially consistent with the existing laws and policies of government. Crucially, the model faces up to the reality – often denied in other quarters – that a growing demographic of under-served urban households throughout the country simply will not receive grid electricity in the foreseeable future, and are anyway increasingly unlikely to be able to afford that electricity when they do.

The iShack model embodies the incrementalism implied in the Constitution's mandate to local government to ensure the 'progressive realisation' of rights to housing and related basic services. Notwithstanding various challenges and setbacks throughout the iShack Project's emergent development, the resultant service-delivery model has been widely promoted as a success. There has been no shortage of positive media attention, and considerable interest in the model has been shown internationally and at national and local government level, with regular requests for presentations, conference talks, project tours, policy briefs and case studies.

However, neither the delivery model nor the SHS technology should be seen as a default solution for all existing electrification backlogs. A mass roll out of off-grid SHS in informal settlements would be neither appropriate for, nor acceptable to, the many communities who are higher up the waiting list and who face fewer legal or environmental barriers to grid electrification. But there are many newer informal settlements throughout urban South Africa for whom such an interim service would indeed be appropriate.

So why is it that this model, or similar models, are not being adopted more widely by municipalities throughout the country? The easy response is the enduring South African critique: 'We have plenty of good laws and policies but poor implementation'. This could be for a variety of possible reasons spanning lack of capacity, inertia, corruption, and an alleged tendency to prefer compliance over innovation in the civil service (Swilling, Gcanga and Boraine, 2019).

Yet this kind of critique probably does not tell the whole story and offers little insight into how we might break through the inertia. It is a question uppermost in the minds of the iShack team as they seek opportunities to replicate, and disseminate their learnings from, the project.

5.3.5 OVERCOMING INERTIA: RE-IMAGINING DEMAND-LED SERVICE DELIVERY

The various innovative strands within the iShack model are perhaps missing a vital thread, which has to do with 'energy democracy', the central subject of this book: innovative democracy that goes beyond top-down provisioning by policy- and law-makers and officials. Perhaps it is in the under-served communities themselves where the most profound democratic 're-imagining' may be required in order to truly unlock the potential for alternative and incremental forms of service delivery. A different way in which communities decide upon, and give voice to, their service-delivery needs and priorities may be the last pillar of innovation that is required to support the roll out of incremental services such as off-grid solar electricity.

It is in the under-served communities where the most profound democratic 're-imagining' may unlock the potential for alternative and incremental forms of service delivery.

To explore this idea, it is necessary to go back to the start of the iShack Project in 2013. When funding was secured to roll out the energy service to the residents of Enkanini, there were two key factors that dictated the terms of the service. The first was that, at the time, many residents in Enkanini were involved in service-delivery protests demanding grid electricity from Stellenbosch Municipality. The second factor was that the iShack Project had not yet secured the FBE subsidy from the municipality in order to cover the ongoing operational costs of the service. These factors are explored further below.

5.3.6 DEMAND-LED SERVICE DELIVERY: A DE-POLITICISED SERVICE

When the iShack Project was first launched, it was not received positively by certain members of the Enkanini community, who had found (or appointed) themselves in precarious representative positions during the height of the service-delivery protests. When contemplated as a response to the community's demands for electricity – with possible municipal support – solar home systems (SHS) were (understandably) rejected as an inferior alternative to grid electricity. It therefore became obvious that the roll out of a solar service needed to be framed in terms that were completely separate from the community's ongoing service-delivery demands. (This framing was, of course, consistent with the fact that there was no municipal funding for the project at that time.) Thus, the iShack solar service was introduced to the community as a purely commercial offer, which residents could voluntarily opt into (or out of) while they waited for grid electricity. Those households who opted into the service paid a fixed monthly fee to use the service, which included the free use of a television. The take-up was significant, reaching sign-up rates of over a hundred per month. This 'de-politicising' strategy shifted the relationship between each client and the project to a more transactional agreement. It created a relationship in which both parties were accountable to the contract and helped to inculcate a customer-centric imperative within the operations team of the newly formed enterprise.

There was minimal subsequent involvement by the residents of Enkanini in the rather long process of securing a subsidy from local government. When the project did finally secure the operating subsidy, it was able to reduce each client's financial obligations to reflect a free basic service; in line with the original aims of the project, monthly fees were discontinued. Apart from a few meetings with the local ward councillor and committee members, there was very little consultation with the wider community about these changes or about the fact that the service had effectively been adopted by the municipality as a (temporary) free basic electricity provision. There was of course no resistance to these changes in the community, because each household was now able to stop paying fixed monthly fees and carry on using their systems. Further, the language of the commercial relationship with each client was retained; end-users continued to be charged co-payments for maintenance, upgrades, appliance purchases and battery replacements, when needed.

This quasi-commercial approach fit with the particular circumstances of the flagship Enkanini utility. But replication in other off-grid settlements would require the communities themselves to be more actively involved and widely supportive from the beginning. After all, it is these communities that should decide whether they are prepared to accept a temporary SHS while they wait for a more substantial energy service (grid electricity or solar

infrastructure with significantly more capacity). In response, it is the municipalities that would need to allocate the capital and operational funding required for such a service. Thus, the prospects for the more widespread adoption of an interim services approach, such as the iShack Project, required that the underlying idea be re-politicised!

5.3.7 *RE*-POLITICISING ALTERNATIVE, INTERIM SERVICES: THE SIQALO PILOT

Recall the proposition that some form of innovative energy democracy is required to unlock the replicating potential of an interim off-grid free basic energy service. It is the idea of (responsibly) 're-politicising' the service that the iShack Project has tried to support in a new pilot utility in a community called Siqalo.

Siqalo is home to approximately 2 000 families living on private land in Philippi, Cape Town. They have no access to electricity, a very limited supply of water and the most basic of sanitation services. Siqalo is regularly in the news for volatile and disruptive service-delivery protests. In May 2018, such a protest resulted in a death, injury, damage to property and many arrests (Etheridge, 2018). At least on the surface, such protests seem to be quite effective in drawing attention to communities' sense of exclusion from the institutions of state and from the basic necessities of modern life. For example, during the 2018 Siqalo protest, the Premier of the Western Cape responded immediately by visiting the community, urgent stakeholder meetings were held, and commitments were made. But a year later the community had still not seen any tangible improvement in services. And, so, the vicious circle of protests and promises continues (Mortlock, 2019).

And yet Siqalo, like many communities in a similar situation, are eager to explore alternatives: alternative options for improving their lives, and alternative ways of making their voices heard. In 2016, a group of Siqalo residents requested a visit to the iShack utility in Enkanini. Subsequently, they asked the project to bring the solar service to Siqalo. Without a subsidy from the City of Cape Town, it was decided to run a small pilot to give residents in Siqalo the opportunity to first experience the technology, as part of a process of engagement that might lead to some form of democratic decision-making. One hundred households joined the pilot. They are each paying off the cost of an SHS (and a television) over 24 months. Each pilot client is a member of one of five 'solar teams', headed up by 'solar captains', who communicate to their teams via WhatsApp user groups. The captains intermediate between the project and team members when clients default on their payments or need assistance with any aspect of the service.

While the organisation of solar teams is useful for the project in resolving transactional issues and disseminating information, this emergent social process has also supported a promising example of innovative energy democracy. After the pilot had been running for a year, the solar teams organised a community-wide petition. They obtained 1 800 signatures on a simple request, addressed to the Mayor of Cape Town, asking the city to subsidise a temporary solar service for the whole settlement while they continue to wait for permanent services. The petition was handed to the (new) mayor in December 2018. For a community that was normally in the news because of disruptive protest action, the organised, widely democratic petition for a reasonable intervention signified a remarkable departure from the norm.

The cost of fully subsidising an off-grid SHS service is significantly lower than the maintenance costs – alone – of a household grid connection (which is, after all, what the municipality is constitutionally required to provide). The solar service itself reduces the risks of runaway shack fires and thus reduces other financial burdens on the city's stretched emergency relief capacity and budget. But the municipal benefits go beyond the financial: by acceding to Siqalo's request, the city would help to establish a template for a workable social contract that maps out a feasible plan for further services in future. Doing so would also provide the city with breathing space to plan for a more staged programme of service delivery. Overall, this could be a framework for constructive engagement that other communities could follow, one in which they are able to give expression to their democratic demands while avoiding the febrile undertones of protests that so often spill over into violence and destruction.

5.3.8 AN INVITATION TO A RE-IMAGINED SOCIAL CONTRACT

In response to the often interminable wait for 'all-or-nothing' services, the iShack Project is just one embodiment of a re-imagined approach that enables municipalities to fulfil their legal and constitutional obligations by providing modest interim relief to indigent informal settlement households. The model is technically and financially viable, and it is compatible with South Africa's existing laws and policies (notwithstanding the fact that the policies, in particular, are long overdue for revision, given the rapid advances in technology in the past decade).

Even so, imaginative business models using new technologies and novel operating approaches are not enough to bring relief to the hundreds of thousands of households throughout the country who are stuck in a limbo of scandalous energy inequality. It is the experience of the iShack Project that a sea-change is also required at the level of grass-roots democracy; a change that requires communities to consider alternatives and to support new, pragmatic social contracts with their local government.

PART FIVE 5.3 BEYOND UTILITY-SCALE RENEWABLE ENERGY

Imaginative business models are not enough to bring relief to the hundreds of thousands of households stuck in a limbo of scandalous energy inequality.

The community of Siqalo have extended an invitation for such a social contract to the City of Cape Town. They have taken a risk by signalling a willingness to compromise and suspend (albeit temporarily) their more typical, more disruptive style of demand. They have innovated by organising a peaceful, pragmatic, and profoundly democratic request. But, once again, they are waiting. All that remains is for the decision-makers in local government – both the politicians and the officials – to accept the invitation. No doubt the invitation has a time limit.

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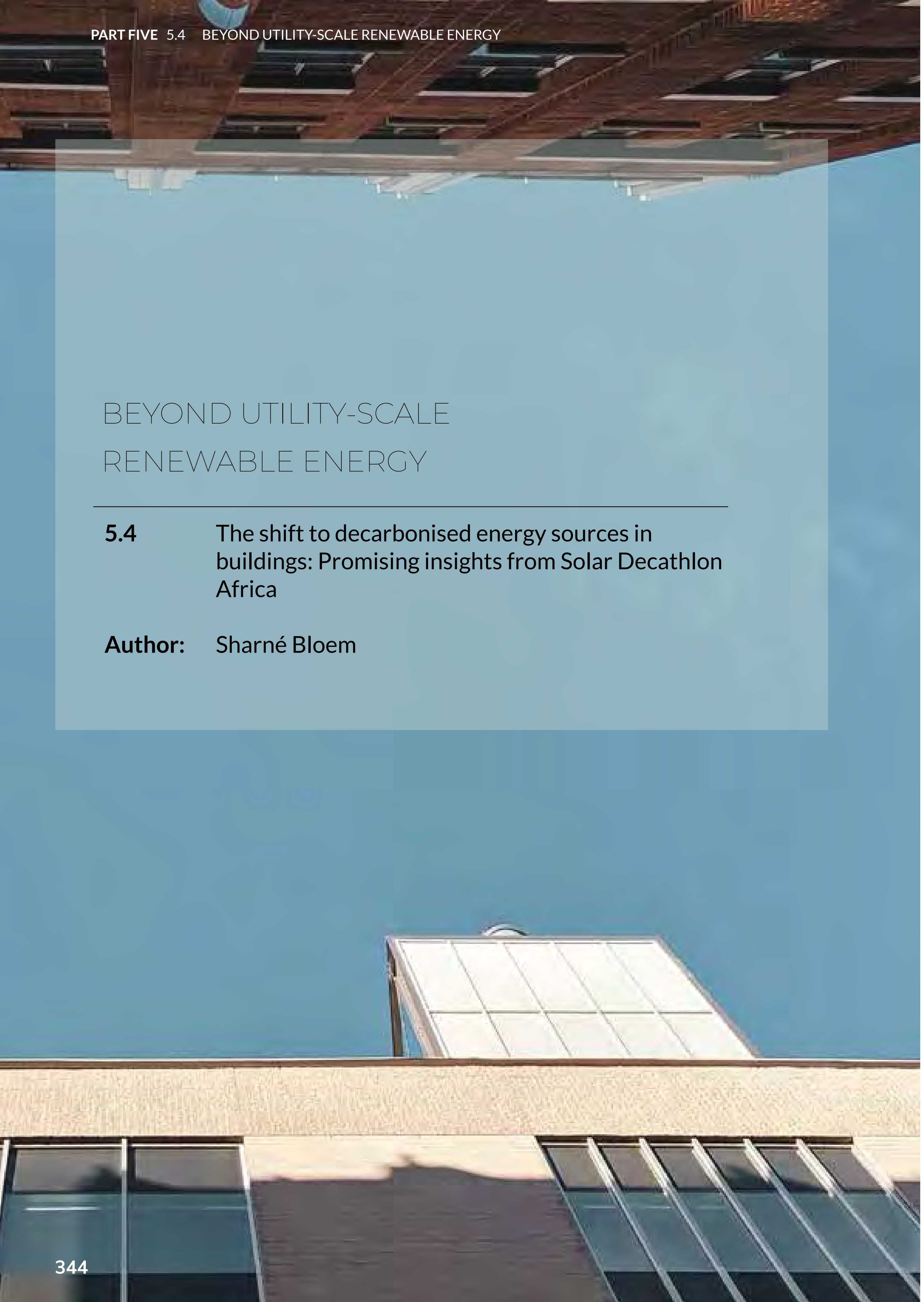

BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.4 The shift to decarbonised energy sources in buildings: Promising insights from Solar Decathlon Africa

Author: Sharné Bloem

5.4.1 INTRODUCTION

When thinking about carbon emissions, the mind naturally turns to images of coal-fired power plants spewing heavy smoke, or petrol-powered vehicles, or industrial parks. This chapter helps us broaden that picture to include the built environment and shows how changes to design and building practices can reduce emissions. Indeed, some European countries consume less energy than they did five to ten years ago because of renewable energy (RE) policies and energy efficiency gains in buildings. The transition from non-renewables to RE systems is growing rapidly throughout parts of Africa, with energy-efficient buildings also on the rise.

The buildings in South African cities produce more than 36% of the country's total greenhouse gas emissions, as energy from fossil fuels is used to electrify, heat and cool them (Cartwright, 2018). It is predicted that, by 2030, more than 70% of the South African population will be living in cities (Cartwright, 2018), putting more pressure on resources and energy systems in these cities. To date, the Green Building Council of South Africa (GBCSA) has certified four net-zero-carbon buildings and more than 500 green star rating buildings (GBCSA, 2019). Recently, four of South Africa's biggest cities, City of Cape Town, eThekwini, Tshwane and City of Joburg, have committed to make all new buildings net-zero-carbon by 2030 and all buildings by 2050, as part of the C40 Cities South African Building Programme, and in conjunction with the GBCSA (GBCSA, 2019). The GBCSA is one of 14 green building councils taking part in the World Green Building Council's 'Advancing Net Zero' project, which aspires to advance and support the acceleration of net-zero-carbon buildings to 100% by 2050.

This chapter shares insights from Solar Decathlon, an international competition for green buildings. It challenges university teams to design, develop, build and operate net-zero-energy houses during an eighteen-month period. The competition started in the United States in 2002 and, in September 2019, the first Solar Decathlon competition took place on the African continent, in Benguerir, Morocco (**Image 13**).

IMAGE **THIRTEEN** Solar Decathlon Africa media launch (Source: Solar Decathlon Africa website)

A team from Stellenbosch University was one of only 20 selected and was the first and only team from sub-Saharan Africa to ever compete in a Solar Decathlon. Although the competition is focused on the energy balance of a house, this involves certain green architectural and bioclimatic design principles that are very important in making design choices to improve indoor climate and energy efficiency. The following section covers the importance of energy efficiency in buildings and highlights certain design principles that achieve this end.

5.4.2 ENERGY-EFFICIENT BUILDINGS: THEORETICAL LENS

Various sectors contribute to anthropogenic climate change, with the building sector being the largest energy-consuming sector (EIA, 2016). Buildings account for approximately 40% of global energy consumption and contribute over 40% of total world carbon dioxide (CO_2) emissions (Grey et al., 2017). Urbanisation and population growth, among other things, are significant contributors. Africa's urban population is expected to triple between 2010 and 2050, reaching 1.2 billion people (UN Environment, 2018). Soon the African continent will overtake Eastern Asia as the region with the largest urban population in the world (Gomez-Echeverri, 2018). According to the latest United Nations population report (UN Environment, 2018), the majority of Africa's urban population live in small cities and are likely to experience significant expansion in the coming decades. The scale of development required to accommodate this growth is monumental, and for the most part is contributing to the even greater challenge of

PART FIVE 5.4 BEYOND UTILITY-SCALE RENEWABLE ENERGY

community transition (Jomehzadeh et al., 2017). This transition, or shift, is moving faster than development can keep up, which emphasises the need for re-inventing building practice within neighbourhoods.

Since the United Nations Conference on Environment and Development (also known as the Earth Summit) held in 1992, sustainable development in neighbourhoods and buildings has been a focal point for experimenting with sustainability principles, green architecture, bioclimatic design principles and socio-technical imaginaries. These contemporary trends of environmental design not only became very popular, but also aimed to instil more sensitivity towards the environment within the building industry (Masood, Al-Hady & Ali, 2017). To understand this shift better, green architecture and bioclimatic design principles are discussed in more detail below.

The transition is moving faster than development can keep up, which emphasises the need for re-inventing building practice within neighbourhoods.

5.4.1.1 Green architecture

'Green architecture' is the theory, science and style of designed buildings, with principles rooted in environmentally friendly construction, and striving towards less resource consumption (Ragheb, El-Shimy & Ragheb, 2016). Green buildings aim to integrate techniques, materials, design and methods to reduce a building's negative impact on the environment and increase resource efficiency (Mahdavinejad et al., 2014). The German city of Freiburg is considered a sustainability success story, having gone through the 'sustainable transition pathways' changes in building practice – green architecture being among these. Green architecture, or green urbanism, is an experimental emerging field which concentrates on the intentional use of low-impact local building materials, enhances energy efficiency and is more environmentally friendly (Gupta, 2017; Huseynov, 2011). It forms part of the sustainable infrastructure and technology used in intentional communities that choose an environmental vision to guide their living.

Experimentation in green architecture includes design elements that enhance thermal comfort for users, improve the efficiency of energy in buildings, lower the embodied energy through building material selections, decrease the waste of energy in return for energy saving or consumption regulations, and combine renewable energy systems into the design (Hakiminejad, 2018). Although this is not necessarily the case in green building design, Sengers et al. (2016) warn that sustainability-oriented experiments could sometimes become isolated events, not contributing to the change they were meant to bring about. However, in general, "experiments are often seen as the seeds of sustainable change that should be cherished and protected since they might flourish to transform incumbent socio-technical systems" (Sengers et al., 2016: 9).

5.4.1.2 Bioclimatic design principles

Bioclimatic design is the symbiosis of building construction, local climate and natural surroundings, to ultimately reach better energy efficiency and optimal indoor climate. Ko (2013) and Li, Yang & Lam (2013) talk about four main objectives that serve the bioclimatic design of buildings:

- Conventional energy savings – by using integrated renewable energy systems.
- Financial savings – through passive design principles and thermal mass.
- Environmental protection – by using local materials and less fossil fuels.
- Thermal comfort inside – through improvement of indoor climate and air quality.

As a demonstration, a building's orientation, its shape, and the size of the openings could all be natural solar collectors in winter, thereby having thermal mass serve as heat storage (Conradie, 2018; Heravi, Salehi & Rostami, 2020). Further, insulation can be both a heat trap and a natural cooling trap, while colour and texture, natural ventilation and outgoing heat radiation at night can all be natural cooling traps (Conradie, 2018; Heravi, Salehi & Rostami, 2020).

In sum, buildings are major energy consumers and contribute the lion's share of global CO2 emissions. By considering green architecture and bioclimatic design principles, therefore, buildings' energy efficiency could be improved, leading to lower energy consumption overall.

5.4.3 SOLAR DECATHLON AFRICA

During the United Nations Climate Change Conference (known as COP22) in Marrakesh in 2016, the Moroccan Ministry of Energy, Mines and Sustainable Development, the Moroccan Research Institute in Solar Energy and New Energies (IRESEN), and the US Department of Energy signed a memorandum of understanding to collaborate on the development of the Solar Decathlon Africa competition.

Solar Decathlon Africa, hosted by IRESEN[1], challenged 20 international university teams to come up with a net-zero-energy housing solution within the African context by August 2019. These designs were to be built on the competition site in Benguerir in Morocco, with teams competing in 10 different categories and 53 sub-categories. 'Team Mahali' was made up of students from different countries and fields of study, selected from the University of Stellenbosch and collaborating with the School of Architecture, Planning, and Geomatics at the University of Cape Town.

5.4.2.1 Competition objectives and rules

The competition goal was to contribute to the African story of solar and sustainable housing by following some basic objectives (SDA, 2016):

- Raising awareness of participating students about the benefits and opportunities of renewable energy and sustainable construction, challenging them to think creatively to develop innovative solutions that contribute to energy savings.
- Educating the general public regarding responsible energy use, renewable energy, energy efficiency and available technologies to help reduce energy consumption.
- Promoting the use of solar technologies, including architecturally attractive solar system integration, and encouraging the use of solar technologies to replace conventional construction materials in the building envelope (such as the roof, skylights or facades).
- Demonstrating that high performance solar homes can be comfortable, attractive and affordable.

Along with these objectives, the rules and technical guidelines for the competition were as follows:

- The measurable area of the house could be between 50m2 and 90m2 for one storey, and up to 110m2 for a double storey, designed to fit within the solar envelope.
- To allow all teams equal access to the sun, the solar envelope had to be 20m by 20m, with the central 10m2 at maximum height of six meters.
- The installed capacity of each system could not exceed 10kW-rated Direct Current (DC) capacity.
- The photovoltaic (PV) system could be grid-tied or standalone and the maximum battery storage capacity was 5kWh. (Although this energy balance load could be rather generous, green building, bioclimatic design principles and energy efficient solutions were encouraged).

5.4.2.2 Mahali house: Aim and sources of inspiration

The team aimed to design and develop a house for the African context with specific elements that could allow it to be built anywhere on the continent. The use of local materials was therefore a key element. Using what is available in the area has a direct impact on the level of embodied energy spent and sustainability achieved. Two such 'local' materials provided inspiration: shipping containers and timber.

Globalisation has a huge impact on the lifecycle of shipping containers, which are only used a certain number of times before being replaced. In fact, the lifespan (in shipping service) of a shipping container is only 10 to 12 years. When most of these recycled containers are replaced, they are still structurally fit and could easily be transformed into a dwelling.

Timber is another building material that is easily available in Africa. Many African cultures have timber at the core of their building structures. The look of these might be of more natural and less processed wood, such as the traditional Swati huts in Eswatini (see **Image 14** and **Image 15**).

IMAGE **FOURTEEN**

Traditional Swati hut exterior (Source: Sharné Bloem)

IMAGE **FIFTEEN**

Traditional Swati hut interior (Source: Sharné Bloem)

The roof structure over the container and timber pods could be added to any courtyard-style design and the material could vary, depending on what is locally available. The rain collected from the central rainwater harvesting pond could be stored in a water bladder and, if stored below the catchment area, it could be gravity-fed. The central water body could also serve as a thermal mass or a cooling element if a small fountain could be installed.

5.4.2.3 Mahali house: Design principles

By using a former shipping container, the Mahali house is essentially a 'house in a box' concept. It adopts a circular use of resources, taking into consideration the complexity of contemporary social and ecological challenges, and remaining non-permanent. For ease of transportation – both for the competition and for implementation throughout Africa – it was decided to make use of a single, standard, recycled side-opening container without any structural modification. The entire house with all its parts can be packaged and shipped in one 'box', with the box forming part of the completed house.

- *Building shape:* The design of the house is based on specific bioclimatic design principles, a 'traditional courtyard typology' found in many parts of Africa. This design has been used for centuries because of its advantages in terms of climate control, security, privacy, flexibility and adaptability.

- *Passive design principles:* In many parts of Africa, a tree is used as a place for important gatherings, events and discussions. By using 'biomimicry' as a starting point to this concept, the main structure of the Mahali house is based on that of a tree. In this case, a steel frame – that supports a stretched coating covered with thin-film PV panels to provide shade and energy – imitates a tree in nature, and a rainwater harvesting system collects rainwater in the centre. Roofing shades almost all of the occupied area, keeping the rooms in the shade, while allowing passive ventilation through the space.

- *Orientation:* In general, the optimal orientation in the northern hemisphere for heat-gain through window openings is south-facing. As shown in **Figure 14**, the angle along the horizon indicates the solar azimuth for the summer and winter sun paths. According to thermal analysis, the relationship between the winter and summer sun paths, and the orientation of the building, determine the room temperature. Thus, south-facing rooms will be warmer; north-facing rooms will be cooler; and direct sun can cause west-facing rooms to get extremely hot in the summer, especially those without window treatments or overhangs. The position of the Mahali house faces south, following the natural sun path.

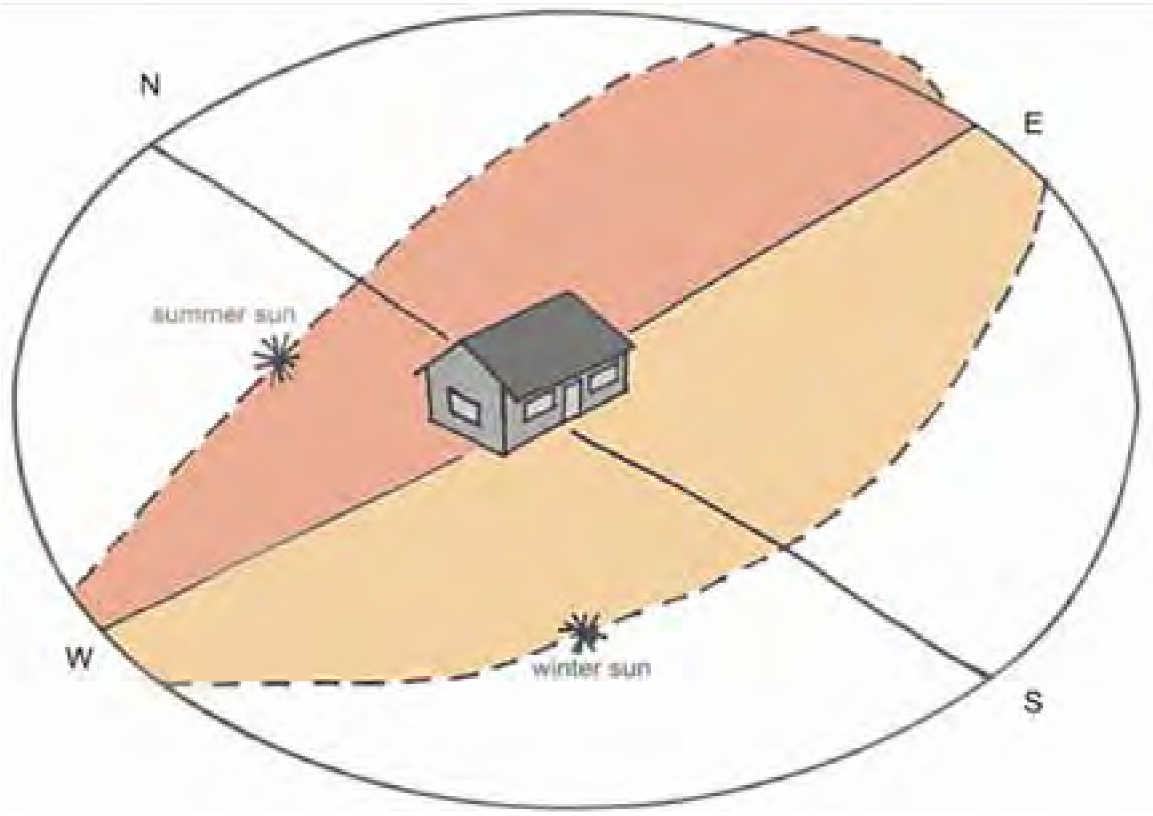

FIGURE **FOURTEEN** *Orientation through optimising heat control between winter and summer sun paths (Source: Sharné Bloem)*

- *Fenestration:* Smaller window openings, with window coverings projecting through the outside cladding layer, are used to shield the indoor climate against the direct penetration of sunrays. Regulating winter and summer sun could also utilise thermal mass for passive solar building design: by distributing solar energy in the form of heat in the winter and rejecting solar heat in the summer (refer to **Image 16** and **Figure 15**). This was the logic behind the fenestration for the Mahali house.

IMAGE **SIXTEEN** *Window boxes (Source: Sharné Bloem)*

- *Insulation:* Proper insulation is a great contributor to energy efficiency in buildings. Of the different applications of insulation, roof insulation is most popular in South Africa. In the country's sunny climate, where a building's roof is much exposed to sunlight, proper roof insulation can increase the overall energy efficiency of the building but also decrease its temperature (by 10°C in the summer and 5°C in the winter). Insulating the timber pods and the container of Mahali house reduces heat transfer. There is also insulation in the walls, floors and ceilings – as illustrated in **Figure 15**.

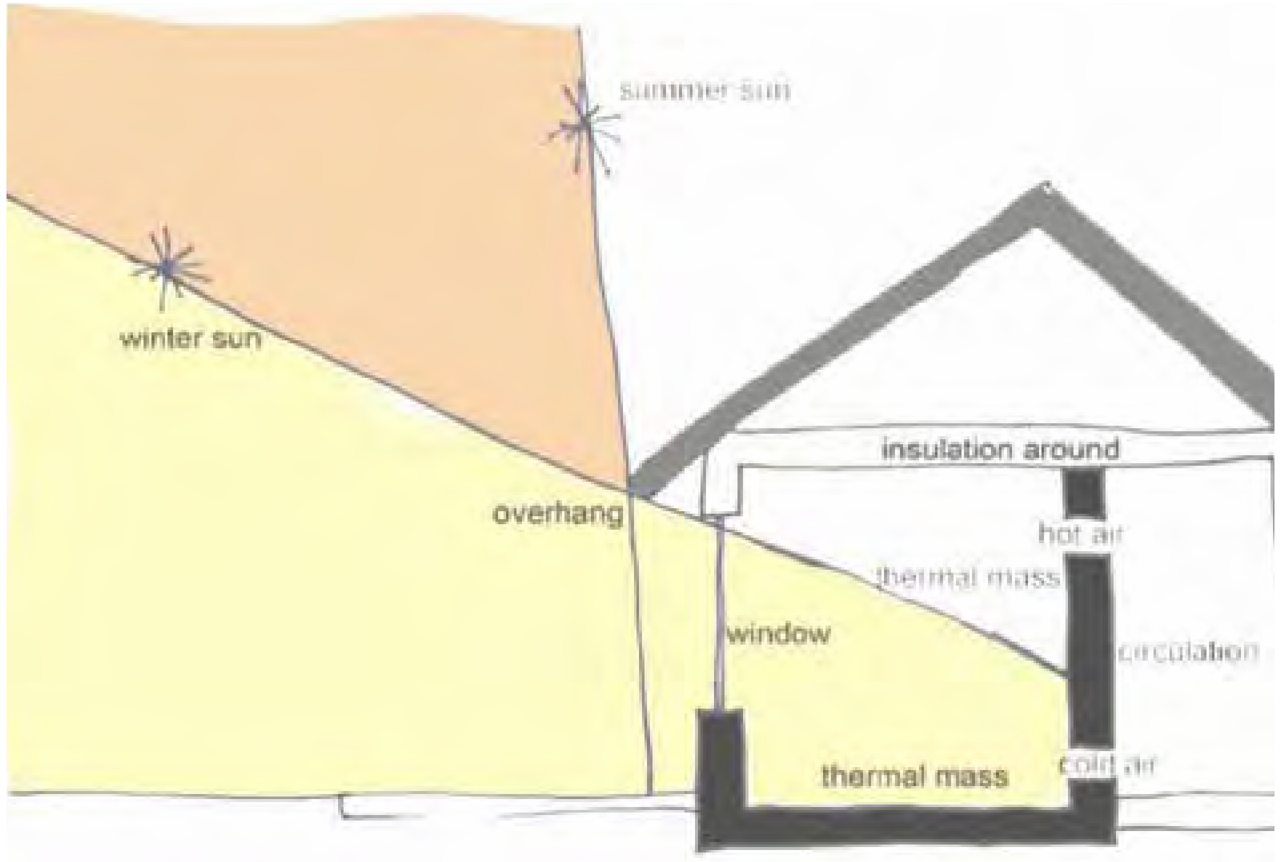

FIGURE **FIFTEEN**

Winter and summer sun path in relation to an overhang on the south façade (Source: Sharné Bloem)

- *Renewable energy system:* The team chose not to make use of the allowable 5kWh battery backup, and instead took the approach of using the electricity grid as a 'battery bank'. With this approach, cost was reduced in terms of capital expenditure and maintenance. By using the grid as a 'battery', excess generation from the PV panels can be exported onto the grid and, during non-sunlight hours or when consumption exceeds generation, energy can be drawn back from the grid. The system will remain net-zero, or net-positive, as long as the export to the grid remains higher than the import for one full calendar year. This is consistent with the net-zero criterion, meaning that power usage is drawn only from what is generated by the house. Team Mahali's unique architectural design involved covering the house with a geotextile; thus, special solar modules were required. In the growing market of building-applied photovoltaic (BAPV) modules, a number of options were available. A flexible module, which can bend with the geotextile and be glued directly onto the finish with a specially designed adhesive, was chosen. **Image 17**.

IMAGE **SEVENTEEN**

Optimizers; First solar PV panel installed; Array of Flexible solar PV panels; Inverter (Source: Sharné Bloem)

- *Local materials:* The Mahali house is built mostly from locally sourced timber, shipping containers and other elements. Not only did the team aim to create the house from local materials, but also to use artisanal techniques and handmade products to showcase the uniqueness and authenticity of the rich cultures in Africa. Many of these techniques also included the repurposing, recycling and upcycling of materials .

IMAGE **EIGHTEEN** *Old Fences were upcycled (Source: Sharné Bloem)*

IMAGE **NINETEEN** *Old fences to beautiful planter boxes (Source: Sharné Bloem)*

IMAGE **TWENTY**

Waste in the Architecture Studio was Upcycled (Source: Sharné Bloem)

IMAGE **TWENTY - ONE**

Waste to wonder Furniture (Source: Sharné Bloem)

- *Thermal comfort:* As mentioned above, houses use passive heating and cooling systems to contribute to an optimal indoor climate. Buildings provide protection from the elements, shelter and comfort. Regardless of the weather, regardless of Moroccan and South African building practice, indoor temperatures during the day and evening should ideally be between 19°C and 25°C, provided the humidity is within a range of 25% to 60%, which is comfortable for the large majority of people. A comfortable indoor climate can be achieved through building design that is appropriate for the local climate, and specific design principles can optimise the energy efficiency inside the building.

Many traditional building technologies in Africa have been leading the way to climate neutrality all along, and perhaps it is time to learn from them.

The design elements mentioned in this section all contributed to the bioclimatic design of the Mahali house (see **Image 16**). It could be argued that Africa has many hidden treasures for green building practice. Indeed, it seems that many traditional building technologies in Africa have been leading the way to climate neutrality all along, and perhaps it is time to learn from them. They can be fruitfully combined with realistic technology solutions, thereby empowering citizens, aligning action with industry policy, and ensuring social fairness.

IMAGE **TWENTY - TWO**

Mahali house (Source: Sharné Bloem)

5.4.4 CONCLUSIONS

The energy transition in African building technologies is connected to the phenomenon of rapid and haphazard urbanisation across the continent. Extensive rural-to-urban migration has been predicted by UN-Habitat for the next 20 years. Finding responsible and efficient ways to green new and existing buildings should therefore be at the centre of any effort to

cut carbon pollution, especially in tackling Sustainable Development Goal number seven (SDG #7), 'Affordable and Clean Energy', and SDG #11, 'Sustainable Cities and Communities'.

Across the 20 teams that competed in Solar Decathlon Africa, one thing stood out: the simplicity in the designs and the richness of local materials in Africa. Even in the simplicity of traditional African homestead designs, communities always construct their buildings while considering the local climate and natural surroundings to ultimately reach better energy efficiency and optimal indoor climate.

The Solar Decathlon Africa competition was an intensive learning experience for the teams, the public and industry. All of these groups benefited from being exposed to a combination of the latest technologies, local building materials, smart home solutions, energy efficient designs, water conservation measures and integrated PV systems. It would be valuable for the Africa component of the competition to become an annual event, where stakeholders can continue to explore these building solutions together as a continent. Ultimately, even on a continent with many housing issues, the solutions that can be found in traditional homestead design may be more promising than those that can be simply 'copied and pasted' from developed countries.

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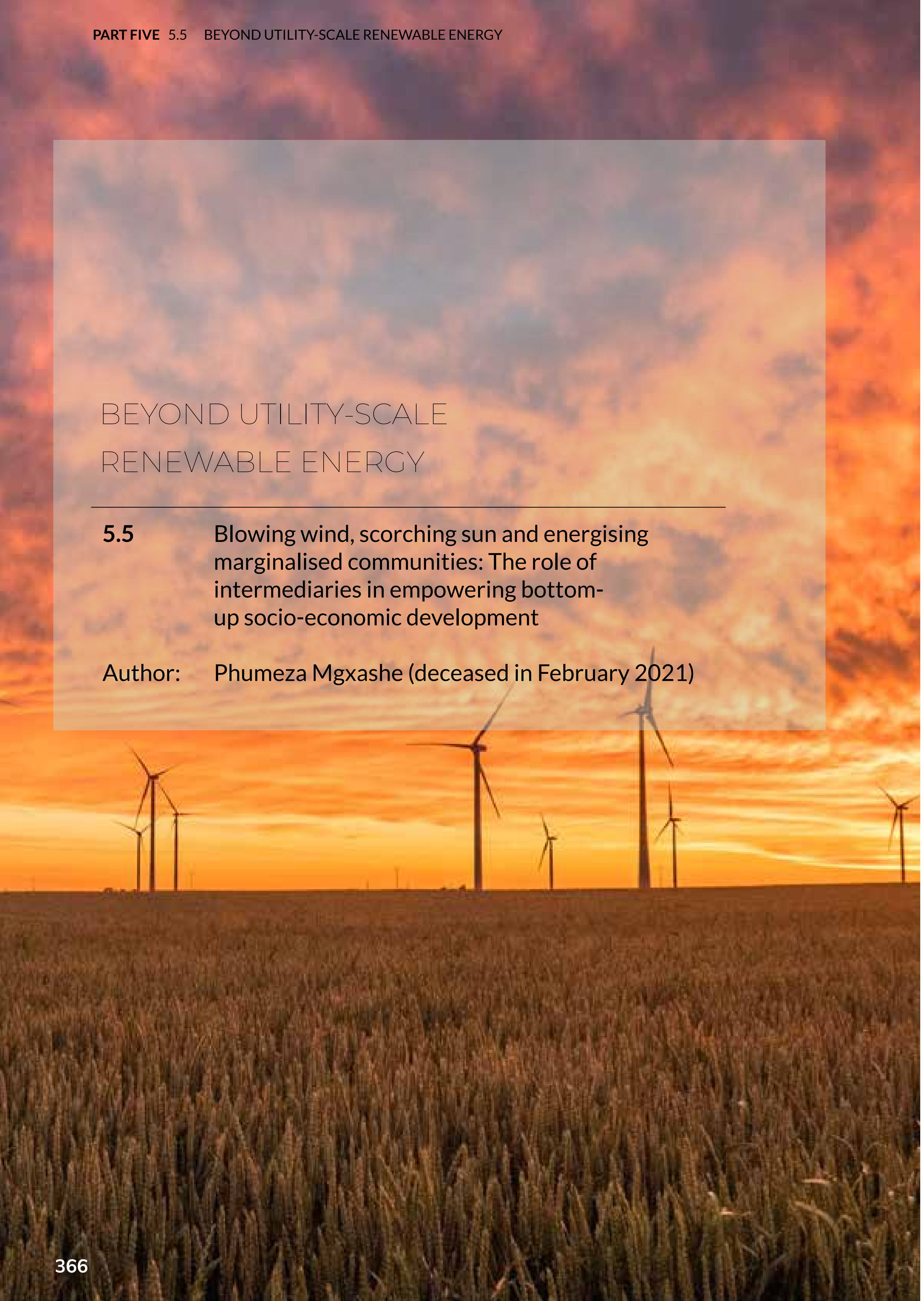

BEYOND UTILITY-SCALE RENEWABLE ENERGY

5.5 Blowing wind, scorching sun and energising marginalised communities: The role of intermediaries in empowering bottom-up socio-economic development

Author: Phumeza Mgxashe (deceased in February 2021)

5.5.1 INTRODUCTION

This chapter analyses the socio-economic development element of the economic development scorecard of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). Special attention is given to the relational capacity that independent power producers (IPPs) require in order to successfully implement the allocated funds. As an example of good practice, and in an effort to identify relevant lessons for others rolling out socio-economic development programmes, the chapter investigates the community partnership programme of an organisation by the name of Project 90 by 2030. Based on my experiences as an embedded researcher in that process, I conclude with reflections on the necessary conditions for meaningfully implementing this kind of corporate-led community development practice.

5.5.2 THE SOCIO-ECONOMIC CONTEXT OF THE REIPPPP

The REIPPPP defines its contribution, in addition to energy generation, as economic development (ED), which it governs through the mechanism of an ED scorecard. The scorecard disaggregates ED into seven areas, of which socio-economic development (SED) is one (IPP Office, 2016). This presents an interesting and curious question about the kind of transformation that the SED component could unleash in low-income communities. It is critical to better understand the potential role that intermediaries – acting on behalf of, and in between, IPPs and communities, as knowledge, power and funding brokers – could play to support the implementation of the SED benefits.

A good starting point for appreciating the need for SED in South Africa is the national rate of unemployment, which stands at 27% (StatsSA, 2018). Further, unemployment in the 15 to 24 age group is a staggering 31%. More pertinently, the Northern Cape, which hosts many of the REIPPPP projects, continues to have very limited economic activity. The province contributed a mere 2% to the national gross domestic product (GDP) in 2017 (StatsSA, 2018). A total of 29% of the children in the province live in a household where no adult is working and 39% of those aged between 15 and 24 are not in employment, education or training (Hall, 2018). The Children's Institute cites poor education as one of the reasons for poor employment prospects for this age group in South Africa (Hall, 2018).

This gloomy picture, of a lack of employment and economic prospects for locals, naturally compounds the levels of expectation and hope they have for the REIPPPP. Scholars have suggested that the optimal way to support economically distressed communities involves paying attention to the household (Acey & Culhane, 2013), with an emphasis on addressing the vulnerabilities resulting from economic deprivation and the lack of climate change adaptive capacity, as well as promoting human rights and gender equality (Chambers, 1995).

5.5.3 THE CHALLENGE PRESENTED BY BUSINESS-LED COMMUNITY DEVELOPMENT

While the REIPPPP might be good news in many respects for South Africa, it is disappointing that it does not require IPPs to consult local beneficiary communities when they draw up SED plans during the bidding stage (WWF, 2015). Project companies are required to submit their SED plans along with their bids, and this leaves little to no time for meaningful community engagement about the content of such plans ahead of submission (WWF, 2015). This represents a missed opportunity: it would help developers gain community support from the get-go if they had to draw up plans with the input of the very people meant to benefit from them.

While the REIPPPP might be good news in many respects, it is disappointing that it does not require IPPs to consult local beneficiary communities.

This lack of consultation is contrary to what is asserted by the community development literature, which establishes that community agency should be harnessed as an enabler of community development (McEwan, Mawdsley, Banks, & Scheyvens, 2017). It also contrasts with the view expressed in South Africa's strategic plan for development, the National Development Plan (NDP), which is emphatic about the role and participation of citizens in their own development (NPC, 2012). The NDP was spearheaded by the South African government, with the participation of social partners such as business and civil society. Even though the REIPPPP is a government-initiated programme that still somehow fails to uphold a core tenet of the NDP, it appears to be evidence of a lack of harmony in the policy environment in South Africa.

Another weakness of the REIPPPP design is the 50km-radius limit for beneficiary communities, which often leads to overlapping beneficiaries among different IPPs (WWF, 2015). The WWF study of community development requirements for the REIPPPP recommended a re-think of this limit to enable different project companies to collaborate and maximise impact for the beneficiary communities (WWF, 2015). For the fourth bid

window, Round 4, the definition of beneficiaries has subsequently been extended to all those living within the boundaries of the host municipality (IPP Office, 2016). Some scholars have bemoaned the design of the SED benefits element of the REIPPPP, as it seems to have chosen not to engage with existing community development practice, traditions or programmes in South Africa (Wlokas, Westoby, & Soal, 2017).

While there is a long history of corporate citizenship in South Africa, observers have cautioned against leaving a development agenda in the hands of private companies. One concern is the fact that, when businesses drive development, they tend to focus on areas where they also have business development opportunities (McEwan et al., 2017). It has also been pointed out that enduring and complex social problems cannot be solved by business, as it tends to seek short-term remedies that may prove unsustainable (Morar, 2019). Others have noticed a pattern of non-compliance by business, especially when social plans are worded imprecisely (Hamann, 2019). Already, the government's weak monitoring and evaluation of compliance with the ED scorecard have been flagged (Mthembi, 2016).

5.5.4 WHAT ROLE CAN INTERMEDIARIES PLAY IN LINKING BUSINESS AND COMMUNITIES?

Paying attention to the role of intermediaries is key, given the strong grounds for scepticism about SED being outsourced to private companies by the state. The REIPPPP is the most significant indication of the transition from fossil fuel power to clean energy in South Africa to date, so the new role-players emerging in its roll out must be recognised. Among these stakeholders are new industry intermediaries (Moss, 2009). There is agreement in the literature that the collaboration of diverse interests is the engine room of systems transformation (Davies, 2016). Often, it is intermediaries who can help to mobilise community support for such transitions (Burch, Shaw, Dale, Robinson, et al., 2014) through their unique networks and systems that are best placed to facilitate such engagements (Loveridge et al., 2012). A lack of meaningful engagement results in undesirable action, such as protests; unfortunately, these have already been staged at IPP project sites by REIPPPP beneficiary communities (Mthembi, 2016).

5.5.5 PROJECT 90 BY 2030: CASE STUDY

The remainder of this chapter focuses on the case of a particular intermediary, Project 90 by 2030, a non-profit, public-benefit organisation (NPO and PBO) based in Cape Town. Project 90 by 2030 is named after the aspiration to reduce greenhouse gas emissions by 90% by the year 2030. The organisation is helping to build capacity in marginalised communities in the city to facilitate their transition to clean energy, while supporting and strengthening climate change mitigation efforts. Project 90 by 2030 has implemented its programme in at least four provinces in South Africa; my research focus was on its community partnership programme (CPP) in particular. The organisation's slogan is: 'Inspire. Mobilise. A low-carbon generation'. Further, Project 90 by 2030 boldly states that it 'challenges South Africans to think and act differently'. It challenges stakeholders to find ways to reduce their environmental impact on key resources, such energy and water (Project 90 by 2030, 2019).

Project 90 by 2030 has convened and opined on some of the implications of the REIPPPP for the marginalised, including the impact on jobs for semi-skilled workers in the fossil-fuel supported industries, and the misrepresentation of broad-based black economic empowerment (B-BBEE) credentials by some IPPs. It has also been working at grassroots level to support communities' transition to clean energy. While undertaking this research, I embedded myself in Project 90 by 2030's CPP and conducted semi-structured interviews with some of the participants thereof. At the time of writing, the organisation was not involved in the REIPPPPP as a service provider. Nevertheless, it was considered to be a worthwhile focus for a case study because of its development practice. I felt that insights from Project90by30 might provide learnings for others engaged in SED programmes in marginalised communities.

The organisation convenes stakeholders from various communities, and offers training on a range of subjects: explaining the instruments of democracy, such as the Integrated Development Plan (IDP); demystifying the role of the National Energy Regulator of South Africa (NERSA); and facilitating participatory opportunities for citizens when they arise. The IDP is important for communities to be aware of, as it guides the development planning of a local municipality, and is a product of a consultative process with citizens. It reflects the development agenda of local government during its term in office (Makoetje, 2017).
Project 90 by 2030 aims to address the ever-increasing costs of energy, and particularly the impact of such high costs on marginalised communities who suffer because of the ripple effect on food and transport costs. A simple, but effective, intervention has been the continued provision of training to communities on the use of the 'Wonderbag', a low-cost, low-tech bag that utilises an energy-efficient cooking method (Project 90 by 2030, 2019).

5.5.5.1 Community partnership programme (CPP)

The CPP of Project 90 by 2030 is focused on low-income communities living in areas such as Gugulethu, Nyanga, Bishop Lavis, Manenberg, Hanover Park and Khayelitsha, among others, in the Cape Town metro. These low-income communities experience enormous social challenges that are sustained thanks to the pervasive inequality in the country (Bhorat & Van Der Westhuizen, 2012). Project 90 by 2030 employs some selection criteria for participating communities to qualify, so that they can be included in the Integrated Development Plan of its municipality: a community must have an existing community-based organisation (CBO) focused on articulated needs, and must fit the definition of a 'marginalised community' in order to participate.

Semi-structured interviews were held with some participants of the CPP, and the researcher also spent time observing the group. These interactions inform the discussion that follows.

5.5.5.2 Research themes

The themes below emerged from the research.

Programme alignment with NDP

The NDP is emphatic about the importance of civil society as a link between government and the people. It advocates for people to be involved in their own development (NPC, 2012). The plan calls for the participation of citizens in platforms such as Ward Committees, participatory IDP engagement processes, and so on. With regard to energy and other critical resources, the NDP promotes the transition to renewable energy, thereby strengthening climate change mitigation measures (NPC, 2012). The participants in the Project 90 by 2030 CPP are recognised leaders in their communities, each with years of activism under their belt.

Programme alignment with SDGs

The Sustainable Development Goals (SDGs) set a deadline of 2030 for realising various development achievements by the global community. The goals are indivisible and integrated (Clark, 2017). The CPP is aligned to at least seven SDGs:

- SDG #7 – Affordable and clean energy
- SDG #10 – Reduced inequalities
- SDG #11 – Sustainable cities and communities
- SDG #13 – Climate action
- SDG #15 – Life on land
- SDG #17 – Partnership for the goals

Self-interested motivation and incentivised participation

Through the interviews with the facilitators and participants, it became evident that involvement in the programme was useful for participants, as it enabled them to access information needed for their community work, and to gain insights into how the government system works in South Africa (Westley & Vredenburg, 1997).

Project 90 by 2030's core strategy is centred around helping the activists to access the information they need in order to better resource and capacitate their organisations. This seems to be the ultimate incentive for the programme's participants too (Project 90 by 2030, 2019). Most of the participants are full-time activists and are therefore not employed. Given South Africa's current reality of high unemployment (StatsSA, 2018) and uneven development that has created islands of prosperity with increasing inequality (Bhorat, Tseng, & Stanwix, 2013), such participation is characterised by a sense of care for those who are unlikely to access opportunities in a market-driven economy (Barkin & Lemus, 2014). Participants are not paid for their engagement in the programme, but are supported with a transport stipend and refreshments provided by Project 90 by 2030 after each workshop.

Intrinsic motivation seems therefore to be the fuel for the participants (van der Horst, 2008). There is no monetary incentive to participate; it is rather the opportunity to gain knowledge to leverage their own community development work (Prendergast, 2008) that ultimately incentivises participants. CPP participants choose to take time away from their respective organisations and other commitments in order to commit to the programme. It appears that the alignment between their own organisations' goals and the content of Project 90 by 2030's CPP is a strong motivating factor (Mansuri & Rao, 2004).

Organised collective action requires a number of incentives, one of which is the attraction of being capacitated to influence political decision-making. The CPP's emphasis on understanding the IDP and preparing participants to make submissions to present at a NERSA hearing, can be considered one of these political incentives. Knoke (1988) describes these benefits as utilitarian and purposive, which are key features of organisations offering political benefits. A further observation can be made that citizenship programmes attract more interest in developing countries where citizenship is deemed important, as it potentially opens avenues to opportunities (McEwan, 2005).

Demographic diversity

A key observation of the group participating in the CPP was that women significantly outnumbered their male counterparts. This is in tune with what has been expressed in the literature on the community activism of women (McEwan, 2003). A likely explanation for this is that women disproportionately carry the load of climate change adaptation and mitigation work in low-income communities (Pandey, 2010). A home led by a woman is likely to be mired in poverty (Bhorat et al., 2013), considering also that women are much more likely to be the parent that takes responsibility for child-rearing (Hall, 2018). Given these factors, the

socio-economic status of women becomes even more precarious. I also noted the presence of a youth activist in the group, which bodes well for the intergenerational transfer of skills, knowledge and ideological development. The presence and participation of young people in civil society programmes helps them learn the ropes from experienced activists (Percy-Smith & Burns, 2013).

Esteem benefits, inclusion and belonging

Intra-group rapport, respect and cohesion were observed. The group exhibited a sense of social acceptance, emotional safety, and respect for one another. The proceedings on the particular day of my observation began with participants giving feedback and discussing their opinions of a political debate they had attended a week earlier. Most expressed their political views freely, and one went as far as telling others which political party she supported. One participant was fasting when the observation happened, as it was the period of Ramadan, and the participant was encouraged to pack her lunch and have it at home later when she broke her fast. This indicated a deep respect for the diversity in the room. There was also an acknowledgement of, and respect for, participants' roles as community leaders and activists in their work outside of the CPP forum. It was encouraging to observe the way in which the CPP then furthered an opportunity for them to advance their understanding of citizenship participation.

Empowerment and capacity-building

Research states that drivers of social change cannot successfully attempt the work without changing themselves, too, and that learning occurs within a web of relationships (Omatsu, 2010). Some of the participants indicated that they had applied their learnings from the programme in their lives already. One participant cited negotiating a workplace dispute; another explained how they were supporting a community development initiative in another community; and another described how the insights and skills had set them on a pathway to start a recycling business. This evidence is congruent with the view that learning programmes should be designed to help humans flourish by being people- and action-oriented, allowing for creativity and critical thinking (Percy-Smith, 2010). Further, it points to the fact that the programme has increased the capacity of participants to effect change in their own communities by adding to their toolkit of skills and competencies (Burch, Shaw, Dale, & Robinson, 2014).

'Frontstage' convening

Project 90 by 2030 convenes various community activists and organisations and determines the agenda for the cohort through the content of its CPP. Project 90 by 2030 methods seem to view the collaborators as independent organisations that have not surrendered their mandate to Project 90 by 2030, but have a negotiated relationship for the CPP specifically (Westley & Vredenburg, 1997). The stated boundaries for the programme are that participants need to be mandated community leaders residing in low-income communities that are energy-poor, and that the communities need to be recognised for the provision of services by the local municipality. This kind of 'frontstage' convening requires 'backstage' convening as well.

'Backstage' convening

Project 90 by 2030 spends a lot of time on 'backstage' convening, meeting with CBOs and trying to understand their work in order to explore synergies. Project 90 by 2030 holds meetings with various community activists to identify those who enjoy a genuine mandate from the community. This includes physically spending time and holding meetings in a community to build relationships and to gain trust. Effective backstage convening seems to be the best method to gain the full commitment of the activists to the programme (Westley & Vredenburg, 1997).

Distributed benefits and leadership

Project 90 by 2030's work in the CPP employs a distributed leadership style. There is a sense of equality, in the sense that power is distributed rather than hierarchical (Westley & Vredenburg, 1997). The training is focused on capacitating the participants so they can exit the programme with the ability to share the learnings in their communities and with their respective CBOs.

Social capital

Social capital has been defined as the ability to have and sustain a relationship of trust with others. Scholars suggest that there are similarities between social and human capital, and that possessing certain skills and attitudes can serve as a door-opener (Apaliyah, Martin, Gasteyer, Keating, & Pigg, 2012). Apaliyah et al. (2012), point to two forms of social capital: 'bonding' social capital, which is found in exclusive relationships between those who already know one another well, and 'bridging' social capital, which relates to relationships outside one's regular social networks. The selection process of Project 90 by 2030 involves working with those community leaders who enjoy a higher social position in their community. Some of the participants of the Project 90 by 2030 CPP know one another well and already work together. Through the programme, they have the opportunity to meet others from different communities, indicating that both forms of social capital are at play in the CPP.

5.5.6 REFLECTIONS

The empirical data collected for this study supports the argument that, while the REIPPPP programme is designed to ensure that benefits are distributed to beneficiary communities hosting IPPs, much can be learnt from civil society organisations that are already established in communities, particularly their ways of working with, not for, communities. This is a small but distinct difference in the quality of relating, and it has a profound impact. Project 90 by 2030's practice of working with CBOs and mandated representatives helps to ensure that they engage with those who already enjoy social acceptance in communities. Project 90 by 2030 also makes an explicit effort to respect all kinds of knowledge, viewing their programme as adding to existing knowledge in the community, and not replacing it. They view their role as supporting, and not prescribing to, communities.

Much can be learnt from civil society organisations that are already established in communities, particularly their ways of working with, not for, communities.

Project 90 by 2030's example demonstrates that intermediaries can have a role to play in the implementation of SED benefits in the REIPPPP. They have to first seek to understand what is already underway in communities, with the aim of supporting the realisation of needs that communities have already articulated. Their role is to support, not lead, as the community has to take charge of its own development. The REIPPPP is a burgeoning infrastructure investment programme and is expected to leave a lasting impact in beneficiary communities – and their participation in that process is therefore paramount. While I would be careful not to anoint the CPP of Project 90by2030 as being the best example of community development practice, I would certainly recommend that it be further studied and emulated where possible.

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PART SIX 6

1. LIST OF ABBREVIATIONS

AIDC	Alternative Information and Development Centre
AGM	Annual general meeting
ATTP	Assistance to the Poor
AMCU	Association of Mineworkers and Construction Union
BW	Bidding Window
BWOB	Black women-owned business
BiT	Block-inclined tariff
B-BBEE	Broad-based black economic empowerment
BAPV	Building Applied Photovoltaic
CBO	Community-based organisation
CEM	Clean Energy Ministerial
CPA	Communal Property Association
CLO	Community liaison officer
CSP	Concentrated solar power
CSI	Corporate Social Investment
CSR	Corporate social responsibility
CSIR	Council for Scientific and Industrial Research
CSIR	Council for Scientific and Industrial Research
DoE	Department of Energy
DEA	Department of environmental affairs
DBSA	Development Bank of Southern Africa
DCF	Development Coordinating Forum
DFI	Development finance institution
DER	Distributed energy resources
ED	Economic development
EnD	Enterprise development
ESG	Environment, Social and Governance
EIA	Environmental Impact Assessment
FDI	Foreign direct investment
FBE	Free basic electricity
GenCos	Generation companies
GBCSA	Green Building Council of South Africa
GHG	Greenhouse gas
GDP	Gross domestic product
IPP	Independent power producers
IPP Office	Independent Power Producers Office
IDC	Industrial development corporation
IPAP	Industrial Policy Action Plan
IASS	Institute of Applied Sustainability Studies
IDP	Integrated Development Plan
IEP	Integrated energy plan
IRP	Integrated resource plan
ILO	International Labour Organisation
IRENA	International Renewable Energy Agency
LCOE	Levelised cost of energy
LED	Local economic development
LTMS	Long-term mitigation scenario
MPRDA	Mineral and Petroleum Resources Development Act
MLP	Multi-level perspective
NERSA	National Energy Regulator of South Africa
NIP	National Infrastructure Plan
NUMSA	National Union of Metalworkers of South Africa
NDC	Nationally Determined Contributions
NGP	New Growth Path
NGO	Non-governmental organisation
NPO	Non-profit organisation
OEM	Original equipment manufacturer
PRA	Participatory Rapid/Rural Appraisal
PPA	Power purchase agreement
PBO	Public-benefit organisation
RDP	Reconstruction and Development Programme
RE	Renewable energy
REFIT	Renewable Energy Feed-In Tariff
REIPPPP, REI4P	Renewable Energy Independent Power Producer Procurement Programme
RFP	Request for proposals
IRESEN	Research Institute in Solar Energy and New Energies
SMME	Small, medium and micro enterprise
SEDA	Small Enterprise Development Agency
SSEG	Small-scale embedded generation
SEZ	Special Economic Zone
SROI	Social Return on Investment
SED	Socio-economic development
SHS	Solar Home System

Solar PV	Solar photovoltaics
SWH	Solar water heater
SAPVIA	South African Photovoltaic Industry Association
SAWEA	South African Wind Energy Association
SSN	South South North
SOE	State-owned enterprise
SNM	Strategic niche management
SDGs	Sustainable Development Goals
TENTRANS	Tendering Sustainable Energy Transitions
ToR	Terms of Reference
WOV	Women-owned vendors

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