

Perspectives on Business and Economics



SOUTH AFRICA: REMEDIES FOR THE PAST AND OPPORTUNITIES FOR THE FUTURE

Volume 38 2020

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PERSPECTIVES ON BUSINESS AND ECONOMICS

Volume 38 2020

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SOUTH AFRICA: REMEDIES FOR THE PAST AND OPPORTUNITIES FOR THE FUTURE

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Perspectives on Business and Economics is the journal of the Martindale Student Associates Honors Program founded and run by the Martindale Center for the Study of Private Enterprise at Lehigh University. Each year, a faculty panel selects 12 of Lehigh's finest undergraduate students to become Martindale Student Associates. The students each undertake research focusing on an aspect of the economy and business environment of a foreign nation and prepare articles for publication in this journal. The country of focus changes each year.

This cohort's study of South Africa began in the spring of 2019. After several on-campus orientation seminars, the group made the program's annual trip to Washington, D.C., for a series of in-depth country briefings at the South African Embassy, USAID, and US Department of State. The cohort also had a rare treat, the opportunity to spend a day in New York City for briefings by the South African Consulate General and CIVICUS, a civil society advocacy group. In May, the Student Associates and faculty advisors traveled to South Africa for an intensive 11 days of travel, meetings, lectures, briefings, and discussions in Johannesburg, Pretoria, Pilanesberg, and Cape Town, with leaders from government, business, and academia whose expertise and enthusiastic participation in and support for the program are key to the success of our mission. Other highlights included a safari in Pilanesberg National Park and a visit to the UNESCO World Heritage site, Cradle of Humankind.

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The Martindale Center acknowledges the critical role played by alumni, parents, friends, and the many experts in South Africa and the US who gave generously of their time and expertise as advisors, co-organizers, and speakers to help make the 2019–20 program and Volume 38 of this journal a success.

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Malose Letsoalo, economic minister, arranged our visit to the South African Embassy in Washington, D.C., and also put us in contact with the Department of Trade and Industry in South Africa as well as the Consulate in New York City.

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SOUTH AFRICA: REMEDIES FOR THE PAST AND OPPORTUNITIES FOR THE FUTURE

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INTRODUCTION

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RESTRUCTURING ESKOM: TRANSFORMING SOUTH AFRICA'S ELECTRICITY SECTOR

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South Africa's electricity sector is dominated by the state-owned and vertically integrated electrical utility, Eskom. Once named the *Financial Times* Power Company of the Year, Eskom now struggles with reliably supplying electricity to Africa's second largest economy. It is the most serious risk to South Africa's national budget and economy. This article discusses how South Africa's electricity sector can be transformed to resolve Eskom's debt crisis, fuel competition, and embrace renewable electricity generation.

INCREMENTALISM IN THE SOUTH AFRICAN LEGAL SYSTEM: SOCIOECONOMIC RIGHTS AND THE JUDICIARY

Aaron K. Adams 11

The South African Bill of Rights expressly provides citizens with the socioeconomic rights to housing, health care, and education. As a constitutional issue, the economic and administrative difficulties in delivering these rights have been addressed as a subject of the courts. Increased access is the legal prescription for socioeconomic rights achievement. This article explores case law evidence for a different way in which judicial interpretation expands these rights. I have termed this, *incrementalism*: the progressive realization of the right through its components.

THE EFFICACY OF SOUTH AFRICA'S BROAD-BASED BLACK ECONOMIC EMPOWERMENT POLICY

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Twenty-five years after the end of apartheid, South Africa remains one of the world's most unequal countries. Broad-Based Black Economic Empowerment is one policy by which the government has sought to reduce inequality by promoting black involvement and ownership in the economy. This article discusses the efficacy of that policy as it relates to governance and needed improvements in education, entrepreneurship, and women's empowerment.

FOOD SECURITY IN SOUTH AFRICA IN AN ERA OF CLIMATE CHANGE

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Concerns regarding food and water security in South Africa are increasing at a rapid pace while the effects of climate change have a disproportionate impact on the region. At the core of the climate change conversation in South Africa is the issue of food security. This article identifies challenges and problematic trends related to the relationship between food security and climate change and then evaluates potential solutions regarding production of food.

EXPROPRIATION WITHOUT COMPENSATION IN SOUTH AFRICA

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Due to the slow progress of land reform in South Africa, there has been increasing political pressure for the government to expropriate land without compensation (EWC). Consequently, there currently is a draft bill in the South African parliament to amend the Constitution to explicitly legalize EWC. This article discusses how EWC came to the forefront of the South African land issue as well as the advantages and disadvantages of utilizing EWC as a mechanism for land reform.

SOUTH AFRICA'S LABOR FORCE AMID TECHNOLOGICAL CHANGE

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South Africa's labor force is ill prepared for the advent of digitalization, with 35% of all jobs at risk

of displacement. This article analyzes the current challenges and capacities of the South African labor force and suggests appropriate measures moving forward to mitigate the effect of technological change.

VOCATIONAL EDUCATION IN SOUTH AFRICA

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South African youth are the most vulnerable in that country's labor market, with a strikingly high unemployment rate. This article addresses the vocational education system in South Africa and offers recommendations and implementation strategies to address the impact of youth unemployment transformation. Current challenges and capacities in the South African labor force are analyzed and appropriate measures to mitigate the effect of technological change are suggested.

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This article explores the unintentional harmful consequences of governmental policies meant to diminish racialized housing disparities. The need to better consider community-based solutions to address housing segregation and the entangled disparities is discussed. Empower Shack and Hustlenomics are posed as two successful and growing examples of positive systematic interventions.

COMBATING CORRUPTION IN THE SOUTH AFRICAN PUBLIC HEALTH SECTOR

Christianna Angeli S. Pepingco 73

Corruption in the public health sector threatens the health and well-being of South Africans, and inadequate accountability and enforcement by the government allow for injustices to prevail. This article discusses how the vulnerabilities of the South African public health system allow corruption to persist, evaluating current efforts to mitigate corruption and offering recommendations to improve tactics in the fight against it.

HIV AND AIDS IN SOUTH AFRICA: EMPOWERING INDIVIDUALS TO MAKE WIDESPREAD CHANGE

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For over three decades, the HIV and AIDS epidemic has been ravaging South Africa with only limited success in controlling the spread of the virus. Pre-exposure prophylaxis provides a novel opportunity simultaneously to progress toward the end of the epidemic and to empower marginalized groups by giving them more control over their health. This medication will serve a dual purpose by protecting individuals and beginning to unravel the sociocultural forces that allowed the epidemic to flourish at its onset.

SOUTH AFRICA'S EDUCATION DILEMMAS

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South Africa has made progress in attempting to address and alleviate the social barriers and systemic inequality born out of apartheid. However, the current education system continues to fail poorer students, thereby perpetuating class inequality. This article examines the issues most prevalent in South Africa's public education system and provides possible solutions that can alleviate the high levels of disparity present.

RESTRUCTURING SOLID WASTE MANAGEMENT IN SOUTH AFRICA: OPPORTUNITIES FOR ECONOMIC GROWTH AND DEVELOPMENT

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South Africa is failing to manage the waste that its rapidly growing population is generating in urban areas. Existing waste infrastructure is deteriorating while environmental degradation, per capita energy demand, and unemployment continue to rise. This article examines how economic value can be derived from organic waste via anaerobic digestion methodologies to create a solution that synergically solves many problems related to a legacy of historically unsustainable development within the country.

CONTRIBUTORS..... 108

INTRODUCTION

I congratulate the scholars in the Martindale Student Associates Honors Program at Lehigh University for their fine research work in this volume. I was honored to learn about these bright students' interests in South Africa in Spring 2019 when the Martindale Center reached out to me, as Acting Consul General, and my colleague Consul Dion van Tonder during planning for the program. We were pleased to host the Lehigh team in South Africa's Consulate in New York, and Mr. van Tonder was impressed with his discussions with the students and faculty while in Bethlehem. It is heartening to know that researchers, in particular emerging young scholars in the US, are keen to learn about our nation and people. We were happy to hear that our assistance was helpful in facilitating the program's activities at the Embassy of South Africa in Washington, D.C., and at various ministries in Pretoria. The Martindale Program leaders and students are to be commended: the impressive 18-month program appears to have been jam-packed with meaningful opportunities.

As the diversity of the timely and important topics of the articles in this volume suggests, South Africa is dynamic and complex, a still-evolving young democracy. The Martindale students' visit was especially well timed: it coincided with the commemoration of 25 years of democracy in South Africa. As South Africa's Ambassador to the United States N.C. Mfeketo reflected in 1994, "millions of hopeful South Africans, united in our diversity cast our votes for the first time for a new South Africa," in so doing expressing "our hopes and aspirations for an equal, just, democratic and non-racial society in which all could live freely."

The youth of the Soweto uprising in June 1976 awakened the international community to apartheid, eventually leading to dismantling that repressive system in 1994. Those youth fought for equal and quality education for all. When the Lehigh scholars arrived 43 years later, our nation was amidst reflection on the great strides the country has taken toward addressing a host of challenging issues, such as race and equality of economic opportunities.

Today, as several insightful articles herein point out, our young democracy's constitution is unique in enshrining key socioeconomic rights, including universal rights to education, housing, and health care. I am glad to see these hard looks from outsiders' perspectives at our progress on such core constitutional promises.

Working to deliver on those promises, today's government aims to provide opportunities for all South Africans to be educated and gain the skills to grow the economy. Government investment in the Technical Vocational Education and Training colleges and the National Student Financial Aid Scheme are some of the ways we are addressing the skills gaps. Those gaps and implications for schools and employment opportunities are the specific foci of two fascinating articles in this volume. Highlighted too are the important Black Economic Empowerment program and ongoing efforts tackling South Africa's aging power infrastructure, land ownership reform, waste management, and food security.

These 12 articles present a comprehensive exploration of modern South Africa. The student scholars have tackled some of the most vexing challenges and emerged with valuable insights and well-grounded suggestions. By taking a keen interest in our beautiful country's socioeconomic challenges, the students unequivocally have become true friends of our nation, their actions echoing the words of the late South African antiapartheid revolutionary, political leader, philanthropist, and former President of South Africa (1994–1999), Nelson Rolihlahla Mandela, "I like friends who have independent minds because they tend to make you see problems from all angles."

I am grateful for the solidarity evident in this volume and by the sincere interest in and deep exploration of our country. Congratulations to the Martindale Student Associates once again for such fine work.

Gavin du Preez
Consul
South African Consulate General
New York

RESTRUCTURING ESKOM: TRANSFORMING SOUTH AFRICA'S ELECTRICITY SECTOR

Tino Petros



South Africa's electricity sector is dominated by the state-owned and vertically integrated electrical utility, Eskom. Once named the *Financial Times* Power Company of the Year, Eskom now struggles with reliably supplying electricity to Africa's second largest economy. It is the most serious risk to South Africa's national budget and economy. This article discusses how South Africa's electricity sector can be transformed to resolve Eskom's debt crisis, fuel competition, and embrace renewable electricity generation.

Introduction

Eskom is South Africa's state-owned and vertically integrated electrical utility. It generates and supplies effectively all the country's electricity. The utility has struggled to reliably supply South Africa with electricity since the load shedding¹ episode of 2008 that escalated into a national emergency. Eskom's mismanagement of coal-based, electrical capacity expansion projects, aimed at resolving these initial shortages, has contributed to its financial troubles. Its R454B (\$32B)² debt burden as of September 2019 represents about 15% of South Africa's sovereign debt and makes the utility the most serious risk to the country's national budget and economy (Eskom, 2019b,

p. 5; Leprich, 2019, p. 24; National Treasury, 2019, p. 51). Yet, as recently as 2001, Eskom was recognized as the *Financial Times* Power Company of the Year at the Global Energy Awards (Du Toit, 2019). Government policy failures, over-reliance on coal, state capture, and mismanagement have contributed to the recent decline of the utility. Given its dominant role in the electricity sector, restructuring Eskom and transforming the sector are virtually synonymous.

Calls for the broad reformation of the electricity sector from global investors, industry, and civil society are louder now than in all its century-long existence. In response to pressure for action on Eskom, President Cyril Ramaphosa promised to unbundle Eskom into separate generation, transmission, and distribution entities in his February 2019 State of the Nation Address. The Department of Public Enterprises (DPE) subsequently released a document detailing the government's plans to restructure Eskom: *Roadmap for Eskom*

¹As a last resort and preventative measure to prevent the collapse of the electric grid, consumers are rotationally cut off from electric supply to shed excess electricity demand (Leprich, 2019, p. 11).

²This article assumes an exchange rate of \$1 = R14, rounded to the nearest billion.

in a *Reformed Electricity Supply Industry* (2019). Although the plan is a step in the right direction, the government has notably vowed to keep all the newly unbundled entities under state ownership. The *Roadmap* forgoes the opportunity to strongly address the lack of competition in electricity generation and fails to fully embrace the promise of renewable generation.

In this article I briefly deal with the long history of South Africa's electricity sector. I contrast recent government policy with independent expert opinion on how Eskom can be restructured to resolve its debt burden and the electricity sector transformed to embrace competitive and renewable generation. Lastly, I address the most critical challenge to broadly transforming the electricity sector: protecting the livelihoods of communities that have historically supported coal mines and coal-fired power stations.

Becoming Eskom

It will be our endeavor...as pioneers to foresee the needs of a country fast developing, and by wise anticipation be ever ready to provide power without profit, wherever it may be required.

—Dr. Hendrik Johannes van der Bijl, Founding Chairman, *Eskom, n.d.*

A Century of Progress

The century-long history of South Africa's electricity sector sheds light on how it came to be dominated by Eskom and why it faces immense challenges today. Electrification efforts in South Africa were initially related to telegraphy and street-lighting. The discovery of gold in Witwatersrand in 1886 led to greater demand for electricity as mining companies sought to illuminate mines and power small machinery. The strong bond between mines and the electricity sector in South Africa still exists. Although mines initially had their own generation plants, it soon became clear that a centralized electricity project would supply power more adequately and cheaply, which led to the formation of the Victoria Falls Power Company Limited (VFP) in 1906. Owners of this independent but inaptly named endeavor

abandoned original plans to harness the power of the distant Victoria Falls and opted to use coal deposits in the northerly Transvaal region of South Africa. To this day, South Africa relies heavily on coal-fired power stations for generation (Table 1) (Eskom, n.d.).

In 1909, four colonies that make up the modern-day Republic of South Africa established the Union of South Africa. The statement above, by the founding chairman of Eskom, Dr. Hendrik Johannes van der Bijl, exemplified the government's view of the provision of electricity as a public service; the government passed the Power Act of 1910 to nationalize VFP and later established Eskom in 1922. In the following decades, Eskom electrified railways throughout South Africa, established power stations to supply growing mining activities, and acquired all the remaining private entities in the electricity sector. It utilized advancements in transmission technology in the 1960s to establish an interconnected network to pool all the power stations into one central grid, which effectively improved economies of scale, enhanced reliability, and helped lower electricity prices. The utility became more critical to the economy and ramped up coal-fired generation in the 1970s and 1980s to meet energy demand that could no longer be fulfilled by oil and gas imports, which were limited by increasing international anti-apartheid pressure on South Africa at the time (Eskom, n.d.).

After the end of apartheid in 1994, Eskom grew even larger as it embarked on an aggressive electrification campaign. It sought to directly service the black townships and rural households previously neglected under apartheid. In 1995 alone, Eskom connected more than 300,000 households—equivalent to a thousand per business day. By the turn of the century, Eskom was known as a model utility; it was recognized as a leading power company at the Global Energy Awards in 2001 for providing the world's lowest-cost electricity, increasing transmission system reliability, and developing superior methods for combustion of low-grade coal (Du Toit, 2019).

Rapid Decline

Less than a decade after receiving the

Table 1
Share of Electricity Generation by Source in 2016 (%)

Coal	85.7
Nuclear	5.2
Gas	4.9
Other renewables	2.7
Pumped storage	1.2
Hydro	0.3

Source: Leprich (2019, p. 9).

Global Energy Awards accolades, Eskom found itself at the center of a national emergency. The utility was forced to introduce load shedding in January 2008, after the reserve margin—the ratio of excess electrical capacity to peak demand—had fallen from 27% in 1999 to 5% ten years later (Chettiar et al., 2009). No significant additional electrical capacity had been added to the South African grid after the end of apartheid. Misalignment between the government entities responsible for the execution of a well-intentioned plan to restructure Eskom and to transform the electricity sector contributed to this decline in supply reliability.

The Department of Minerals and Energy (DME) 1998 *White Paper on the Energy Policy of the Republic of South Africa*, the seminal post-apartheid government policy on energy, was a visionary guideline that highlighted how South Africa’s energy sector ought to adapt for the twenty-first century. The *White Paper* envisaged the unbundling of Eskom, discussed the introduction of competition into generation, and predicted supply shortages by 2007, barring the installation of additional capacity. In 2001, the Cabinet of South Africa followed up on the *White Paper* with a mandate that sought to commence private sector participation, by completely disallowing Eskom from making further investments in generation (Newbery & Eberhard, 2008). Responsibility for new electrical capacity was given to the DME to apportion to independent power producers (IPPs). The DME, however, did not have the ability to successfully contract IPPs. It did not even have direct access to the grid or institutional authority to influence

Eskom and hold it to account. Eskom is managed by the DPE not the DME. Although it recognized the need for additional capacity, Eskom had no incentive to support IPPs, which it tacitly resisted. Yet, its dominant position and control of the transmission grid meant that its participation was crucial for IPPs to be successful. Ultimately, the DME failed to set up the requisite legal and regulatory framework to facilitate the procurement of IPP power purchase agreements (PPAs) in time (Trollip et al., 2014). Just as more South Africans were being connected to the electricity grid and demand was rising, no new capacity was added. The Cabinet ultimately had to reverse its mandate and reauthorize Eskom to manage new generation projects in 2004.

After it regained responsibility for capacity expansion projects, Eskom rushed to resolve South Africa’s falling electricity reserve margin and began construction on two new coal-fired power stations, Medupi in 2007 and Kusile in 2008. Medupi and Kusile are among the world’s largest coal power stations; they were planned to have a combined installed capacity of about 10,000 MW, expected to cost R160B (\$11B), and scheduled to be completed by 2014 (Donnelly, 2019). The mismanagement of this investment after the inauguration of Jacob Zuma as President, in 2009, worsened Eskom’s crisis. Zuma allegedly used his powerful position to place corrupt officials in government-owned entities, including at Eskom, and to forward government contracts to the controversial Gupta family and their associates for a cut of the proceeds (Madonsela, 2016; Hofstatter, 2018). Owing to state capture and mismanagement, Medupi and Kusile have

suffered time and cost overruns, construction defects, and labor problems. According to the South African Parliament (2019), the total cost of Medupi and Kusile had tripled by March 2019, whereas only half of the combined generation units at Medupi and Kusile had begun commercial service.

While government policy failure, state capture, and mismanagement, all made easier by Eskom's vertically integrated nature, were the face of its recent decline, there is another important factor: coal. The domination of coal in generation (see Table 1) makes the South African electricity sector extremely inflexible. The country's coal deposits are in the Transvaal region in the northeast, where almost all the electricity is generated. Eskom incurs high transmission costs as it transmits power from the northeastern provinces to the rest of the country. Coal-powered capacity expansion projects are also capital and time intensive; they often are marked by cost and time overruns like those experienced at Medupi and Kusile. Furthermore, it is going to be extremely difficult for South Africa to finance new coal projects going forward as global investment firms increasingly buckle under pressure to divest from coal-fired power stations. All this is in addition to the reality that only one global investment rating firm yet remains to downgrade South African government bonds to junk status³ because of the debt-riddled nature of the country's economy (Toyana, 2019).

Restructuring Eskom

This configuration is no longer suitable to meet the country's energy needs and has made the business susceptible to the kind of problems it has recently experienced... (DPE, 2019, p. ii).

What Has Been Done So Far

In October 2019, the DPE released a plan that dismisses Eskom's configuration as

³Junk bonds carry a much higher risk than most bonds issued by governments or corporations. If South African bonds become universally rated as junk, the country will pay higher rates to borrow, lose its place on the World Government Bond Index, and lose out on billions in potential investments (Toyana, 2019).

unsuitable for the twenty-first century and details the government's plans to restructure it: *Roadmap for Eskom in a Reformed Electricity Supply Industry*. The *Roadmap* lists unbundling Eskom, improving transparency in the utility's governance, resolving the debt crisis, and ensuring sustainable livelihoods for workers and communities as key steps toward change. The document has been received as a positive first step in the transformation of South Africa's electricity sector, but government can do more to minimize Eskom's reliance on financial support from government, facilitate private participation to address the lack of competition in generation, and encourage the use of renewable sources of electricity.

The *Roadmap* generally recognizes Eskom's challenges as broadly falling under structural, financial, and operational categories. It outlines the structural separation of the generation, transmission, and distribution functions of Eskom into separately managed subsidiaries under Eskom Holdings. The government argues that unbundling Eskom will create transparency to protect against corruption, enhance management focus, and improve efficiency. The *Roadmap* also addresses Eskom's financial challenge and mostly assumes continued government financial support to ensure Eskom continues to meet its debt obligations. This support includes a total of R100B (\$7B) over the next three years, on top of an existing R350B (\$25B) government guarantee (National Treasury, 2019, pp. 6, 62). This financial support is conditional on the implementation of various operational measures that include stringent performance reporting regimens and cost containment in coal procurement and compensation. The most important commitment that the government makes in the *Roadmap* recognizes the potential social impact of restructuring Eskom. The government pledges to establish a fund to retrain and re-skill workers who may be displaced by the eventual decommissioning of coal-fired power stations. Although internal progress has been made towards unbundling Eskom, no significant portion of the *Roadmap* has been completely executed as of this writing.

There Is Room for Improvement

Overcoming debt, igniting competition

The upcoming restructuring of Eskom may be an opportune time to consider the privatization of electricity generation in South Africa. Not doing so further commits tens of billions of dollars to supporting Eskom and continues to risk national creditworthiness. In the *Roadmap*, the government discusses plans for the recovery of proceeds lost to corruption and outstanding fees owed to Eskom by municipalities and neighboring countries. Although these measures should be executed, they will only lessen Eskom's financial hemorrhage at best, not resolve its debt crisis.

Eskom can raise more money than it owes by auctioning the majority of its coal-fired generation assets. Two inaugural members of the Ministerial Advisory Council on Energy in South Africa published a cost-reflective financial model that illustrates that the auction of Eskom's power stations could raise most of the funds needed to finance Eskom's R454B (\$32B) debt. They propose a multi-year staggered auction whereby ten coal power stations would be sold—all except the oldest five of Eskom's 15 power stations due to be decommissioned within five years. Each sale would be bound by a fixed-term PPA that entitles the purchaser to supply at least a specific amount of electricity over the remaining lifetime of the power station, at a predetermined station-specific tariff.⁴ The model's estimations leave a margin for the purchaser, after accounting for the cost of coal, labor, operations, and the eventual decommissioning of the power station. The authors estimate that with good implementation, the proposed auctions could raise R450B (\$32B), effectively settle Eskom's debt, and retain national creditworthiness. Furthermore, fixed-term PPAs would determine electricity prices for years to come, which provides industry, investors, and

⁴Seven out of ten of the eligible power stations are due to be decommissioned by 2040; the majority of PPAs will be less than 20 years long (Bischof-Niemz & Van den Berg, 2018). To reflect the effect of inflation, predetermined tariffs would have to be accompanied by reasonable annual adjustments.

households with certainty (Bischof-Niemz & Van den Berg, 2018). Although it is unclear how much interest there is in Eskom's coal-fired plants from private companies, traditional coal mining companies like Glencore that already supply Eskom and multinational energy companies like Enel that have the capability to run coal-fired power plants would be logical buyers (Caboz, 2019). Given the political challenge of privatizing Eskom's generation assets completely, some of these assets can be publicly owned, perhaps through instruments such as pension funds, while the rest can be auctioned to private companies.

Auctioning Eskom's generation assets also would begin to introduce competition to the electricity sector. Instead of taxpayers carrying the burden of Eskom's underperformance through the national budget, such a burden would be rightfully passed on to power station operators who have every incentive in a new competitive market to produce electricity more efficiently and less costly than Eskom. This decentralization of generation ensures flexibility, which is required to absorb new technological innovation. Recent innovation has been achieved in solar and wind, for which costs have been falling. Nonetheless, detachment of generation from transmission and distribution will allow Eskom, as a system operator or steward of the national transmission grid, to still be a critical but more focused part of the electricity sector.⁵ Furthermore, this separation opens up transmission and distribution to exciting customer-friendly opportunities; electricity retail markets can be set up to allow end-customers to choose an electricity supplier by source type or to receive compensation for supplying excess on-site generation capacity to the grid.

Embracing renewables

Unbundling Eskom is the only way to challenge South Africa's dwindling minerals-energy complex by which Eskom came to

⁵Unlike generation, which can now run well on smaller distributed plants than in the past, transmission and distribution can be run well on one set of wires, so they continue to have increasing returns to scale and network effects that make them natural monopolies and unsuited to competition (Hunt, 2002).

be a coal-reliant utility and make room for less costly and environmentally sustainable alternatives for generating electricity. In South Africa, the minerals-energy complex is the system of production and consumption based on the country's historical dependence on coal to produce electricity for an export-oriented industry based on minerals (Baker, 2017). While the coal mining industry supplies coal for about 85% of generation (see Table 1), it also is among Eskom's biggest customers for electricity. This generates a conflict of interest whereby the utility is reluctant to consider other forms of generation due to its own large fleet of coal-fired stations and interdependence with influential coal mining companies that are interested in continuing to supply its generation business. The minerals-energy complex no longer provides the cheapest electricity, even before considering the large externality costs of emissions from coal.

South Africa's least costly and most sustainable long-term electricity supply configuration is one that is diversified, distributed, and based mostly on renewable capacity. The country's large coal resources coupled with the historical externalization of environmental costs have made coal-fired power stations the cheapest way to generate electricity in the past. However, Bischof-Niemz and Creamer (2019) highlight that over the last few decades, the cost of solar photovoltaic (PV)⁶ and wind has fallen dramatically through innovations subsidized by first adopters, such as Germany, USA, and China. South Africa does not have to pay this price. In fact, a comparative analysis of data from South Africa's own successful but limited Renewable Energy Independent Power Producer Program (REIPPP) shows that new solar PV and wind generation capacity in South Africa is 40% cheaper than new coal-fired capacity, with costs forecasted to fall even further in the future. This is in addition to the fact that South Africa has world-class solar and wind resources. For example, it has two times Germany's solar resource, yet Germany already

has 40 GW of solar PV installed compared to South Africa's 1.8 GW.⁷ Scientists in South Africa have demonstrated that solar PV and wind will be the least costly ways to supply 82% of South Africa's electricity by 2050 (Bischof-Niemz & Creamer, 2019, pp. 45, 50, 65). Yet, current electricity sector policy clearly shows the government's reluctance to move more aggressively in this direction.

The latest Integrated Resource Plan (IRP) illustrates some of the government's desire "to ensure that South African coal still plays an integral part of the energy mix" (DOE, 2019, p. 15). The IRP is an electricity infrastructure plan that lays out the South African government's intentions for the electricity sector. The current IRP retains historical constraints on the annual addition of solar PV capacity to 1000 MW and wind capacity to 1600 MW for another decade, while continuing to allocate some new coal and even nuclear capacity. This may be a result of the politicization of the electricity sector, enabled by Eskom's configuration as a state-owned entity. Eskom and the coal mines that supply it are large and visible employers of highly unionized and politically active labor. Broadly embracing renewables and rapidly transitioning away from coal for generation, therefore, would be politically inconvenient for any government that tries to do so in South Africa. However, should South Africa hold on to coal for too long, the country will soon be spending much more on electricity. The least costly option would be to decommission coal-fired power stations as scheduled and allocate all new capacity to solar PV and wind (Bischof-Niemz & Creamer, 2019). Although economically ideal, the least costly option cannot be implemented in the present environment; Eskom previously has obstructed renewable projects by refusing to sign contracts with the winning bidders in REIPPP auctions (Yelland, 2017). However, if generation were independent, competitive, and separate from Eskom, the utility would have no option but to purchase the cheapest electricity available from IPPs, which in a competitive generation market, would over time increasingly choose to generate electricity from solar and wind.

⁷For perspective, South Africa's entire coal fleet has an installed capacity of 38 GW (DOE, 2019, p. 14).

⁶PV technology converts sunlight into electricity directly, as opposed to concentrating solar technology, which converts sunlight to concentrated heat that then generates electricity.

Challenges Lie Ahead

Privatization is a polarizing proposition in a country with an unemployment rate as high as 29% in 2019. Although the introduction of competition to generation in South Africa may resolve Eskom’s debt crisis, address supply shortages, and improve efficiency and reliability, it is extremely politically controversial. Eskom employs more than 46,000 people, and coal mining, which supplies close to half its output to Eskom, employs 80,000—about 17% of the entire mining industry (Eskom, 2019a, p. 133; Bischof-Niemz & Creamer, 2019, p. 147). Both workforces are highly unionized and politically influential; the Congress of South African Trade Union (COSATU), for example, represents many of these workers and is directly linked to the ruling African National Congress (ANC) through the Tripartite Alliance.⁸ The influence of unions has played a large role in the government’s reluctance to drastically transform the electricity sector. While threatening mass strikes in September 2019, COSATU demanded that no employee be retrenched during any turnaround of Eskom. These fears are not completely unfounded; analysts repeatedly cite addressing Eskom’s bloated staff as an essential part of any cost reduction measure at the utility (Ensor, 2019). Unions also often have expressed concerns that renewables were being introduced by profit-making interests, fueling narratives that any transition to renewable generation would negatively affect coal-related jobs and widen wealth inequality (Baker, 2014).

⁸Established ahead of the 1994 elections, the alliance is comprised of ANC, COSATU, and the South African Communist Party. The three wings are very closely intertwined, particularly for the purpose of garnering support for elections.

South Africa’s history with racial inequality should not be ignored in any potential transformation of its electricity sector. Fears exist that the historically disadvantaged, mostly black communities, largely located in the poorer northern regions of South Africa, such as Limpopo and Mpumalanga in the Transvaal region, that have historically supported the country’s mineral-energy complex, will be the most negatively impacted by a transition away from coal. Jobs aside, coal-fired power stations have also spurred economic activity by bringing much needed infrastructure development in the form of roads, schools, and shops to communities. Thus, any successful transformation of the electricity sector would need to be implemented in a way that not only mitigates potential negative societal impact for such communities but also challenges the legacy of inequality left by apartheid.

Some evidence exists that Eskom can be restructured, and the electricity sector transformed, without negatively harming jobs in the long term. A colossal coal-fired power station may be a more visible employer than a modest solar or wind farm, yet a study conducted for South Africa’s Integrated Energy Plan (IEP) demonstrates that new solar and wind projects would provide more new employment opportunities than coal in South Africa (cited by Bischof-Niemz & Creamer, 2019). Solar PV and wind farms have lower capacity factors than coal stations due to the variability of sunshine and wind speed. They also generally have shorter lifetimes. Therefore, more solar PV and wind generation capacity must be installed more frequently than comparable coal-fired capacity to consistently provide the same amount of electricity. This allows solar and wind technologies combined to provide more direct jobs than coal (Table 2). The IEP

Table 2
Permanent Jobs from Producing 100 TW Hours
of Electricity in Perpetuity by Source

	Direct Jobs	Indirect Jobs	Total Jobs
Coal	20,486	7,696	28,182
Solar and wind	26,475	10,517	36,992

Source: Adapted from Bischof-Niemz & Creamer (2019, p. 141).

also highlights an even more important aspect of employment creation called localization: the proportion of a technology's entire value chain that can be easily provided in-country. Solar PV and wind have 45% and 79% immediate localization in South Africa, respectively, whereas coal has 53%. Therefore, in aggregate, the value chain that supports renewable generation infrastructure can be localized more easily to employ South Africans than that for coal. In fact, at a national scale, new solar PV and wind generation capacity would produce 30% more permanent direct and indirect jobs than new coal capacity (see Table 2) (IEP cited by Bischof-Niemz & Creamer, 2019). The benefits of solar and wind over coal may be clear in the aggregate and in the long term, but ensuring that such benefits can reach all South Africans in a reasonable time frame may be elusive.

Looking Forward

If the politics of restructuring Eskom are to work...we need to honor coal mining and power-station communities, whose labor has been the foundation on which South Africa's industrial development has been built.

—Dr. Grové Steyn, *EE Publishers, 2018*

A key reason why ideas such as the privatization of generation or greater use of renewables have not caught on is that socio-political challenges unique to South Africa make seemingly acceptable solutions much more complicated to execute. To overcome these challenges, the South African government can do more to engage citizens and assuage their fears. It can combat the notion that renewable generation is not labor intensive; solar and wind provide more but different jobs. The government can use its proximity with unions to help workers understand that the transformation of the electricity sector is a multi-decade transition. Coal-related jobs will not go away tomorrow. Unions, in particular

those that represent coal miners and coal-fired power station workers, can take the lead in educating their members and re-skilling them for the plentiful jobs that a renewed electricity sector eventually will provide. Broad-Based Black Economic Empowerment (BBBEE) is South Africa's legislation that seeks to redress the legacy of apartheid by requiring the economic participation and empowerment of historically disadvantaged people (see article by Buonasora in this volume). Private participation in the electricity sector can be strictly held to the standards of BBBEE to ensure local ownership, job creation, and skills development. Local leadership in communities that have historically supported the mineral-energy complex can lobby for renewable generation projects to be located on land previously used for coal mines or coal-fired power stations; such locations already are conveniently close to the existing electricity transmission lines, labor, and other amenities. Public funds, such as pension funds and other community-based trusts, can be used to grant ownership stakes in solar PV or wind farms to the general public and ensure that they play a role in the technology's promising upside.

South Africa has taken the first few steps in responding to the need to transform its electricity sector. The *Roadmap* lays out what needs to be done with Eskom, particularly to address its structural and operational challenges. However, its proposals to address Eskom's debt, the lack of competition in generation, and the country's over-reliance on coal still fall short. The government has many opportunities to engage all South Africans, especially the historically disadvantaged, to create a political environment in which renewable and competitive electricity generation is acceptable. Hopefully, the government will honestly and openly engage workers' unions, community leadership, and all of South Africa, not only to successfully transform the electricity sector but also to do so for the benefit of all South Africans.

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INCREMENTALISM IN THE SOUTH AFRICAN LEGAL SYSTEM: SOCIOECONOMIC RIGHTS AND THE JUDICIARY

Aaron K. Adams



The South African Bill of Rights expressly provides citizens with the socioeconomic rights to housing, health care, and education. As a constitutional issue, the economic and administrative difficulties in delivering these rights have been addressed as a subject of the courts. Increased access is the legal prescription for socioeconomic rights achievement. This article explores case law evidence for a different way in which judicial interpretation expands these rights. I have termed this, *incrementalism*: the progressive realization of the right through its components.

Introduction

The words, *reasonable measures*, shape socioeconomic law in South Africa. This phrase has delineated the path that the courts have taken, and will take, in interpreting cases of the government's shortcomings in delivering constitutionally prescribed rights to housing, health care, and education. Justice Zak Yacoob, in his majority decision in *Government of the Republic of South Africa et al v. Grootboom et al* (*Grootboom*), spoke for the Constitutional Court in directing legislators to take "reasonable measures to provide adequate housing" (2000, p. 11). Expanding beyond that right alone, the state is constitutionally obliged to "take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of each of [the aforementioned] rights" (2000, p. 11).¹

¹The example of education is explored in further detail later in this article. The right to basic education is written and understood differently from the rights to further

What the *Grootboom* decision did in applying that clause to its reasoning was to cement it as a feature of judicial decision making. It was thereafter established as a litmus test that the courts could use in determining the adequacy of the government's efforts. Subsequent socioeconomic rights trials have been determined on this decision's logic. Rather than focusing on the right to access, the courts placed emphasis on the state's positive duties. Although the question of access remained relevant to the courts, the reasonable measures test became central to their jurisprudence. Was the government taking adequate steps within the limitations of finite resources to deliver constitutional guarantees? This question decided *Grootboom*, and it has driven many of the landmark socioeconomic rights cases since.

In generating a reasonable measures test, the South African Constitutional Court

education, housing, and health care, and the concept of "progressive realization" does not apply to it.

has established an incrementalistic doctrine for socioeconomic rights achievement. In effect, the constitutionally demarcated rights to housing, health care, and education will not be realized by any single, potential case directing government action; rather, a series of court decisions achieving sub-rights of the whole will incrementally bring those entitlements into existence. An analysis of relevant case law reveals this pattern to be the methodological paradigm of the courts.

Through the armature of case law precedent of the South African courts, I argue for the existence of an extraconstitutional principle that underlies socioeconomic law. This principle is a product of the combined definitions of *progressive realization* and *reasonable measures* as they are interpreted through the lens of the Constitutional Court's test. This test manifests in a judicially constructed remedial pattern, that I term, *incrementalism*.

Incrementalism exists in the political science lexicon as a form of governance whereby policies are formed through partisan mutual adjustment utilizing proposals that only incrementally alter the status quo (Hayes, 2017). I use the term in reference to South African law in a different way. Incrementalism, as used in this article, refers to the way in which the courts act in a quasi-legislative manner in defining the components of socioeconomic rights.

The purpose of this article is to call to attention a methodological structure that is implicit in the courts' reasoning, which I have observed from analysis of socioeconomic rights cases. While the concept of incrementalism is of use to an academic understanding of judicial reasoning, I hope that what is written here can serve a strategizing purpose. What is common in almost all the cases that I have explored is the presence of non-governmental organizations serving a supporting legal role to those who have not received their constitutional guarantees. NGOs play a vital role in society, giving voice, and often counsel, to the poor. Their most powerful tool is the rule of law.

Term Definitions and Interpretation as per *Grootboom*

"Socio-economic rights are expressly

included in the Bill of Rights; they cannot be said to exist on paper only....The question is therefore not whether socio-economic rights are justiciable under our Constitution, but how to enforce them in a given case. This is a very difficult issue which must be carefully explored on a case-by-case basis" (*Grootboom*, 2000, p. 18). With this statement, Justice Yacoob defined the role of the judiciary in cases of socioeconomic rights abuse. He animated the words of the constitution with his own, creating a Frankensteinian moment in which he declared the powers of the judiciary to be alive.

The court majority in the *Grootboom* case decided that questions about socioeconomic rights ought to be answered by the courts as subject to trial. More importantly, by suggesting that the application of remedial action be determined on a case-by-case basis, the justices established the courts' prerogative to determine when the government has not fulfilled the rights and when corrective measures are needed (*Grootboom*, 2000, p. 18). The state's duties to fulfill the socioeconomic provisions of the Bill of Rights are threefold and broken down as follows: "(a) the obligation to 'take reasonable legislative and other measures'; (b) 'to achieve the progressive realization' of the right; and (c) 'within available resources'" (*Grootboom*, 2000, p. 30). An understanding of the phrases "reasonable measures" and "progressive realization" is relevant to the concept of incrementalism.

Reasonable measures is the key phrase upon which the Constitutional Court's test is based. The government's efforts toward the goal of realizing socioeconomic rights must pass judicial muster as to what can be deemed reasonable. Reasonableness is fluid in definition and to be determined based on the nature of each case (*Grootboom*, 2000, p. 18). However, the evolving pillars of what is necessary to pass the reasonable measures test can be erected from the courts' decision making. In *Rail Commuters Action Group v. Transnet Ltd t/a Metrorail (R.C.A.G.)*, Justice O'Regan outlined the metrics by which the reasonableness of the government is judged. These include the social and economic contexts surrounding the government's duty, the relationship of the duty to the core activities of the duty-bearer (branch

or level of the government), the intensity of harm that may result as an effect of the duty not being met, and the relevant human and financial resource constraints (*R.C.A.G.*, 2004, p. 63).

Reasonableness also implies an adherence to features of international law. The Constitution of the Republic of South Africa, Chapter 2, Section 39, sets international law as a standard by which the courts can interpret the Bill of Rights. The relevant document for housing, health care, and education is the UN International Covenant on Economic, Social, and Cultural Rights (1966). The covenant requires that member states demonstrate that every effort has been made using all available resources to satisfy the “minimum core” of the rights (*Grootboom*, 2000, pp. 22, 27).

The court in *Grootboom* rejected the covenant’s conception of a minimum core to the right, as there can be no true minimum in a large and diverse country with dissimilar economic and resource situations between various provinces and dissimilar population densities. Their rejection was conditional though. The decision suggested that there could be cases in which it would be appropriate to obtain and use information regarding a minimum core. With that, the Constitutional Court opened the idea that data gathering and statistical assessment are features of a reasonable state program (*Grootboom*, 2000, p. 27).

In the *Grootboom* majority decision, Justice Yacoob clarified that “a reasonable programme...must clearly allocate responsibilities and tasks to the different spheres of government and ensure that the appropriate financial and human resources are available” (*Grootboom*, 2000, p. 31). It is not enough for the government to act toward the end of rights fulfillment without the necessary condition of having a clearly articulated plan and organizational structure. The success of measures taken by the state is not in and of itself considered sufficient; well-directed policies and programs must exist to continuously forward the aim of fulfilling the rights. The Constitutional Court determined that the programs must be reasonable from conception through implementation, at various levels of government. “An otherwise reasonable programme that is not implemented

reasonably will not constitute compliance with the state’s obligations” (*Grootboom*, 2000, p. 33). This expansion on the meaning of reasonable measures forged an organizational component in the law. It became necessary for the state’s policy to be more than just action; it must be a forward-thinking blueprint for the administration of the rights.

Progressive realization indicates that the constitutional drafters foresaw that the rights could not be immediately realized (*Grootboom*, 2000, p. 34). The constitution does make clear, however, that rights should be extended in more cases to more people. As interpreted by the *Grootboom* decision, “accessibility should be progressively facilitated: legal, administrative, operational and financial hurdles should be examined and, where possible, lowered over time” (p. 35). The phrase progressive realization is derived from the aforementioned covenant. The covenant explains the duality of meanings for the term. It simultaneously serves a role of flexibility while being obligatory. As to the former, it reflects the reality of real-world economic conditions and the potential difficulties involved in fully realizing socioeconomic rights with immediacy. Regarding the latter, its objective is to establish a duty to fully realize those rights as “expeditiously and effectively as possible” (p. 36).

In combining the definitions as they appear within the rights, reasonable measures and progressive realization can be taken to mean that government programs “must be capable of facilitating the realization of the right[s]” (*Grootboom*, 2000, p. 32). The reasonable measures test exists as an assessment of the adequacy of programs in light of the goal of progressive realization. This places the burden on the government’s efforts rather than its effects. The Constitutional Court, in interpreting the framers’ language regarding any inability to immediately realize the rights in their entirety, put forth a definition of reasonable measures that permits incremental achievement of components of the rights. In this framework, cases brought against the government do not attack its inability to deliver the right to more individuals, which also would be permitted under the flexible definition of

progressive realization, but rather charge an inefficacy in delivering *elements* of the greater right (e.g., the right to textbooks as a sub-right to education). The result is a court-created doctrine of incrementalism: the achievement of the whole through its parts.

Case Law Evidence for the Incrementalistic Principle²

What it means to progressively realize a right is a matter of court interpretation. Each right to housing, health care, and education includes the concept of “access to the right” as a central feature. Individuals possess “the right to have access to” housing and health care, for instance. Or, in the case of higher education, the government must make the right “progressively available and accessible” (Constitution of the Republic of South Africa, Ch. 2, § 26, 27, 29). The idea of access implies that full realization would necessarily entail achieving the metric of accessibility to all citizens.

The Constitutional Court majority interpreted the phrase this way in their *Grootboom* decision: “The goal of the Constitution is that the basic needs of all in our society be effectively met and the requirement of progressive realisation means that the state must take steps to achieve this goal.” Note the justices’ inclusion of the word “all.” They contended that the requirement of progressive realization is in place to fulfill the basic needs of the whole population. Accordingly, the *Grootboom* decision read that, “housing must be made more accessible not only to a larger number of people but to a wider range of people as time progresses” (p. 35). Through this decision making, the court explained to whom increased access applies. It denoted that the rights should be expanded to, at least primarily, those who have never received their benefits. The court determined that increasing access not only means that greater populations living in wealthier cities and provinces receive

the entitlements but also that new populations are introduced to the benefits.

In isolation, progressive realization is not married to the idea of increasing access. When paired with the Constitutional Court’s reasonable measures test, the phrase behaves differently than it would manifest if read within the context of the constitution and international law alone. Legal scholar Mark S. Kende notes that the pragmatic reality of socioeconomic rights in a constitution is limited by resource constraints, which is addressed in the South African constitution by the phrase “within available resources.” The inclusion of these rights in the constitution “does not mean that every individual is entitled to assistance on demand.” For that reason, the court developed the reasonable measures test (Kende, 2009, p. 248).

What the courts deem reasonable is fundamental to how the rights manifest. Socioeconomic rights case law reveals that the applicational practice of progressive realization results in decision making that expands the scope of the right rather than expanding access to the right. Both in applying the reasonable measures test and through other jurisprudential reasoning, the courts have led the slow march toward the realization of socioeconomic rights. An analysis of landmark cases reveals that the test has resulted in an expansion of the meaning of the rights’ components, thereby producing a pattern of incrementalism.

As a contextual background, the Constitutional Court is the highest court in South Africa; it is the interpreter of the supreme law of the land, and its decisions are binding on all lower courts and bodies of government. The Supreme Court of Appeal is the highest appellate court, just below the Constitutional Court in its authority. Its decisions are binding to all but the Constitutional Court itself. There also are nine High Courts that operate as the chief provincial-level bodies. This section includes a mapping of relevant case law that is organized by a relationship in content rather than a relationship in time. Although the precedent-building chronology of cases is important, my reasoning for this organizational pattern is to reveal how the scope of the rights is expanded

²Special thanks to Attorney Paul Hoffman, who, upon our meeting in Cape Town, introduced me to many of the cases cited within this article. The recommendations provided by him, along with others whom I had the honor of meeting, served as the foundational documents for the development of my ideas.

by each subsequent court determination that additional features are central to the rights' meaning.

It is necessary to begin with an expanded view of *Grootboom* to give a historical context to the inception of the reasonable measures test. It represents the shoulders upon which socioeconomic rights law stands in South Africa. *Grootboom* deals with an evicted group of squatters who were moved into settlements that lacked running water and electricity. The Constitutional Court determined that in not designing a coherent and coordinated housing program, the government did not take reasonable measures to realize the right. This effectively established the reasonableness standard by which subsequent cases have been decided (*Grootboom*, 2000).

Eleven years after *Grootboom*, and citing the reasonable measures test within that decision, the High Court of the Western Cape in *Ntombentsha Beja et al v. Premier of the Western Cape et al* (*Ntombentsha Beja*) (2011) added necessary features to the provincial government's obligation. Judge Nathan Erasmus, in his majority decision, alluded not only to *Grootboom's* test but also to Justice Yacoob's instruction that the courts regard human dignity as a metric in determining the reasonableness of state action. The result was a decision that expanded the scope of obligations for the right to housing to include elements that the Western Cape courts deem "central features" of the right. In this case, the toilets to a housing settlement provided by the provincial government were unenclosed and did not meet standards for sanitation, health, or human dignity (*Ntombentsha Beja*, 2011, p. 24). The combined force of reasonable measures and human dignity under the court system's incrementalistic doctrine bound the Western Cape government to fulfill a right to housing that goes beyond the standard definition of shelter. Components of the right that enable citizens to live in humane, safe, and dignified conditions must be accommodated.

The landmark Constitutional Court case for the right to health care, *Minister of Health et al v. Treatment Action Campaign et al* (*T.A.C.*) (2002), extended the reasonable measures test that became precedent in

Grootboom to the domain of health care. The government had a supply of the antiretroviral (HIV) drug nevirapine, which they would administer only in certain pilot sites. Beyond that, they delayed the setup of the sites that were chosen. The Court ruled that the government needed to make the treatment available nationwide as well as give a detailed plan for its administration. The government, in not taking reasonable measures to plan for and disseminate the drug, had failed the court's test: "it was not reasonable to restrict the use of Nevirapine to the research and training sites" (p. 26). The Constitutional Court also defined what a reasonable legislative plan for health care includes. Not only is it necessary to expand the geographic range and timeliness of the drug's dissemination but also reasonable measures include the training of medical professionals for counseling, testing pregnant women for HIV, and administering treatment of the drug (p. 34).

This extension beyond the realm of housing was essential to the development of socioeconomic rights delivery. Because all three rights—to housing, health care, and further education (but not basic education, explored in the next paragraph)—include the phrasing of reasonable measures and progressive realization, the logic of *Grootboom* extends to all cases of these rights. It became a necessity that the government adopt a strategy for the realization of the rights that includes progressive realization of their components. The training of professionals as well as nationwide and timely treatment access became the first step in the incrementalistic approach to realizing the right to health care (*T.A.C.*, 2002).

The right to basic education is understood in a different way than the other socioeconomic rights. The fundamentality of the interests of children replaces the condition of progressive availability with the obligation of making basic education immediately realizable. In effect, government duties to provide education to children are more acute than the commitments to the rights to housing, health care, and higher education. This diminishes the role of considering available resources in court decisions. The product of immediate

realizability is universal basic education, but the reality of limited resources leads to inequalities. In the realm of education, the existence of the incrementalistic principle is clearest, as the primary concern of the courts is to increase the scope of which features constitute basic educational needs. Reasonability continues to serve as a standard in determining whether the government has made strides at rectifying inequalities (*Governing Body of the Juma Masjid Primary School et al v. Juma Masjid Trust et al* [Juma Masjid], 2011, p. 19).

The principle of immediate realizability is derived from the Constitutional Court's decision in *Juma Masjid*, a case that pitted private property rights against children's rights to basic education. Juma Masjid Trust was a private estate that rented land to the Juma Masjid Primary School. When the school failed to pay rent, the trust ordered an eviction. In response, the school argued that the eviction would interfere with their obligation to fulfill the right to education. *Juma Masjid* established that the positive right to basic education places the duty on private parties of noninterference with the right's fulfillment. Most importantly, however, the court cemented a distinction between basic and higher education. Whereas higher education (beyond secondary) must be made progressively available, as is the case with other socioeconomic constitutional rights, basic education must be immediately realizable (*Juma Masjid*, 2011).

Minister of Basic Education v. Basic Education for All (2015), decided upon by the Supreme Court of Appeals, was a case that dealt with the failure of the provincial government of Limpopo to deliver textbooks in a timely fashion to students. It was among the most notable education cases for the reason that the court emphasized a link between education and equality, thereby adding a layer of discriminatory offense to right to education violations. Required textbooks were determined to be central components of the right to education. The court decided that books required by the education system must be provided to every learner in every grade, thereby setting precedent that materials needed for the act of learning are constitutionally guaranteed.

Operating under the same logic, the High Court decided in *Madzodzo et al v. Minister of Basic Education et al* (2014) that access to desks and other critical school furniture is inherent in the right to education. In that case, the schools did not have adequate furniture, which the court considered a serious impediment to the delivery of the right to basic education. This case reaffirmed the immediate realizability of basic education, particularly in regard to implements for learning.

What these socioeconomic rights cases amount to is a pattern of legal development that is not reflective of progressive realization as it has been defined in the collective consciousness of the government, constitution, and courts. While this phrase has been traditionally understood to imply increasing accessibility, the courts operating under the reasonable measures test have applied the idea in a different way. Rather than spreading a fully realized image of the rights to encompass greater and greater portions of the population, the court test has resulted in the incremental achievement of the right through its components. In the following section, I argue for the existence of the extraconstitutional doctrine of incrementalism that underpins the judicial system's decision making.

Incrementalism in the South African Legal System

The delineation of case law, discussed previously, serves to highlight the court system's expanding paradigm of incrementalism: running water, electricity, sanitation in housing, health standards, privacy, timely delivery of medication, medical training, the condition of respect from private parties, textbooks, and school furniture all exist as sub-rights of housing, health care, and education that have been brought into existence through court decisions. Noticeably absent from the landmark cases of socioeconomic rights are ones that deal with accessibility alone. Rather, all that I have listed, which are archetypal of landmark cases dealing with Sections 26, 27, and 29 of the Bill of Rights, concern the expansion of the definition of the rights instead of the expansion of the body of beneficiaries.

The South African constitution, in

many ways, is not precise in explaining what it means for the population to have the abstract right to something as concrete as housing. Section 26 [1] of the Bill of Rights provides that everyone has access to “adequate housing.” But what does “adequate” mean? It is a term that is subjective, especially without the inclusion of the minimum core of the right that the covenant provides. The same issue exists for health care. Section 27 [1] provides that everyone has a right to access health care services, but what services this right constitutes also is up to interpretation. With the exception of an overarching goal of equality and learning in the official language of one’s choosing, components of the right to basic and higher education are not defined in the constitution. It is the place of the courts to determine what they consider a reasonable government program. What is reasonable, as past cases have shown, tends to be a vision of a right that is elastic in what elements, or sub-rights, it includes.

The full achievement of socioeconomic rights in South Africa will come by means of cases that build an image of a right by expanding the scope of what is considered fundamental to it. I have conceptualized two models that serve to represent rights realization. I have termed these the *loading screen model* and the *jigsaw puzzle model*. The former presents an explanation of the traditional understanding of the phrase in accordance with the definition of progressive realization that implies increased accessibility, as it is defined by the courts. The latter is an illustration of the concept of incrementalism, which I contend is the effect of the courts’ decision making based on the reasonable measures test.

One can imagine the achievement of a socioeconomic right as a loading screen in which the progressive realization of the right is facilitated by increasing the percentage of the population that receives a constitutional entitlement within available resources. Beginning from the starting point of limited access, expansion of the right constitutes the inclusion of new populations into the scope of its benefits. Thereby, the right exists as a constant, while the number of citizens who can access it increases.

In contrast, the jigsaw puzzle model envisions a right as an incomplete whole that is built through sub-right components that represent pieces of a fully realized entitlement. Progressive realization is achieved by extending the privileges that are inherent in the right given available resources. Beginning from the starting point of a baseline right, expansion constitutes the inclusion of new benefits for the whole population. Thereby the population exists as a constant, while the scope of the right increases.

Regarding housing, health care, and education, it can be demonstrated through the case law that the guiding logic of the court has leaned toward the jigsaw puzzle model. The models are not mutually exclusive, and the courts have used the loading screen model’s conception of increasing access alongside the jigsaw puzzle model’s expansion of the scope of the right. The cases discussed in the previous section serve to demonstrate, however, that the most impactful leaps forward in socioeconomic rights have come from precedents that incorporate reasoning akin to the jigsaw puzzle model. For housing, components of what have been deemed adequate living conditions exist in the spirit of the right and thus were expanded on by the court. Privacy, sanitary conditions, and running water, amongst other sub-rights, have built the puzzle that is housing. For health care, the same has been true regarding the evolution of the right to include timely delivery and the training of professionals for administering testing and medication. The case has been especially clear for basic education, which was broadened to include the sub-rights to textbooks, desks, and further components. Each of these pieces has contributed to the formation of a fully realized image of socioeconomic rights. In the concluding section, I seek to identify some sub-right gaps in an effort to predict what is prospective in the South African socioeconomic landscape.

Conclusion: A Prospective Application of Incrementalism

The body of case law that exists for socioeconomic rights is extensive and developed for housing and basic education. Incrementalism and its active component in the courts, the reasonable measures test, have

been applied explicitly in the realm of housing and expanded to decisions on health care and education through the shared language of the constitution. *T.A.C.* in 2002 was vital to socioeconomic law in that it brought the reasonable measures test to a domain other than housing, but few landmark cases since have developed the full extent of what health care can be. Health care presents multiple opportunities for the application of the incrementalistic principle. As a logistical matter for litigation, the infrastructure of the reasonable measures test in this arena is primed for producing case results that expand the right's scope. Hospital infrastructure, in the same way that the courts treat educational infrastructure, can be included as a central component of the right. Shorter wait times suggest another possibility. Where inadequacies are seen, the incrementalistic principle can be applied.

Basic education is an outlier in that it is requisitely made immediately realizable by the government. I forecast that the courts will continue expanding the scope of the right to education in order to rectify inequalities between schools. Higher education, however, has not yet seen substantial cases to the same extent as have the other rights. With language quite similar to that of the rights to housing and health care, it seems reasonable to assume that higher education eventually could receive the same treatment.

Although there is bountiful case law surrounding the right to housing, that right itself can be expanded further based on conditions considered central to it. Progress has rendered the features of the right to be fluid. What constitutes adequate housing has changed over time and may well be subject to further change in the future.

The positive rights to housing, health care, and education are features of South African law that are as fundamental as any natural right. They were written as a way of redressing the economic inequalities that have perpetuated from the apartheid era. The words of the constitution are more than laws; they are the written embodiment of a very specific aspect of national identity, the struggle of a people, and the dream of a more equal tomorrow. The courts' reasonable measures test, and the incrementalistic remedial path that it manifests in, serves as the judicial course of action for realizing those rights that are so central to the story of South Africa. When the country ratified their modern constitution, the people did more than codify the principles of their government: they made a statement about what it meant to be South African in the present and what they hoped for in time ahead. The judiciary is the bastion of that vision, the interpreter of the law, and the future of socioeconomic rights.

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THE EFFICACY OF SOUTH AFRICA'S BROAD-BASED BLACK ECONOMIC EMPOWERMENT POLICY

Rachel Buonasora



Twenty-five years after the end of apartheid, South Africa remains one of the world's most unequal countries. Broad-Based Black Economic Empowerment is one policy by which the government has sought to reduce inequality by promoting black involvement and ownership in the economy. This article discusses the efficacy of that policy as it relates to governance and needed improvements in education, entrepreneurship, and women's empowerment.

Introduction

After the fall of the apartheid regime in 1994, the newly elected African National Congress (ANC) was tasked with the responsibility of remedying the pervasive race-based inequality within South Africa. The government committed itself to reversing a long history of systematic discrimination and segregation aimed at the majority nonwhite population. Although apartheid officially began in 1948, South Africa had been entrenched in racial disparity dating back to Dutch colonization in the 1600s. The postapartheid equality goal is a tremendous commitment undertaken by the South African people; it will require years of dedication and transformation at every level of society. Consequently, the government has set out to elicit change in economic, political, and sociocultural spheres through the installation of diversified transformation agendas and policy changes.

With the birth of a new postapartheid

South Africa, the idea of black economic empowerment, often referred to as BEE, came to the fore. BEE seeks to promote economic growth through the economic inclusion and empowerment of the victims of apartheid. The goals of BEE are carried out through a litany of policies and programs instituted by the South African government. Despite the policies in place and the desire for change among South Africans, the BEE framework has failed to provide ample opportunity and transformation within the economy. This article analyzes the 2013 Broad-Based Black Economic Empowerment (BBBEE) Act to ascertain shortcomings in governance as well as opportunities for improvement in education, entrepreneurship, and women's empowerment.

The History of Black Economic Empowerment

The implementation of apartheid in 1948 resulted in systematic discrimination and

inequality of opportunity between white and nonwhite South Africans. It was not until the 1970s that the apartheid state began to reform due to pressure from international powers and the recognition of a growing black middle class (Ratuva, 2013, p. 221). During the 1980s and early 1990s, relationships between political elites and business leaders resulted in mutually beneficial transfers of equity ownership to black stakeholders. These initial forms of empowerment were a way for companies to adapt to changes in South Africa's political economy (Lindsay, 2015, Section 4.5). Despite these improvements, white supremacy and class inequality continued to entrap the majority of nonwhite South Africans. Since the legislative facets of apartheid institutionalized racial segregation, in-depth reform and structural change were required for reparation. In February of 1990, the ANC was instrumental in the institutionalization of BEE (Lindsay, 2015, Section 4.5.4).

With the dawn of a new South Africa in 1994, the ANC government was able to commit itself to the principle of equality put forth in the Freedom Charter of 1955.¹ The government enacted several transformation initiatives, such as the Reconstruction and Development Programme and the Employment Equity Bill (Ratuva, 2013, p. 225). The Reconstruction and Development Programme instituted numerous affirmative action-based policies including, but not limited to, access to housing, education, health, and electricity. The aggregate of the policies immediately put forth by the new government can be considered the initial institutionalization of BEE. The policies aimed to benefit African, Indian, and colored ethnic groups, which commonly are referred to as black or historically disadvantaged South Africans (HDSAs), with written policy and legislation.

In 1998, the ANC established the BEE Commission to analyze the successes and inefficiencies of the BEE agenda at the time. The BEE Commission consisted of black business leaders and was chaired by Cyril Ramaphosa,

who currently serves as the President of South Africa. The BEE Commission Report of 2001 defined BEE as a socioeconomic process "seeking to substantially and equitably transfer and confer the ownership, management, and control of South Africa's financial and economic resources to the majority of its citizens," and it judged that "the private sector's participation in BEE has been inadequate and in some instances self-serving" and went on to suggest that the government institute a BEE Act to provide a framework for a more functional transformation process (BEE Commission, 2001, pp. 2, 35; Lindsay, 2015, Section 7.2). These critiques influenced the ANC to reform BEE to benefit the majority of black South Africans rather than a select group of elites.

Changes came in the form of the BBBEE Act of 2003, accompanied by the Codes of Good Practice in 2004. Parliament passed BBBEE Act 53 of 2003 and established the BEE Advisory Council under the purview of the Department of Trade and Industry (DTI) (Republic of South Africa [RSA], 2004). The Codes emphasized ownership, management and control, employment equity, skills development, preferential procurement, enterprise development, socioeconomic development, and qualifying small enterprises (RSA, 2013). The codes are accompanied by scorecards designed to award a score to companies based on their compliance to the various pillars of BBBEE. In the government contracting and tender process, companies with higher scores are given preferential treatment and are more likely to be selected or awarded contracts. BBBEE's benefits are designed to extend beyond government contracted portions of the economy via inclusion of supplier relations as a scorecard metric. Ten years after the Act of 2003, Parliament passed BBBEE Act 46 of 2013 to clarify interpretation, promote compliance by public entities, and establish the BBBEE Commission to orchestrate and increase compliance (RSA, 2014).

Since the inception of BEE and related BBBEE Acts, there have been various schools of thought on their effectiveness and place in the South African economy. BEE's ability to yield positive transformation has been marred by its unfortunate tendency to perpetuate

¹The Freedom Charter is a set of core principles put forth by the Congress of the People in 1955, which states that South Africa belongs to all who live in it (Congress of the People, 1955).

corruption in the South African economy. In theory, BEE seeks to create a virtuous cycle in which transformation naturally permeates throughout education, work, living conditions, and the overall economy. Unfortunately, inefficiencies and corruption threaten the successful implementation of this cycle and exacerbate the exact problem BEE seeks to address. BEE aims to solve a complex problem; consequently, it requires an equally complex, multifaceted approach. In its utopian form, BEE would right the wrongs of apartheid by providing equal opportunities and empowerment to all peoples of South Africa. In reality, the path of BEE has been molded and deformed by sociopolitical agendas and narrow codifications and guidelines. While these limitations may seem to belittle the higher goal at hand, they also suggest a more attainable and measurable form of transformation. Through its formation and various iterations, BEE has taken on different meanings to different people, businesses, and government entities.

Macroeconomic Analysis of Broad-Based Black Economic Empowerment

Given the broad and unspecified nature of the BEE phenomenon, the scope of analysis is narrowed to the BBBEE Act. The successes and inefficiencies of BBBEE are intrinsically linked to the complex cyclical issues plaguing South Africa's overall economy. When BBBEE was updated in 2013, South Africa's GDP growth rate stood at 2.49%. Since then it has decreased to a dismal 0.79% in 2018, placing South Africa at a ranking of 169 in the world (World Bank, 2018a). This is a negative indicator of the economy's ability to effectively support the transformation proposed by BBBEE.

Since the inception of BEE there has been tension between the pursuit of growth and the pursuit of equality. South Africa's ability to deliver economic transformation is complicated by a high unemployment rate of 29.1% in 2019, an increase from 24.6% in 2013 (RSA, 2019b, p. 21; World Bank, 2018b). BBBEE seeks to economically empower all black people by "achieving equitable representation in all occupational categories and levels in the workforce" (RSA, 2014, Section 1). At

the nominal level, these goals require equal employment of black South Africans compared to other population groups. Unfortunately, black South Africans consistently bear a higher unemployment rate than white South Africans. In 2019, the unemployment rate for each population group was 32.8% African/black, 23.5% colored, 13.3% Indian/Asian, and 7.4% white (RSA, 2019b, p. 21). To be successful BBBEE requires an increase in the employment rate and economic growth to provide opportunities to HDSAs.

Governance

As part of BBBEE Act 46, the BBBEE Commission, a member of the DTI group, was established to oversee and report on adherence to that act while maintaining governance and promoting the overall transformation goal of BBBEE (RSA, 2014). As part of the commission's duties, it releases annual research reports on the transformation progress titled *National Status and Trends on Broad Based Black Economic Empowerment Report*. The most recent report details the transformation from 2017 to 2018 in terms of adherence to the Code of Good Practice. The report also provides data and analysis of performance for each code on the scoring card. In terms of ownership trends, large entities and qualifying small enterprises reported stronger black ownership within the construction and transport sectors, while the agricultural sector reported the lowest levels of ownership, largely attributed to land ownership barriers (B-BBEE Commission, 2019). Skills development improved by 39%, but there are no data to verify the correlation between this statistic and improvement in skilled people accessing the job market. Overall, about half of Johannesburg Stock Exchange-listed entities met BBBEE scorecard elements across sectors (B-BBEE Commission, 2019). A major theme throughout the report was the lack of compliance by entities when reporting on and implementing BBBEE practices in their businesses. This directly relates to stagnant transformation and less than optimal performance as a result of inadequate governance.

The World Bank defines governance as "the manner in which power is exercised in

the management of a country's economic and social resources for development” (World Bank, 1994, p. vii). This definition is crafted to guide the sustainability of projects and programs pioneered by the World Bank, and it also can be applied to the broad realm of economic and social policy. The Institute on Governance, a nonprofit organization based in Canada, similarly defines governance as the interaction between government and social organizations in decision-making processes (Graham et al., 2003). The Institute on Governance furthers the definition of governance through five good governance principles: 1) legitimacy and voice, 2) direction, 3) performance, 4) accountability, and 5) fairness. The principle of legitimacy and voice is characterized by participation and holistic consensus that incorporates differing perspectives. Direction is characterized by a strategic vision capable of understanding past complexities and the long-term goals for development. Performance can be measured in terms of effective use of resources in the processes designed to serve all affected people. Good governance requires accountability and transparency in all stages of development. Finally, fairness calls for equal opportunities and a policy that operates within the rule of law. Of these principles, two in particular, direction and accountability, appear problematic. Analyzing BBBEE policy in the context of these principles reveals areas of weakness and potential for improvement.

Clarity of Vision

Among the five good governance principles, BEE inadequately communicates a clear vision for direction to the citizens of South Africa. Legitimate policies and plans necessitate a grounded consensus and ideology to guide the direction of policy. In the case of BEE, there is an overarching goal of reducing inequality and empowering black South Africans. This goal is not confined to the agenda of BEE policies, but rather it is a guiding principle for the entirety of postapartheid South Africa.

Consequently, the idea of BEE has become an ambiguous concept with various perceptions and applications, with BBBEE acting as just one concrete piece of legislation on the matter. Donald Lindsay, in

his doctoral research at the University of the Witwatersrand, speaks to the poor articulation and consequent lack of understanding of BEE policy as demonstrated in former President Jacob Zuma's (2013) speech at the BBBEE Summit: “Terms such as BEE, B-BBEE, affirmative action, and transformation are used interchangeably while unrelated references are made to diverse economic policy frameworks” (Lindsay, 2015, Section 5.4). The ambiguity in definition and expectation as identified by Zuma makes it difficult to ascertain the success of BBBEE policy and other related policies. Current BBBEE Commissioner Ms. Zodwa Ntuli blamed lagging economic progress as the cause for increasing disenchantment among disadvantaged South Africans (B-BBEE Commission, 2020, p. 2). Impactful transformation requires clear direction and implementation in order to revitalize the commitment to the BBBEE agenda by companies and individuals.

Accountability

In terms of transparency, the most apparent malfeasance is in the practices of fronting and cronyism. The DTI defines fronting as a “a deliberate circumvention or attempted circumvention of the B-BBEE Act and the Codes” (DTI, n.d.). A common example is when black South Africans are appointed to positions strictly to fulfill BBBEE requirements but are given no participatory role in the enterprise's business operations. In the most recently released Annual Performance Plan from the BBBEE Commission, then Minister of Trade and Industry Dr. Rob Davies, MP, stated that 80% of reported complaints relate to fronting, proving that it is a considerable threat to the ethical implementation of BEE (B-BBEE Commission, 2020, p. 1).

BEE lacked clear policies and regulation during its inception and initial phases. As a result, it appeared to have promoted only a small elite group of politically connected black South Africans. By reaping the benefits of BEE, these few people amassed wealth and power, which contributed to the rise of corruption in political and economic spheres (Chikozho, 2016). BEE policy was further manipulated as cronies utilized the tender system to advance

state capture under Zuma's administration (Chipkin et al., 2018). State capture occurs when public policy is heavily influenced by private interests.

Despite the progress made in BBBEE policy and reporting mechanisms, instances of fronting and falsified certificates continue to poison the South African economy and empowerment framework. As recently as September of 2019, investigations uncovered fraudulent BEE certificates in deals involving South Africa's state-owned electricity provider Eskom and the notoriously corrupt Gupta brothers (Head, 2019). (See article by Petros in this volume for discussion of Eskom.) These revelations not only tarnish the BEE agenda but also indict the consulting agencies entrusted with implementing and approving BBBEE compliance. Moving forward, the governance of BBBEE must be improved so that it is not used as an instrument of corruption, but rather as a means to influence the economic transformation it was designed to elicit.

The Mining Industry

The mining industry is a revealing case study with respect to corporate governance transgressions and the damage they cause. Over the past decade and a half, the mining industry has experienced slow improvement in terms of redressing socioeconomic inequality. According to Professor of Management Adèle Thomas, this poor performance can be attributed to three general categories of transgressions: 1) political influence, nepotism, and fronting; 2) fraud and controversial deals; and 3) mismanagement and negligence. Political influence, nepotism, and fronting involve practices such as "tenderpreneurship" in which government tender opportunities are awarded to those who are politically connected. The mining industry has also suffered from the infiltration of foreigners exploiting empowerment deals to pocket profits from the developing economy. The restructuring of ownership entailed within the BBBEE process has made the mining industry susceptible to debt risk and has propagated an extreme wage gap between workers and management (Thomas, 2015). In response to this corruption and the industry's unwillingness to transform

itself, the South African government conducted multiple assessments of the industry in 2004, 2010, 2014, and 2018. During 2014, the assessment demonstrated a lack of compliance and eagerness to transform the industry, poor living conditions and poverty in mining communities, and low levels of meaningful participation by nonwhite South Africans in the value chain of the mining industry. By way of response to these abuses, the government introduced a new "Broad-Based Socio-economic Empowerment Charter for the Mining and Minerals Industry" (Department of Mineral Resources, 2018). This revision aims to further clarify regulations and definitions to increase adherence to legislation and yield transformation.

The continual abuse of BBBEE policies has warranted a call for a change in governance. Despite the efforts of the DTI, the BBBEE Commission, and other agencies, high-powered business leaders, politically connected people, and verification agencies have managed to tarnish the goals for equality through their systemic collusion and corruption. The current state of policy has allowed for detrimental loopholes that undermine the intended increase in black empowerment. The goal for transformation is also inhibited by the challenges within South Africa's education system.

Education

The management control scorecard within the Codes of Good Practice indicates compliance targets for levels of black employees holding management positions. The compliance targets are 50%, 60%, 75%, and 88% respectively for executive, senior, middle, and junior management positions held by black employees (RSA, 2013). Consequently, BBBEE's goal of transferring economic and financial power to the black population requires a population of black South Africans adequately educated to fill such positions. According to the South African government, 68.7% of black South Africans have attained secondary education, but only 9.1% of black South Africans have attained postsecondary education; comparatively, 38.3% of white South Africans have attained postsecondary

education (RSA, 2019a). Given South Africa's sophisticated economy, with a GDP placing it at 33rd in the world in 2018, and an increasingly service-driven economy (World Bank, 2019), there is a need for greater postsecondary education in the workforce. As the economy and state of education currently stand, there is a clear gap between the actual skills of middle-aged black South Africans and management positions prescribed to them via BBBEE.

Since BEE incentivizes corporations to adhere to BBBEE standards by maintaining a black majority workforce, there has been a decrease in hiring opportunities for skilled white employees. The effects of this are twofold: not only are young white workers leaving the country to find opportunity abroad, but also many corporations are not able to source black employees with the necessary skills (Wessels, 2018). When considering the brain drain phenomenon and skills gap, there is an issue connecting education, opportunity, and financial growth. There is hope that this gap is a temporary issue that will be solved as an increasing number of black South Africans receive education and training. In the meantime, as BBBEE disrupts this cycle, it interferes with the growth and functioning of South Africa's businesses. (For further discussion on education, see articles by Jin and Skinner in this volume.)

Entrepreneurship and Empowerment

An objective of BBBEE Act 46 is "to promote access to finance for black start-ups, small, medium and micro enterprises, co-operatives and black entrepreneurs, including those in the informal business sector" (RSA, 2014). This ideology is enforced by the Enterprise and Supplier Development element within the Codes of Good Practice. Enterprise and Supplier Development scoring is based on procurement spending for goods and services from Empowering Suppliers. The Codes of Good Practice outline specific requirements that must be met for a company to be classified as an Empowering Supplier. Start-ups and exempted microenterprises are excused from this rule and automatically granted Empowering Supplier status in order to facilitate entrepreneurship within the BBBEE environment (RSA, 2013).

This guideline acknowledges the beneficial link between empowerment and entrepreneurship, but BBBEE policy can do even more to facilitate entrepreneurship.

The *Journal of Entrepreneurship Education* is devoted to discussing the power of higher education in promoting entrepreneurship to mitigate issues of youth unemployment and racial inequity. Entrepreneurs are the key to discovering new opportunities for capital, employment, and transformation. Their innovation is capable of breaking cycles of stagnation and inequality (Ncanywa, 2019). BBBEE policy can connect companies with entrepreneurial-based programs in higher education. Such programs will provide young South Africans with access to the technical skills and the human capital needed to launch their entrepreneurial ideas. In addition, it may help stymie the increasing youth unemployment, especially among HDSAs.

Gender Empowerment

BBBEE Act 46 redefines BBBEE as "viable economic empowerment of all black people [including], in particular women, workers, youth..." (RSA, 2014). This specification of the legislation as well as the enactment of other gender-based empowerment policies symbolizes South Africa's commitment to development for women. According to the *Global Gender Gap Report 2020*, South Africa was ranked 17th of 153 countries, with a score of 0.78 out of 1 in terms of gender parity. This global index score consists of four subindexes: economic participation, educational attainment, health and survival, and political empowerment. Although South Africa is performing comparatively well in health and survival and political empowerment, it is ranked 92 for economic participation and opportunity and 67 for educational attainment (World Economic Forum [WEF], 2020).

Economic participation and opportunity include labor force participation, wage equality, estimated earned income, number of women holding senior positions, and the number of professional and technical women workers (WEF, 2020). This index strongly aligns with the DTI's empowerment agendas and the ideology behind BBBEE's aim to support women in the

economy. In 2013, South Africa scored 0.651 for economic participation; in 2020 that score had decreased slightly to 0.649 rather than showing any improvement (WEF, 2013). Policy in South Africa has sought to address and meet this need by introducing specific stipulations and frameworks to bolster women empowerment; yet, since these changes, women's empowerment has been stagnant. Moving forward with the continued implementation of BBBEE, there is a need for gender equity regarding economic empowerment. The challenges facing women's empowerment initiatives correlate closely with the challenges facing the entirety of the BEE agenda.

Comparative Analysis—Malaysia

As the South African government moves forward with its implementation of BBBEE and the quest for equality, it can look to other socioeconomic restructuring programs for models to emulate. As one example, the New Economic Policy (NEP) in Malaysia is a similar transformation agenda that also sought to redistribute wealth and economic power to the majority population group. The bumiputera of Malaysia share challenges similar to those of HDSAs.² Malaysia's population by racial groups when NEP was adopted in 1970 was 55% bumiputera, 34.4% Chinese, 9.1% Indian, and 1.5% others. Comparatively, South Africa's population by racial groups at the end of apartheid in 1994 was 76% black/African, 13% white, 9% colored, and 3% Indian/Asian (RSA, 1996, p. 5). In both cases, the respective affirmative action policies sought to restructure economic involvement and ownership among the disadvantaged majority population group.

The NEP, instituted from 1971 to 1991, and its successor, the New Development Policy (NDP), adopted in 1991, provided beneficial growth and change to Malaysia's economy. Overall, the real GDP growth rate was 6.7% annually from 1971 to 1990 and increased to 7.0% annually from 1991 to 2000. In addition to economic growth, the country experienced a reduction in income inequality as denoted by a decrease in the Gini coefficient to 0.443 in 1999

for the entirety of Malaysia (Economic Planning Unit, 2004, p. 14). There also was considerable restructuring of economic involvement of the bumiputera population, a key goal of the NEP and NDP programs.

Malaysia and South Africa's affirmative action agendas differ in their implementation. While South Africa has created a legislative framework and codification through the BBBEE Act and other policies, Malaysia enacted a "discretionary, executive order" carried out by its ruling party (Lee & Mondy, 2018, p. 233). Malaysia's process consisted of intense restructuring of state-owned enterprises and the nationalization of many foreign companies. South Africa did not follow a similar suit due to global pressures as a result of its recent emergence into the international market in 1994. Consequently, transformation in South Africa has occurred at a much slower pace than the streamlined, government-dominated transformation in Malaysia. Another key difference between Malaysian and South African policy is in the landscape of higher education. Malaysia "operated a highly centralized admissions system," whereas South Africa's was autonomous and decentralized (Lee & Mondy, 2018, p. 235). This education system paired with a stronger presence of qualified bumiputera enabled Malaysia's more effective shifting in management roles compared to South Africa. Aside from these differences, South Africa and Malaysia both struggle with governance management of state-owned companies' operations.

When comparing the results of the varied affirmative actions in each country, the most salient difference is the rate at which change occurred. As South Africa continues to lag on its own timeline for transformation, it can look to Malaysia for potential solutions. At the same time, it would be naive to think that the transformation in Malaysia can be exactly replicated in South Africa, given the complex differences in history, global perception, and sociopolitical environments.

An important aspect of affirmative action policy is the presence of an end date at which goals have been met and government action no longer is required: "Exit strategies, or transitional plans toward less overt ethnic

²Calvin W. Floyd (2019) provides an excellent summary of the Malaysian bumiputera case.

preferences, should be integral to affirmative action policy formulation” (Lee & Mondli, 2018, p. 230). The formation of a defined timeline accompanied by measurable goals can help to increase adherence and accountability in South Africa’s pursuit of BEE. This ideology can mobilize BBBEE policy into an active transformation rather than a passive, encumbering piece of legislation.

Conclusion

South Africa’s transformation since 1994 has been a winding and arduous process that has revealed both the potential for equality and the difficulty in achieving it. BBBEE is just one mechanism that has struggled to effect change in the economic, social, and political spheres of the country. This lack of transformation can be attributed to both internal and external factors. BBBEE is a manifestation of the ideology of BEE and, as a result, has inherited the ill-defined and multifaceted nature of the term. While iterations of legislation and reports from the BEE and BBBEE Commissions have aimed to clarify the goals and measurements of BBBEE, implementation is not optimal, and there is a lack of appropriate governance. Inadequate governance and involvement in the initiative have allowed BBBEE to be used as a vehicle for state capture and corruption. In order to

prevent these, policy should increase focus on empowering impoverished black South Africans via education, entrepreneurship, and gender equality.

The efficacy of BBBEE also is threatened by structural issues within the South African economy. As South Africa’s GDP growth remains stagnant, it hinders transformation efforts, and the economy is unable to support growth. This contributes to worsening unemployment for young South Africans and a flawed education system. The education system has failed to coincide with the goals of BBBEE as many black South Africans lack advanced education. As it currently stands, BBBEE has enabled a slow rate of positive transformation, but it also has been complicit in unsatisfactory deals and corruption. In order to improve, the South African government should strive to better quantify the effects of BBBEE with an aim for a terminal status that elicits more strategic and effective change. In addition, BBBEE should increase efforts supporting entrepreneurship among young South Africans and maintain a focus on women’s empowerment within policy frameworks. In the coming years it is essential that policymakers revitalize BBBEE and demonstrate to the South African people that it provides more benefits than harm to the overall economy and the welfare of its citizens.

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FOOD SECURITY IN SOUTH AFRICA IN AN ERA OF CLIMATE CHANGE

Jordan Wolman



Concerns regarding food and water security in South Africa are increasing at a rapid pace while the effects of climate change have a disproportionate impact on the region. At the core of the climate change conversation in South Africa is the issue of food security. This article identifies challenges and problematic trends related to the relationship between food security and climate change and then evaluates potential solutions regarding production of food.

Introduction

Climate change affects the rates and seasonal production patterns of different food items as well as access to food. Currently, about 65% of the South African population is food secure, but approximately half of those people are at risk of becoming food insecure (Masipa, 2017). The remaining 35% of the population currently experiences hunger and malnutrition, even though South Africa produces enough food to feed its population (Abdu-Raheem & Worth, 2011). As a result, food production is seen as a prominent challenge: in the *National Climate Change Adaptation Strategy*, Strategic Outcome 1.1 is to “secure food, water and energy supplies for all citizens” (Department of Environmental Affairs [DEA], 2019).

Importantly, the impact of climate change on agriculture is not just a rural issue (Archer et al., 2009). Increasing urbanization in South Africa might intuitively suggest there is more available land for farming in rural areas, but,

since 2001, as carbon dioxide emissions have increased, the amount of available arable land has decreased, further straining farmers to provide more food to more people with less land and less favorable conditions (Masipa, 2017). Although global warming has degraded arable land worldwide, in South Africa the trend toward decreasing arable land is stronger and has been occurring for longer than in the rest of the world. The World Bank found that in 1961 there were 0.69 arable hectares per person in South Africa. In 2016, that fell to 0.22 arable hectares per person, a result of both a growing population and a decrease in total available arable land. As much as 91% of South Africa is considered arid or semiarid land, “and it is [in] these areas that land degradation can lead to desertification and the irreversible loss of productive land” (Goldblatt, n.d). When it comes to food security, South Africans need to make tough choices in response to climate change, like delaying the start of planting according to rainfall and planting crops in

greater diversity with shorter growing periods (Masipa, 2017).

South Africa and Food

South Africa ranks third in the world in terms of amount of agricultural land as a percentage of total land area, at 79.8% (World Bank, 2019). Agricultural land is land that currently is used for farming, to include grazing, and arable land is any land that is capable of growing crops. South Africa is known for its corn, wheat, sugarcane, fruits, and vegetable crops. The nation's high percentage of agricultural land allows the country the capacity to also raise large amounts of livestock, producing beef, poultry, wool, and dairy products (US Central Intelligence Agency, 2018). However, due to its climate, only 12% of South Africa's land is suitable for the production of rain-fed crops, with only 3% of that land considered truly fertile (Goldblatt, n.d.). Agriculture makes up about 5% of South Africa's total labor force, down from nearly 19% in 1995, which is indicative of the nation's shift from an agrarian-based economy to a service-based economy (Roser, 2020). However, the role of agriculture varies by province, with 37% of households in Limpopo engaged in agricultural activity compared to 2.5% in the Western Cape (*Agriculture, Land Reform and Rural Development*, n.d.). South Africa ranks below average worldwide in terms of agricultural total factor productivity (TFP) growth as of 2015 (US Department of Agriculture, 2019).¹

South Africa recently has tended to support large corporate agribusiness, including a drive to adopt genetically modified (GM) organisms, which has led to a decline in food quality standards and in the economic viability of small-scale farmers. One of the country's "spectacular failures" in this effort involved an attempt by Monsanto to persuade small-scale farmers in KwaZulu-Natal to plant the

company's GM cotton seed (Fig, 2018). Within a few years, "the farmers found themselves deeply in debt and the GM cotton project was abandoned." In another instance involving Monsanto, the corporation's Massive Food Production Programme provided Eastern Cape small-scale farmers with Monsanto GM hybrid corn seed. Traditional farming practices were replaced by mechanical tilling and increased production of maize. Five years later, the program had "swallowed R570 million in state funds" while "productivity hardly improved" (Fig, 2018). Clearly such industrial-scale efforts have failed to resolve South Africa's TFP needs.

Climate Change in South Africa

In 2012, the South Africa DEA published a report that analyzed the nation's past climate data between 1960 and 2012, and projected other important data for the future. The report noted that mean annual temperatures in South Africa have increased by approximately double the observed global average of 0.7°C for the same period, as reported by the fourth UN Intergovernmental Panel on Climate Change report. Increases in hot extremes and decreases in cold extremes along with an increase in rainfall intensity were observed. Although annual rainfall has not changed dramatically, an overall reduction in rainy days has correlated with an increase in the intensity of rainfall events and a longer duration of dry spells.

Looking forward, the report postulated four possible scenarios: warmer and wetter, warmer and drier, hotter and wetter, and hotter and drier. The projections were modified by the possibility of international mitigation strategies, with the effect of strong mitigation implementation increasing the likelihood of the warm scenarios as compared to the hot scenarios. In fact, the report found that "the risk of extreme rainfall changes, both increases and decreases, could be largely eliminated by an aggressive global emissions reduction pathway by 2050" (DEA, 2012). By the same token, "under high emissions scenarios there is a strong indication of considerable risk of significant drying and strong warming scenarios for South Africa by the end of this century," with possible warming increasing by as much as 5°C to 8°C (DEA, 2012).

¹Agricultural TFP indicates "how efficiently agricultural land, labor, capital and materials (agricultural inputs) are used to produce a country's crops and livestock (agricultural outputs)" (*Agriculture Total Factor Productivity*, 2019). Therefore, when more output is produced from the same quantity of resources, those resources are used more efficiently, and TFP increases.

Not all of South Africa, of course, will be impacted equally. The DEA report bases much of its information on data collected on precipitation and temperature from dozens of meteorological stations throughout the country. Nationwide, data collected between 1960 and 2003 showed that stations, with few exceptions, reported increases in annual mean temperatures and general increases in hot extremes. The strongest warming has occurred in South Africa's interior during the autumn months, with a cooling near the country's coastal regions. For precipitation, the quantity of rainfall is not as much a concern as are seasonal variability and timing. The eastern parts, especially, have been hit with increased extreme precipitation and a relatively high frequency of "very heavy rainfall events" compared to the rest of the country. The report documents heavier summer rainfall as well as lighter autumn and winter rainfall, which magnify seasonal cycles, showing later seasonal rainfall onset and bringing with it increased dry spells and fewer rainy days overall. With past research in mind, projections for South Africa's future climate patterns round out the picture for the challenges ahead.

The Impact of Climate Change on Farmers and the Consumer

General circulation models (GCMs), a research strategy used to simulate the response of the global climate system to increasing greenhouse gas concentrations, are able to predict the influence of climate change on projected food production levels. These GCMs predict that southern Africa will get drier and that crop yields in most of sub-Saharan Africa will decline by 10% to 20% by 2050 (Connolly-Boutin & Smit, 2016). Although this GCM prediction might come as no surprise to South African farmers who are experiencing such trends, many are unsure of how best to prepare. Bryan and colleagues wrote in 2009 that in South Africa and Ethiopia, "farmers have noticed increases in temperature and a decrease in rainfall" and yet "a large proportion of the farmers...did not undertake any adaptive measures." South African farmers named a lack of access to credit as a main barrier to adaptation. And when farmers have attempted

to shift from cropping to livestock management to circumvent a lack of rainfall, a reduction in adequate grazing space ensued, resulting in another challenge for farmers looking for ways to navigate growth in an ever-limited environment (Thomas et al., 2007). Ziervogel and Ericksen (2010) predict that one response to the rain declines will be increased average annual irrigation demand on the order of 4% to 6%. The DEA followed up on its aforementioned 2012 report with a third national climate change report in 2017. The report specifically noted the impact climate change already is having on agriculture, citing "reduction of yield in the maize crop under higher temperatures and reduced soil moisture," increases in livestock mortality due to "oppressive temperatures," and issues with water security resulting from "reduced rainfall and enhanced evapotranspiration" (DEA, 2017, p. 17).

As of 2015, South Africa's population is expected to increase by at least 10 million people by 2030, a growth rate predicted to outpace crop production ("Here's how...", 2019; Masipa, 2017). South Africa generally is a food secure country at the national level, but the same cannot be said at the household level, where a majority of rural populations rely on agriculture for their livelihoods and are most vulnerable to climate change (Kirkland et al., 2013). In 2018, one-third of all South Africans lived in rural areas, with a majority of those in poverty residing in rural parts of the country (Abdu-Raheem & Worth, 2011). The decline in arable land since 2001, combined with the projected population growth in South Africa, brings to light an alarming realization: there just may not be enough land in this era of global warming and drier conditions to produce the amount of food needed to fuel a healthy and prosperous nation (Masipa, 2017).

In short, the time-honored strategies and techniques of South African farmers may not stand the test of such volatile climactic conditions. The normal periods in which rainfall can be expected and the anticipatory cycles of growth no longer may be able to be relied on; instead, crops with shorter growing seasons and those requiring less water may become preferred. Without adaptation measures in place to prepare for the impacts

of climate change on the food markets, the South African consumer could be hit hard. Urban populations would feel the most drastic effects in food security, considering the added costs associated with transportation of food products from rural communities. As demand increases and supply of food remains stagnant or decreases, prices will increase, and, when other factors like South Africa's dismal unemployment rate and increased extreme weather-related insurance claims over the past decade are considered, consumers likely will feel the hit of climate change in their purses.

Clear metrics exist to tie the effects of various climate risks to the insurance companies. For example, Standard Bank's insurance division had a 402% increase in storm-related claims in March 2014 after a 48-hour period of severe hailstorms, with hailstones as big as 7 cm in diameter damaging cars, windows, and homes. A South African branch of Aon, a global insurance company, told customers their premiums would increase in response to increasing claims lodged with short-term insurers (Kings, 2014). The Knysna fires in 2017 alone cost the insurance industry R2B (Donnelly, 2019). The increase in weather-related claims is evidence of a growing threat to food production, and any sense of security for farmers could mean rising premiums, a cost potentially passed down to consumers.

Smallholder Mitigation and Adaptation

The economic stability and the general health of the country are dependent on the ability of small South African farmers to adjust to climate change. This section outlines some important mitigation and adaptation strategies farmers can employ within the two major areas of agriculture: crop production and livestock farming. Crop production strategies include mixed cropping, temperature-timed planting dates, expanded extension services for farmers, and irrigation techniques.

Crop Production

Climate variability presents a clear threat to crop production. In the Western Cape, the 2016 and 2017 seasons saw drought and heat

affect fruit quality, with a decrease in exports of 4.2% (Zwane, 2019). Similar observations were made in vegetable production. The Western Cape government reported a 50% decrease in onions being planted and an 80% decrease in the planting of potatoes because of a lack of water. But if there is any solace, it is in nature itself. Crops that prove resilient to a changing climate will continue to weather the storm. Using climate-adaptable seeds from successful crop breeding has the potential to support the adaptation of crops. Mixed cropping or intercropping, the planting of two different types of crops together in the same field, will help farmers diversify and increase their yields and provide practical information for what works in a country predicted to experience generally hotter and drier conditions.

One study that focused on maize-bean intercropping in the Free State region of South Africa found yield and growth advantages in field trials that used this method of intercropping along with increased water use efficiencies (Tsubo et al., 2003). The study, which included three field trials between 1996 and 2001, formally recommended maize-bean intercropping to small-scale farmers in this semiarid region instead of planting maize or beans alone. If the key to sustainable agriculture is increased output per unit of land area, intercropping integrates crops more efficiently, better utilizes soil moisture and nutrients, and takes advantage of such natural ecological processes without the need for human intervention in the form of fertilizer. Greater yield can contribute to the stabilization of household food security. Furthermore, intercropping also reduces the risk for a farmer losing all of a crop with one bad season or weather event. In this way, the farmer is more resilient to potential changes in the climate and is prepared to still produce a harvest and maintain an income.

A different study that focused on farmers' adaptations in sub-Saharan Africa found that in temperate environments like much of South Africa, temperature, not necessarily precipitation, marks the growing season (Waha et al., 2013). One aspect of crop production farmers should consider is planting dates in the face of projected increased seasonal variability

and magnification. Waha and colleagues found that only 3% of South African farmers in the northern provinces shifted their planting dates to match changing conditions; in contrast, “16% of more than 8,000 households in 11 African countries change planting dates as [a] response to perceived changes in temperature and precipitation.” Studies based in Cameroon, for example, found that there were increased yields in maize and groundnut when the crops were planted on an “optimal planting date” compared with “traditional planting dates” in the face of a changing climate. Though the study found that the planting date was changed due to changes in rainfall, a similar principle can be applied to South African farmers, where temperature is the larger determinant of the growing season.

With impacts on both crop and livestock production, drought is an aspect of climate change that cannot be ignored. Between 2015 and 2016, five provinces—Limpopo, Mpumalanga, Free State, North West, and KwaZulu-Natal—were declared disaster areas due to drought. At that time, reservoirs were only 50% full in Limpopo compared to in the late 1990s when they were 84% full. Agricultural productivity and crop production were affected greatly, and the government had to import a million tons of maize into the province (Maponya & Mpandeli, 2016). Thankfully, intervention strategies to prepare farmers for future droughts are possible. One such intervention is providing farmers access to extension services that offer the skills and knowledge needed to produce food even in times of drought. Agricultural extension services are one pathway for local governments, community-based organizations, and universities to empower farmers and equip them with the skills, knowledge, and technology to increase both profit and production for household consumption and thus reduce food prices for the consumer (Abdu-Raheem & Worth, 2011). A farmer who receives information through extension services is 0.95 times less likely to face food scarcity compared with one who does not receive such services. Farmers in drought-prone regions, like Limpopo, should be encouraged to use drought-resistant cultivars and to assemble a mixed crop variety

to combat the devastating impacts of drought or extreme weather events. Given that 33% of all households in Limpopo are considered agricultural households and that Limpopo produces nearly 60% of all the nation’s fruits, vegetables, maize, and wheat, the road to a food secure South Africa in the climate change era runs through this very province (Maponya & Mpandeli, 2016).

A hotter and drier South Africa means farmers no longer will be able to rely on the country’s previously natural cycles of rainfall, both in quantity and in distribution. In September 2016, for example, the reduction in rainfall was on the order of 50% for most parts of the Western Cape. With that said, irrigation will become an increasingly vital part of a farmer’s arsenal to continue to produce food and earn profits. Irrigation, if done right, can improve efficiency on a given plot of land and work to counteract unreliable patterns of rainfall. A 2010 declaration by the Limpopo provincial government found traditional furrow and flood irrigation techniques were not effective for smallholder farmers and promoted wasted water. Thus, while flood irrigation was not officially recommended for smallholder farmers in the Limpopo province, drip and sprinkler irrigation styles were recommended for the province’s smallholder farmers (Zwane, 2019).

Installing these preferred irrigation systems presents a challenge in terms of available capital and the ability to invest in a long-term solution. Agri Western Cape, an influential agricultural organization, prepared a report during the 2015–2016 drought that identified a series of challenges facing farmers and offered recommendations to help farmers combat the drought. One of the challenges facing commercial producers was a lack of “adequate plans for water storage during good rainfall periods” (Swart, p. 4). The organization proposed cash grants for eligible farmers, based on historical production, to support operating expenses and drought recovery. These grants potentially could fund a drip irrigation apparatus for a farmer’s crop production. The report also called for a revisiting of government policies that hamper the building of new dams, including the potential for on-farm dams to aid individual farmers in sustaining

their operations through volatile climactic conditions. Considerations such as these might go a long way toward maintaining farmers' crop production levels.

Livestock Production

The influence of climate change on livestock production is arguably greater than that predicted for crop production, since livestock are reliant on the healthy growing of feed crops. Raising livestock thus requires both adequate feed crop land and grazing pastures. Because livestock are both more expensive to raise and more profitable, the loss of livestock productivity could have an impact on a farmer's revenue sources in a more significant way than food crops alone. There are three main ways in which climate change can impact livestock production: feed availability and price; quality of forage in pastures; and general health of livestock, including through diseases and pests as well as other health conditions, mostly brought about by heat exposure, drought, and heavy incidents of rainfall. If South Africa follows its projections to become hotter and drier, pasture lands will get drier, thereby decreasing grain production for animals, which is predicted to reduce animal weight gain. Dairy cows, when subjected to heat-wave conditions associated with climate change, showed a 10% to 14% reduction in milk production, and those animals did not recover after a return to normal conditions (Rust & Rust, 2013).

The more exposed animals are to the natural elements, the more likely they are to be vulnerable to potentially hotter temperatures and dry conditions. Rust & Rust (2013) point out that a country like the United States is better positioned to resist the impacts of climate change on livestock production, specifically because most livestock are kept in protected environments, like sheds and barns. Maximizing quality forage and rangeland for the livestock that need it most, namely dairy cows and beef cattle, is one strategy to maintain healthy livestock production while not jeopardizing the spatial needs of grazing animals. In other words, farmers will need to think of new ways to maximize efficiency on their farms as climate change threatens to alter the quality of forage, the temperature to maintain healthy and

productive animals, and the water to provide the necessary feed for the animals.

One response would be breeding more efficient animals (Zwane, 2019), parallel to the development of new hybrid crop types, which will help farmers continue livestock production. Animals that are smaller, lighter in color, reproductively sound, and substantially disease tolerant (Rust & Rust, 2013), combined with the development of drought-resistant feed crops and pasture grasses, will yield an overall more sustainable livestock operation. It also may be possible to successfully merge both crop and livestock production. Farmers can improve their farms in self-sustaining ways, like using the manure from their livestock to bolster soil quality, thus improving crop yields. Manure also can help reduce soil erosion due to wind and water and protect water quality by reducing contaminated runoff (*Beneficial Use of Manure and Environmental Protection*, 2015).

Small-scale Farmers and Access to Credit

Small-scale farmers face a lack of access to credit, which is a major barrier to entry and expansion in South Africa. The ratio of small-scale farm credit to GDP in South Africa has declined by 40% since 1986, and the disparity between small-scale farm credit and commercial farm credit increasingly is widening. Despite the favorable lending environment in South Africa toward commercial farms, small-scale farms provide full time employment to 1 million South African households compared to the 700,000 workers, including seasonal and contract workers, employed in the commercial agricultural sector. Small-scale farms need credit, either in the form of grants or loans, to purchase new seed, buy equipment, apply more efficient irrigation techniques, and, indeed, employ new workers (Makina et al., 2015).

It is in South Africa's best interest to rethink its capacity to provide small-scale farmers with access to credit. The Land Bank of South Africa currently operates more like a commercial bank than a developmental one, despite its initial charter as a government-owned developmental financial institution. Its transformation over the decades as a result has strained the resources available to small-scale

farmers. Commercial farmers are, naturally, less risky investments and may be able to offer collateral to make their credit application more appealing. They often are involved in the fund disbursement process and therefore have an unfair advantage in determining who gets access to limited financial resources (Mtombeni et al., 2019). Small-scale farmers often do not have the luxury to wait through a months-long review and disbursement process even once awarded credit. And while financial institutions may be more likely to provide a one-time grant to a small-scale farmer, since this lending strategy is less risky and requires less accountability, smallholders often need more long-term forms of capital and investments to make meaningful impact. This is because small-scale farmers might not have the existing infrastructure that commercial farms do, might own less land, and therefore might be more vulnerable to extreme weather events and climate change.

South Africa has an opportunity to make changes in its funding landscape, the impacts of which could be tremendous. With increased government funding and coordinated cooperation with agriculturally based nongovernmental organizations, the Land Bank would be able to make riskier, earlier-stage investments in smallholder farmers. Such an effort would provide the lender not only with the capacity to offer easier access to credit for smaller farmers but also the ability to increase technical and educational support for their borrowers. This nonfinancial support ultimately benefits both farmer and lender, with the lender likely feeling more secure in its investment and ability to maintain accountability. Supporting small-scale farmers is, in actuality, one of the most productive investments a financial institution can make because of its wide-ranging influence across all parts of the country. With a 27% national unemployment rate and a youth unemployment rate of 55%, providing farmers with access to credit has the potential for these farmers to grow, hire more workers, and expand their food production capabilities. The Land Bank can play a role in ensuring food security in South Africa as the country enters a critical next decade in terms of both population

growth and anticipated impacts of climate change. As farmers adapt to new weather patterns and changing seasons, financial support will be necessary to complete these transitions effectively and feed a growing South African population. Financial institutions have an opportunity to effect social change, too. Most of South Africa's small-scale farmers are black, and most of its corporate farmers are white, with the latter owning 73% of the land in South Africa despite comprising just 10% of the country's total population (Crowley, 2017). Opening up access to credit for small-scale farmers will work to provide business and expansion opportunities to a marginalized group and thus work toward achieving social goals of the nation.

Conclusion

South Africa is vulnerable to the threats expected to be brought by climate change to issues of food security and farming. With household food security and poverty already a concern, the growing population and decrease in available arable land will pose challenges to South Africa. When factoring in changes to the dispersion of precipitation, hotter temperatures, and a potential for crop yields to suffer, the average farmer in South Africa is facing an uncertain future.

Despite these threats, strategies, both in farming practices and in the larger financial sector, are available to mitigate the impacts of climate change and foster a profitable smallholder agricultural sector and a food secure nation at the household level. Inter-cropping with different but complementary plants and implementing efficient irrigation measures that nourish the plants but avoid wasting water can enhance productivity. Efficiency in general will need to be a theme for the smallholder South African farmer, both with livestock, where farmers typically make more profit, and in crop production. Providing a protected environment, in addition to adequate rangeland, will help maintain the health of a farmer's livestock. There also is space for the government-run Land Bank to provide much-needed access to credit for smallholder farmers. In order for farmers to gain access to capital—seeds, equipment, sheds, and irrigation—and

workers, the lending environment in South Africa must become more open, to the benefit of society as a whole. Like any major challenge,

all stakeholders must cooperate in order to meet the needs of the South African people and successfully defend against climate change.

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EXPROPRIATION WITHOUT COMPENSATION IN SOUTH AFRICA

Jake I. Cooper



Due to the slow progress of land reform in South Africa, there has been increasing political pressure for the government to expropriate land without compensation (EWC). Consequently, there currently is a draft bill in the South African parliament to amend the Constitution to explicitly legalize EWC. This article discusses how EWC came to the forefront of the South African land issue as well as the advantages and disadvantages of utilizing EWC as a mechanism for land reform.

Introduction

South Africa's history of dispossession has resulted in spiritual and economic disconnects from the land. The 1996 South African Constitution, specifically Section 25 of the Bill of Rights, or the property section, has attempted to remedy this through a constitutional obligation to implement land restitution, tenure security, and redistribution policies. Yet, in the past 25 years South Africa has failed to implement and enforce land reform policies that adequately minimize the effects of colonial dispossession and apartheid. Consequently, there is immense sociopolitical pressure within the South African political arena to amend the Constitution in order to enable the expropriation of land without compensation (EWC). However, the potential passage of an EWC amendment presents several legal and political challenges. While EWC may seem like a logical, even imperative, policy from social and spiritual perspectives, it

is not economically feasible. The chief problem is that EWC brings with it high risks of capital flight and international lawsuits along with heightened food insecurity. Due to these concerns, South Africa should assiduously pursue the improvement of current land reform policies while replacing obsolete legislation.

History of Dispossession

Twentieth-century segregationist legislation perpetuated colonial-era wrongs instituted by those of white ancestry against black South Africans. This legislation was instrumental in the economic and spiritual disconnects from the land that black South Africans still experience. These discriminatory laws do not totally explain the apartheid legal structure; however, they do provide the underlying background of South Africa's land issue.

On May 31, 1910, the British-controlled colonies (Cape Colony and Natal) were combined with the Boer States (the Orange

Free State and the Transvaal) to form the Union of South Africa (Leacock, 1910). In 1913, the Union passed the Natives Land Act, which prohibited Africans from owning or purchasing 93% of South African land. The remaining 7% was designated as reserves in which Africans might reside. Although Boer and British colonial activity originated African land dispossession, the Natives Land Act legally ensured both white monopolization of the land and the long-term entrenchment of black South African poverty (Modise & Mtshiselwa, 2013). The lasting impact of the Natives Land Act is signified by the current Constitution's use of 1913 as the date after which dispossessed South Africans are ineligible for restitution (Constitution of the Republic of South Africa [Constitution], 1996).

In 1936, the Union of South Africa—established South African Native Trust was to further entrench the national system of segregation. Strong anti-squatting provisions were included to reduce sharecropping and catalyze the forced relocation of black farmers to the reserves (Feinberg & Horn, 2009, pp. 42, 47, 55–56). The election of 1948 increased the rate and magnitude of discriminatory policy in South Africa as the Union Party lost power to D.F. Malan's National Party. The Prevention of Illegal Squatting Act of 1951 instituted fines and imprisonment for illegal squatting and created a legal pathway for the forced removal of squatters (Union of South Africa, 1951). The Natives Resettlement Act of 1954 enabled government officials to forcibly remove any land-owning Africans in the Johannesburg region, regardless of their legal rights (Union of South Africa, 1954).

Under its 1996 Constitution, postapartheid South Africa has a moral and legal duty to provide historical redress. The deep scarring perpetuated by discriminatory and dispossessive legislation necessitates meaningful land reform policy in order for South Africa to move forward. However, more than 25 years after the end of apartheid, the dispossession of natives' land and spatial dislocation continue to lock most black South Africans into poverty with limited space for socioeconomic mobility. The spiritual and economic disconnects from the land

perpetrated by the Union of South Africa are the foundational justification for EWC.

Political History of EWC

The Economic Freedom Fighters (EFF) party, founded in 2013, was the first major supporter of an EWC amendment. The EFF is self-described as a radical, left, anti-capitalist, anti-imperialist political party. The EFF lists “Expropriation of South Africa’s land without compensation for equal redistribution” as the first of “Seven Non-negotiable Cardinal Pillars” (EFF, 2014). The EFF’s founding manifesto proposes that all South African land be put under state custodianship, which would require land occupants to apply for 25-year leases on the land (EFF, 2013). Since its founding, the EFF has become a legitimate threat to the political dominance of the African National Congress (ANC).

The ANC is South Africa’s dominant postapartheid political party. The ANC’s conception of what EWC should mean remains unclear and variable. At the 2017 National Conference of the ANC, then–Deputy President Cyril Ramaphosa challenged then–President Jacob Zuma’s ex-wife Nkosazana Dlamini-Zuma for the ANC Presidency. Dlamini-Zuma represented the term-limited President Jacob Zuma’s faction of the ANC. Ramaphosa became President of the ANC, and subsequently of South Africa, after Zuma’s February 2018 resignation. As a price to pay for political power, Ramaphosa was forced to accept EWC in the 2017 ANC Constitution.¹

South African political expert R.W. Johnson describes how the Ramaphosa administration was backed into endorsing EWC. Johnson identified a key pattern in former President Zuma’s political response to criticism. Zuma would “tack to the left, promising ‘radical economic transformation’ and attempting to throw all the blame on ‘white monopoly capital’” (Johnson, 2019, p. 29). As the South African economy was shriveling, the extent of his corruption surfacing, and his popularity disintegrating, it made political sense for Zuma to co-opt the EFF’s flagship

¹The ANC 2017 Constitution is equivalent to its party platform.

policy. Assuredly, EWC classifies as a radical economic policy that would resonate with landless Africans economically, symbolically, and spiritually. In accordance with Zuma's typical political response, Zuma persuaded Dlamini-Zuma to "tack left" and endorse EWC in order to offer previously unpromised "radical economic transformation" into her election platform at the 2017 Conference (Johnson, 2019, p. 56).

Dlamini-Zuma's public support for EWC posed a serious threat to Ramaphosa's candidacy. Since the implementation of black economic empowerment policy, Ramaphosa earned tens of millions of dollars from the shares and board positions he received from white-owned major corporations that hoped to capitalize on his political clout (Tangri & Southall, 2008, p. 713).² This made Ramaphosa an easy target for Zuma-ites to cast as white monopoly capital's frontman. During the 2017 Conference, "the Ramaphosa forces argued passionately against the EWC resolution...but in the end the Ramaphosa faction decided to give way, contenting itself merely with adding a number of conditions that EWC should only be carried out if it did not endanger food production or food security or the rest of the economy....Their concern was that if they failed to concede it might even lead to an attempt to overthrow Ramaphosa's presidential win" (Johnson, 2019, p. 57). Ramaphosa's victory at the 2017 Conference, which made him President of the ANC, effectively secured Ramaphosa's current position as President of South Africa. Simultaneously, however, it cornered Ramaphosa into a monumental electoral promise with which both he and his most fervent political supporters ardently disagreed. Consequently, Ramaphosa is obliged to deliver an EWC amendment in spite of awareness that it may critically damage several important goals of his administration. This awkward political predicament largely explains the unclear fate of EWC in ANC policy. Before EWC becomes policy, not just a policy consideration, numerous constitutional and political conundrums will have to be addressed.

²See the article by Buonasora in this volume for discussion of black economic empowerment.

EWC Legal and Political Pathway

The opinion that EWC is implicitly legal stems from Section 25(8) of the Bill of Rights, which grants the national government supreme power to resolve the land question, despite limits that cast doubt on this assumption. Section 25(8) states, "No provision of this section may impede the state from taking legislative and other measures to achieve land, water and related reform, in order to redress the results of past racial discrimination, provided that any departure from the provisions of this section is in accordance with the provisions of section 36(1)" (Constitution, 1996). Section 25(8) enables the government to take measures beyond the limits of Section 25 in order to achieve land reform, but within the limits of Section 36(1). Section 36(1) stipulates ways in which the Bill of Rights may be limited, including "that the limitation is reasonable and justifiable in an open and democratic society based on human dignity" and that the government could not have pursued "less restrictive means to achieve the purpose" (Constitution, 1996). Thus, Section 25(8) restricts the national government to pursue legislative measures and other actions that are reasonable and not overly restrictive. Many would argue that EWC is not reasonable and extremely restrictive. The first half of Section 25 exhibits clear intent to make expropriation and compensation inextricable from one another. Section 25(1) prohibits the "arbitrary deprivation of property." Section 25(2) states that property may be expropriated if it is in the public's interest (i.e., historical redress), but "subject to compensation." Section 25(3) outlines the factors which affect "the amount of compensation." Sections 25(1-3) are thus meant to act in proportion to and balance with Sections 25(5-8), which are the legal foundation for all forms of land reform. Section 25(5) enables the redistribution of land. Section 25(6) provides the state with the legal right to enact legislation to promote tenure security. Section 25(7) grants the state authority to adjudicate land restitution claims. Uncertainty about whether the constitution implicitly empowers the national government to conduct EWC led to a Joint Constitutional Review Committee (CRC) review on EWC's current legality.

An EWC constitutional amendment, which would enable the government to take possession of an individual's land without payment, would be feasible only if it is strictly limited. In September 2018, President Ramaphosa created the Presidential Advisory Panel on Land Reform and Agriculture to advise the Inter-Ministerial Committee on Land Reform and Ramaphosa's Cabinet about the shortcomings of current land reform policy and comment on proposed solutions. The panel's 2019 report rejected the position that EWC is currently constitutional (Mahlati et al., 2019). However, the Panel's position is not widely accepted and directly contrasts the recommendations of the CRC, which in its report recommended "That Section 25 of the Constitution must be amended to make explicit that which is implicit in the Constitution, with regards to Expropriation of Land without Compensation, as a legitimate option for Land Reform" (2018, p. 34).

On December 4, 2018, the National Assembly adopted the CRC report, which recommended making EWC an explicitly constitutional method of conducting land reform (CRC, 2018, p. 28). Two days later, the National Assembly appointed the Ad Hoc Committee to Amend Section 25 of the Constitution. After public roundtable discussions and expert consultation, the Committee tabled their report to the National Assembly in March 2019. The report indicated that the proposal of an amendment was not feasible before the expiration of the legislative session, but that the matter should be concluded by the end of the next session: the Sixth Parliament. While the 2018 Committee failed to present an amendment, its work was foundational to its Sixth Parliament successor: the Ad Hoc Committee to Initiate and Introduce Legislation Amending Section 25 of the Constitution (hereafter referred to as the Sixth Parliament Drafting Committee). In December 2019, the Sixth Parliament Drafting Committee released a draft of the Constitution Eighteenth Amendment Bill, which amends Section 25 to allow courts, in land reform cases, to "determine that the amount of compensation is nil" and directs the National Assembly to pass national legislation that "sets out specific circumstances

where a court may determine that the amount of compensation is nil" (Constitutional Drafting Committee, 2019).

Herein lies a critical problem: the draft Constitution Eighteenth Amendment Bill would have little to no clarity about the scope of EWC implementation. The necessary national legislation would take place in the form of a new expropriation bill to replace the current Expropriation Act No. 63 of 1975, which is still the current South African legal guideline for expropriation matters despite its pre-constitutionality and obsolescence. In the 25 years of the Republic of South Africa, Parliament has never been able to pass legislation replacing the Expropriation Act of 1975.

Another critical issue is that it is not clear how large a majority is required for the National Assembly to pass the draft Constitution Eighteenth Amendment Bill. Section 74(1) of the Constitution states that the National Assembly must achieve at least a 75% majority to amend Section 1 of the Constitution. Section 74(2) of the Constitution dictates that the National Assembly must reach a two-thirds majority vote in order to pass a Constitutional amendment with the exception of Section 1 of the Constitution (Constitution, 1996). Paul Hoffman, Director of Accountability Now, has pointed to Section 74(1) in order to argue that an EWC amendment actually should require a 75% vote (Cameron, 2019). Hoffman has argued that almost any EWC amendment the National Assembly drafts will affect Section (1)(c) of the Constitution, which states that the "The Republic of South Africa is one, sovereign, democratic state founded on the following values: the Supremacy of the Constitution and the Rule of Law" (Constitution, 1996). Given the controversial nature of the amendment, President Ramaphosa would be well advised to ask the Constitutional Court to ascertain whether a two-thirds or three-fourths majority is required to pass the bill.

Pros of EWC

There are some economic advantages to EWC if the government allows it in limited circumstances. The expropriation of non-utilized state-owned land without compensation would allow for that expropriated

land to be used more efficiently. If given to a black South African agricultural worker, the land could be used more productively in terms of agricultural production and wealth creation (assuming technical skill, land fertility, and access to cheap capital). EWC from absentee, hopelessly indebted, and criminal landowners would allow land transfer to South Africans who could contribute to the local economy. For example, if the government expropriated land from an absentee landlord of an abandoned apartment building and gave it to a black South African, that building could be used to provide affordable housing to black South Africans. Thus, EWC could replace economic non-contributors with economically disadvantaged black South Africans.

Although there are some economic positives associated with partial EWC, understanding why South Africans would support full EWC necessitates conceptualizing land not as a commodity, but as a “social space.”³ Vorster references a 2009 survey executed by land expert James Gibson, where 70% of black respondents indicated that they prioritize both the land’s dignity and symbolic value over its monetary value (Vorster, 2019, p. 4). Apartheid and segregation served to disconnect people from their land and therefore to dehumanize them. The inhumanity of apartheid and segregation, and their lingering effects, has made the land more than just the home of ancestors. It has added a layer where the land also represents a “symbol of dispossession” (Vorster, 2019, p. 8). EWC enables black South Africans to symbolically dispossess those whose ancestors dispossessed theirs. EWC offers the restoration of the land as a social space for Africans, which no longer carries the stench of dehumanizing dispossession. EWC provides the state with a legal mechanism to redistribute land at a far more expeditious pace to the dispossessed. It also offers eligible South Africans who have filed claims for restitution with an alternative, which promises to provide their family with land far faster than the snail-

³I am greatly indebted to Nico Vorster’s conceptual division of land as a social space, spiritual inheritance, or a commodity based on reviewing written and oral submissions to the Constitutional Review Committee in September 2018.

like pace of the Land Claims Court that handles land restitution claims.

The advantages of EWC also are substantive from the perspective that land is a “spiritual inheritance.” Vorster (2019, p. 6) comments that “Adherents of African traditional religions generally believe in an ‘enchanted’ universe where the spiritual and material realm, ancestors, spirits and living beings are all part of one interactive reality.” To many South Africans, their ancestors are the God-entrusted custodians of the land whose job it is to maintain a moral relationship between the land and the people. Colonial dispossession and apartheid have deeply abused spiritual relational equilibrium with the land, which requires urgent restorative action: “whenever there is a breach in the order of the universe as established by God through the ancestors, humanity must see to it that harmony is restored. Failing this, humanity will suffer” (Kaunda & Kaunda, 2019, p. 92). Thus, when viewing the land as a spiritual inheritance, EWC appears to be an imperative policy because it offers to restore harmony in an urgent fashion, which will protect black South Africans from continued suffering.

Cons of EWC

It is widely accepted that South Africa’s economy is heavily reliant on foreign direct investment (FDI). On April 16, 2018, President Ramaphosa announced a new investment drive, with a stated goal of securing \$100 billion in FDI within 5 years. Ramaphosa’s announcement, just two months into his presidency, showcases the President’s acknowledgement that FDI is indispensable to South Africa’s economy. Relatedly, Ramaphosa announced an objective to be ranked within the top 50 nations in the World Bank ease of doing business index (Ramaphosa, 2018). In October 2019, South Africa was ranked 84th of 190 nations (World Bank Group, 2019). As of January 2020, South Africa faced a 29.1% unemployment rate, the highest since 2003. In January 2020, the World Bank Group forecasted 0.9%, 1.3%, and 1.5% real GDP growth for 2020, 2021, and 2022, respectively. These GDP projections lag behind the averages for emerging markets and developing economies. Moreover, this

nominal GDP growth is based on expectations of a decrease in policy uncertainty (World Bank Group, 2020). If the draft Constitution Eighteenth Amendment Bill is passed, South Africa's degree of policy uncertainties can only be expected to rise. South Africa's high unemployment rate and the World Bank Group's lukewarm GDP projections showcase the urgency of stimulating the economy via FDI. Despite cultural and spiritual advantages, the draft Constitution Eighteenth Amendment is deeply antithetical to maintaining the lifeblood of the South African economy: FDI.

Given the current condition of the South African economy, a Constitutional amendment enabling EWC likely would have deleterious consequences going forward. As Kwarteng and Botchway (2019, p. 98) have argued, EWC will scare away FDI and make the national government susceptible to lawsuits in international investment tribunals, where there is a high likelihood that the Republic of South Africa will be held liable for violating international investment agreements (IIAs) or bilateral investment treaties (BITs). If a State is found to have violated an IIA or BIT, it likely will be liable to pay reparations to the damaged party. South Africa already has been involved in litigation in international courts for appropriating foreign property in violation of BITs (Musakwa & Odhiambo, 2019, p. 48). As a result of the obvious conflicts between BITs and constitutional obligations, South Africa predominantly has terminated BITs rather than renew them. In reaction to the issues resulting from this contradiction, Parliament passed the Protection of Investment Act, 2015, which sought to create a uniform structure for BITs that better aligned with constitutional promises (Musakwa & Odhiambo, 2019, p. 48). Section 9 of the Act states, "The Republic must accord foreign investors and their investments a level of physical security as may be generally provided to domestic investors *in accordance with minimum standards of customary international law* [emphasis added] and subject to available resources and capacity" (Republic..., 2015). Thus, an EWC amendment threatens widespread confusion about the physical security of FDI-backed property because it certainly does not satisfy

the "*minimum standards of customary international law.*" While there is no concrete definition of the international minimum standard of protection, a nation must be expropriating the foreign-owned property in a nondiscriminatory fashion, in legitimate pursuit of the public good, and provide prompt, adequate, and effective compensation (not necessarily fair market value). This precedent has been backed by the World Bank guidelines on treatment of foreign direct investment (Kwarteng & Botchway, 2019, p. 102). While EWC may be implemented in a legitimate pursuit of the public good, it is characteristically discriminatory. Moreover, nil compensation for valuable FDI-backed expropriated land cannot reasonably be considered as prompt, adequate, or effective compensation.

EWC opens the floodgates for endless international investment litigation, which likely would result in the Republic of South Africa paying substantial damages. Furthermore, if South Africa passes an EWC amendment, it would be well advised to explicitly prohibit the expropriation of FDI-backed property, in the EWC amendment itself, in a new Expropriation Act, or in the form of an amendment to the Protection of Investment Act, 2015.

At a Goldman Sachs investment conference in May 2019, Ramaphosa stated that foreign investors have "nothing to fear" regarding an EWC Constitutional amendment and that South Africa was not going to seize property from foreign investors (Cronje, 2019). While Ramaphosa may not have any intention of expropriating FDI-backed land without compensation, a constitutional amendment has legal and economic implications that will far outlive Ramaphosa's presidency. A pledge by Ramaphosa does not guarantee a similar pledge from his successor. The long-term implications of a constitutional amendment necessitate explicit language within the amendment that enables potential foreign direct investors to reasonably gauge the physical security of their property over the long term.

Beyond FDI-related issues, EWC presents serious risks for the agro-industrial complex which would lead to increased food insecurity. In 2018, respected researchers from the

Agricultural Business Chamber—Theo Boshoff, Wandile Sihlobo, and Sifiso Ntombela—published a white paper that noted the economic implications of EWC on South Africa’s agro-industrial complex. They articulated that the threat of EWC would disincentivize white farmers from investing in their businesses as well as deter prospective investment into commercial farming and related industries. A dearth of investment would make commercial farmers and agribusinesses hard pressed to produce at the level necessary to maintain current crop prices in South Africa. In other words, EWC would commence a stagnation of investment into the agro-industrial complex, which, by necessitating higher prices, would increase food insecurity amongst the lower class. Agriculture, including related upstream industries and downstream industries, constitutes approximately 7% of South Africa’s real GDP (Boshoff et al., p. 4). Not only would food security be threatened but also about 7% of the economy would struggle to attract the investment required to maintain its current size. Lastly, a dearth of investment in the agro-industrial complex could further perpetuate South Africa’s already exorbitantly high unemployment rate (29.1% as of January 2020) due to the labor-intensive nature of the sector.

Recommendations

The cons of EWC blatantly outweigh the potential benefits. If the draft Constitution Eighteenth Amendment Bill should pass (even if backed by strict limitations in a corresponding expropriation bill), South Africa will have opened the floodgates for increased capital flight, increased legal liability, and increased food insecurity. Parliament would be well advised not to pass the Amendment Bill or any other EWC legislation in the foreseeable future. Although there is merit behind social and spiritual arguments in favor of EWC, it is deeply antithetical to South Africa’s economic interests. A nation with stagnant economic growth that is completely reliant on FDI and foreign markets is in no position to denigrate the idea of land as a commodity. For all the social and spiritual advantages of EWC, the most pressing issues in South Africa (unemployment, food security, and poverty)

will only become worse and more endemic. However, it is true that the draft Constitution Eighteenth Amendment Bill allows for a limited version of EWC since it merely “sets out specific circumstances where a court may determine that the amount of compensation is nil.” The resulting national legislation, in an ANC-controlled parliament, would enumerate very limited “specific circumstances” where EWC applies in a revised expropriation bill. Even if a new expropriation bill somehow passes, and EWC is limited to “specific circumstances” like state-owned enterprises; abandoned land; and land obtained through criminal activity, donation, or informal settlement areas, the draft Constitution Eighteenth Amendment Bill sets a precedent for EWC-related national legislation and/or EWC-related amendments in the future, which could be far more radical.

If an amendment is passed, political actors should do all they can to prevent the draft Constitution Eighteenth Amendment from creating a slippery slope on the way to radical land reform. For example, Parliament must at least have unambiguous definitions for terms such as “absentee landlord,” “purely speculative,” and “hopelessly indebted” in the revised expropriation bill, if not in Section 25 of the Constitution itself. If defined in the Constitution, the burden to expand the scope of EWC in future expropriation bills would be exceedingly difficult.

Furthermore, the Sixth Parliament would be well advised within any amendment to Section 25 to make sure that foreign-owned land is provided for. As discussed previously, an EWC amendment that does not provide for FDI-backed property opens up the South African government to legal liability within the international investment court system and greatly damages its international reputation as the premier location of foreign investment in Africa. A clause within Section 25 should explicitly protect property that was previously protected under the Protection of Investment Act, 2015. In doing so, South Africa will minimize its legal liability because the explicit constitutional protection of FDI-backed property certainly meets the international minimum standard for expropriation. At minimum, the clause should explicitly protect

any property that South Africa currently has contractual obligations to protect under the surviving clauses of any BITs. Either of these measures will compromise some of the spiritual/cultural punch of EWC. However, they are a necessity in order to affirm the nation's commitment to being an attractive trade partner to foreign nations and investors.

Whether or not the draft Constitution Eighteenth Amendment Bill or any other EWC legislation passes through Parliament, the South African government must be prepared for continued social unrest related to the land issue. The common denominators of land reform in South Africa's 25 years of democracy have been failed promises, corruption, underfunding, deference to traditional leaders, and lack of legislative specificity. South Africans have little consensus about what land reform should mean in terms of method, scale, rate, and so forth. The emotional divisiveness pertaining to EWC is reflective of this lack of consensus. Radically increased funding,

transparency, confrontation of traditional leaders, a commitment to legislative specificity, and active record keeping (in the form of a national land audit) all present much more reasonable policy paths than EWC.

Most importantly, the Republic of South Africa must recommit itself to funding land reform and land redistribution. The funding of the Department of Rural Development and Land Reform (renamed Department of Agriculture, Land Reform, and Rural Development) is regularly less than 1% of the national budget, with only 0.2% of the national budget dedicated to land redistribution (Mahlali et al., 2019). The South African government needs to provide significantly more funding, without which it is impossible to judge the potential efficacy of most of the nation's land reform policies. If a fair resolution of South Africa's land reform policy is ever to happen, the government must discern a way to find additional funding within an already tightly strapped budget.

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SOUTH AFRICA'S LABOR FORCE AMID TECHNOLOGICAL CHANGE

Ha Dao



South Africa's labor force is ill prepared for the advent of digitalization, with 35% of all jobs at risk of displacement. This article analyzes the current challenges and capacities of the South African labor force and suggests appropriate measures moving forward to mitigate the effect of technological change.

Introduction

The world has evolved dramatically from a largely agricultural and rural-based society in the 1700s, to an industrial manufacturing one in the nineteenth and much of the twentieth centuries, and eventually to today's service-based/computerized society. Over time, new technologies (e.g., steam engines, electricity, and computers) have allowed workers to perform more varied, complicated, and value-added tasks. However, unlike earlier changes that both eliminated and created jobs in revolutionary ways, current developments in digitalization and artificial intelligence (AI) will have more significant implications for blue-collar and white-collar workers. Klaus Schwab (2016), founder of the World Economic Forum (WEF), claims that current breakthroughs have no historical precedent in terms of velocity, scope, and systems impact. AI's intelligence and adaptability make it unique compared to previous technologies. Its

capabilities of managing and making decisions based on massive amounts of data mean that even seemingly untouchable jobs are at risk of displacement. For example, a six-year study showed that AI is better than doctors at predicting heart attacks or deaths (European Society of Cardiology, 2019). A society with robots working side by side with humans no longer exists only in science fiction; this new paradigm is on the immediate horizon, and nations need to anticipate these developments to ensure their stability.

Unfortunately, South Africa's workforce is ill prepared for the upcoming changes. Accenture predicted around "5.7 million jobs (35% of all jobs) in South Africa will be at risk by 2025 due to digital automation" (Phillips et al., 2018, p. 3). The current outlook is not optimistic for the country, given its already high income inequality. On the Gini coefficient, a measurement of the income and wealth distribution of a country, South Africa currently is ranked the most unequal country in the

world, at a score of 0.634 (World Bank, 2019). With the advance of technology, those with access to new tools will benefit greatly, whereas people with limited access will be left behind. Thus, upcoming changes in skill requirements potentially will worsen inequality in South Africa. South Africa is at risk due to its chronic unemployment rate, a high concentration of low-skill jobs that are susceptible to displacement, and a medium-skills shortage problem. Additionally, the country has a low capacity to adapt due to its inefficient STEM education and training systems.

South Africa's Exposure to the Challenges

Chronic Unemployment

South Africa is notorious for having one of the highest, most chronic unemployment rates in the world, hovering above 25% over the past two decades. The unemployment problem is a deeply rooted consequence of the apartheid era. Under apartheid, the labor force was governed by the “two labor code,” an informal name for a series of racial discrimination laws that developed gradually over the years. According to Hepple (1971), the first code—the more favorable one—granted workers numerous rights, such as “access to employment, the freedom to organize, etc.,” while the second code for blacks “pegs them to servitude” (p. 1).

Apartheid not only limited the black workforce from having economic benefits (e.g., insurance and fair wages) but also hindered them from acquiring skills to move up in the labor force. The Apprenticeship Act of 1944, governed by the Ministry of Labor, dictated the major conditions for training workers, for example pay rates, work hours, and career outcomes. The Act was a manifestation of collaboration between government and industry on upskilling workers. Industry leaders often consulted with the Ministry on ways to organize apprenticeship contracts and discuss actions to cope with the changing needs of industry. The Act did not explicitly exclude blacks from accessing training, but unwritten rules governing implementation disqualified the majority of South Africans from entering,

In practice, blacks accounted for less than 20% of the registered apprenticeship contracts, and that 20% came mainly from industries requiring lower skills (Hepple, 1971). About half the industries did not grant any contracts at all to blacks, leading to a high concentration of skilled certificates in the white population. The disparity in skill level forced the black population to work in labor-intensive industries such as mining and manufacturing.

The unemployment problem in South Africa also suffers from a structural change in the workforce: an increase in size. According to the Brookings Institution, the growth has been driven by increasing participation rates, specifically among nonwhite women (Bhorat et al., 2015). From 1995 to 2017, the South African labor force added 11.9 million entrants, while only 6.7 million new jobs were created. This deficit reflects slow economic growth and a resulting inability to absorb the increased labor force, a combination that has exacerbated the unemployment problem.

The problem is neither cyclical in nature nor an aftermath of a specific financial crisis; rather, high unemployment is chronic and embedded in the socioeconomic structure of the country. The apartheid system tore down nonwhites' economic and political rights, forcing them into low-skill jobs while benefiting whites who moved away from semiskilled work to skilled work (Mariotti, 2012). This shift created an oversupply of low-paid labor for the mining and manufacturing sector, which was booming in the twentieth century. Moreover, those industries have made workers vulnerable during this new economic transition, as employers are likely to require new skill sets.

Since the early 2000s, there also has been a change in the South African economy, driven mainly by changes in the mining and financial services sectors. A skills report from the Department of Higher Education and Training [DHET] (Reddy et al., 2019) points out that the economy is becoming less dependent on mining and agriculture, with combined employment shares of those industries dropping from 15% in 2001 to 7% in 2012. In this same period, the real economic opportunities moved to financial services. South Africa prides itself

Table 1
Changes in the Occupational Structure

Main Occupation	2014	2016	Absolute Change	Percentage Change
Manager	1,331,000	1,356,000	25,000	1.9
Professional	842,000	866,000	24,000	2.9
Technician	1,552,000	1,470,000	-82,000	-5.3
Clerk	1,653,000	1,642,000	-11,000	-0.7
Sales and services	2,326,000	2,481,000	155,000	6.7
Skilled agriculture	76,000	68,000	-8,000	-10.5
Craft and related trade	1,813,000	1,927,000	114,000	6.3
Plant and machine operator	1,277,000	1,284,000	7,000	0.5
Elementary	3,295,000	3,681,000	386,000	11.7
Domestic worker	981,000	1,005,000	24,000	2.4
Total	15,146,000	15,780,000	634,000	4.2

Source: Reddy et al. (2019).

on having the most sophisticated and mature financial system in Africa. However, the transition for the labor force was not smooth—workers from the labor-intensive sector often struggled to transfer their more limited skill sets to the financial services industry. Pauw and colleagues (2006) showed that within the mining sector, fewer than 5% of the workers are skilled, whereas in manufacturing, the ratio hovers around only 10%. With respect to the financial services sector, the ratio is around 50%. Having few skills to re-enter the market, such disadvantaged workers remain unemployable. This skills mismatch is one of the root causes of the unemployment problem in South Africa.

In previous technological revolutions, despite the increase of machine power, humans remained the driving factor for the economy. However, under the new digital revolution, low-skilled workers are at risk of becoming the “useless” class, a term coined by Harari (2016), who argues that with the proliferation of AI, low-skilled people become unemployable. Previously, new technology was introduced to increase efficiency and allow humans to pursue higher-level cognitive processes; however, AI has both the physical and cognitive capabilities that can outcompete

low-skilled workers (Harari, 2016). Thus, the structural unemployment problem coupled with a limited-skills labor force exposes South Africa to a high risk of being left behind by the upcoming changes in nature of work. The current development is already taking place and will only increase the burden on the South African government.

A High Concentration of Low-skill Jobs

Today, half the jobs created in the South African economy come from what is known as the community, social, and personal services (CSPS) sector, specifically elementary jobs that are considered at high risk of displacement (Reddy et al., 2019). According to the South African National Qualifications Framework (NQF), those jobs indicate the lowest attainment levels, ranging from 1 to 2 on a scale from 0 to 10, with 10 the highest achievement a person can attain. The NQF was one of the first legislative packages passed by the African National Congress government after 1994, with the “goal of integrating the quality measurements of the education system and of the workforce” (Reddy et al., 2018, p. 47). This is a progressive idea aimed at addressing poverty, unemployment, and inequality by

allowing citizens to access and acquire skills that could be transferable between jobs. As indicated in Table 1, South Africa has a high concentration of job creation in levels 1 and 2 (the elementary and domestic worker groups). Approximately two of three jobs created between 2014 and 2016 in South Africa fall under this category, reflecting the low-skilled nature of the South African labor force.

According to the International Labour Organization (2004), elementary jobs “consist of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort.” Tasks performed by workers in this group include domestic help, goods delivery, etc. The simple, repetitive nature of these jobs poses a challenge for the South African labor force. Current technological development is characterized by AI, best utilized where there is repetitiveness in the job and where workers would not add more value to the process. Therefore, the simpler the task, the less data and time required for an algorithm to learn and the higher the risk of that task being displaced by a machine. According to a study by Accenture, “The more predictable and repetitive the activities that make up the task, the more likely it is to be replicated by machines...and automated” (Phillips et al., 2018, p. 8). Because the majority of recent job creation in South Africa lies in the elementary group, the country is at a high risk for job displacement.

Medium-skills Shortages in a Rigid Labor Market

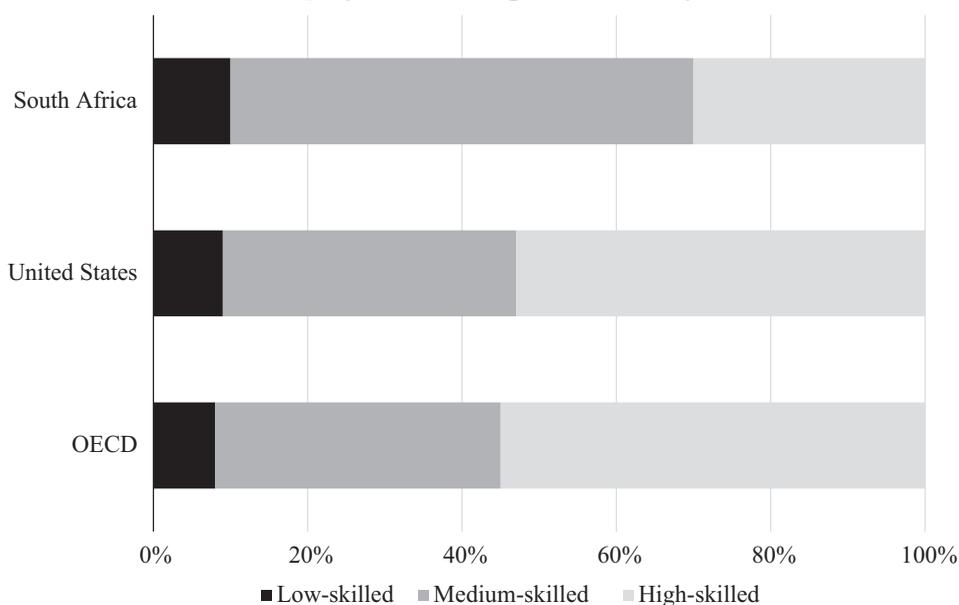
South Africa is facing two related problems: filling the shortage of medium-skilled workers in the short term and preparing to upskill its labor force to even higher levels for the new industrial revolution in the long term. Medium-skilled workers are those under NQF occupational levels 3 to 5, mainly clerical support workers and service and sales workers as well as plant and machine operators. Compared to US and to Organisation for Economic Co-operation and Development (OECD) averages, South Africa has a unique distribution of the types of workers in high demand. More than 60% of shortages in employment are in medium-skill work.

Figure 1 shows the average shortage of available labor in the OECD economies is skewed to the high-skilled level, indicating that demand for labor skills is shifting toward “more complex, non-routine tasks as a result of digitalization” (Manca et al., 2018). Despite the global transition, South Africa stays behind the trend as its skills shortages remain concentrated in the medium range.

As discussed previously, technology during this new phase has the cognitive capability to adapt and take on jobs that previously were thought could be done only by humans. For example, NQF level 5, the highest level in the medium-skill category, comprises mainly customer service clerks (tellers, receptionists, etc.). As an illustration of employment categories at risk in South Africa, several financial institutions, for instance Rand Merchant Bank and Nedbank, already are replacing thousands of hours of human labor by service clerks with robotic process automation. Instead of bank tellers, Nedbank is rolling out a robot—Pepper—that can chat with customers and answer questions. This innovative idea faced considerable pushback among unions because the bank planned to cut 3000 jobs. Specifically, leaders of SASBO—a finance union that comprises 70,000 workers—threatened “serious action plans” against the bank but at the same time conceded in court that “job losses will be inevitable due to advances in AI based technology” (Haffajee, 2018). This example reflects the rigidity of the South African labor market and the influence of the labor unions. The trade unions represent a strong force in the economy as their members account for 17.6% of the workforce (Department of Statistics South Africa [DSSA], 2020). These unions played an important role during apartheid, demanding equality and assuring proper treatment for workers. After 1994, the unions remained a strong force, having a profound impact on South African politics, creating rigidity within the labor market and stifling innovation.

Hlatshwayo (2017) points out that workers are heavily influenced by their union’s philosophical leaning, which in South Africa focuses on labor law, wage negotiations, and HIV and AIDS. Currently, the unions pay no

Figure 1
Share of Employment in High Demand by Skill Level



Source: Manca et al. (2018).

attention—in terms of helping their members prepare for the changing role of technology in industry—to skills challenges arising from automation. The article argues that current skills challenges and structural imbalance are not being addressed by unions because leaders “seem to be preoccupied with ‘politics from above,’ which entails using political power to advance the individual interests of union leaders, and conventional union issues” (p. 111). One member of the Development Institute for Training, Support and Education for Labour, a collaborative organization that works with unions to provide training to their members, believes unions have not planned on training or reskilling the workers yet, as it is not among their current goals (Hlatshwayo, 2017). This is not a new occurrence in South Africa; in the past, labor unions have leveraged their power to prevent the adoption of technology. The CEO of Principa, a South African data analytics company, points out, “South Africa had purposefully rejected several tech advancements from the previous industrial revolutions, wisely, because they destroy jobs. Self-service fuel pumps are a prime example. If we adapt self-service, 70,000

fuel service station employees will be jobless” (DeJager, 2019). Thus, the lack of awareness from workers along with the tunnel vision from the unions expose workers to a higher risk of displacement and create rigidity in the labor market.

The substitution of AI for human clerks in the financial sector (specifically at Rand Merchant Bank and Nedbank) demonstrated AI’s ability to displace medium-skilled workers. Just as the country is facing near-term skills shortages in the medium levels, those same jobs are being taken away by robots. It appears companies are resorting to using machines to address the shortages in the labor market, and the government is not addressing the shortages fast enough to meet the demand from the market. *The Future of Jobs Report 2018* (WEF, 2018) reveals that hiring new permanent staff with skills relevant to new technology is still the top priority for firms. However, without sufficient supply, they will turn to alternative strategies, looking for ways to automate the work (83% of respondents).

In short, filling the shortage of medium-skill jobs in the near term and preparing to upskill its labor force to higher levels in the long

term remain complicated challenges. Unlike other upper-middle-income countries that focus on solving high-skills deficit problems, South Africa has the additional medium-skills deficit problem together with a surplus of low-skilled workers that ranks among the largest in the world. Focusing solely on one problem will put South Africa in a tough spot, either worsening the disparity or leaving the country altogether behind.

South Africa's Capacity to Adapt

In order to address those labor challenges, there are multiple areas that the government can target. Formal education, vocational training, public employment and deployment programs, and job placement programs—supply-side initiatives—all share the goal of alleviating the unemployment problem while equipping South Africans with the skills necessary to respond to changes in nature of work. For each core component of the supply-side initiatives, the government is already passing skill-strengthening initiatives; for example, job placement programs are seeking to address college graduate unemployment problems. Regarding vocational training, Jin in this volume assesses challenges within the current system. Therefore, this article focuses on the remaining two capacities: public employment and deployment programs and formal education, specifically STEM education.

Expanded Public Works Programme

One of the government's main objectives for the postapartheid era was to provide immediate economic relief and address unemployment issues. The original plan was to provide jobs within the public sector in order to transition low-skilled workers and the unemployed back into the workforce. As discussed, the CSPS sector accounted for the majority of employment growth from 2001 to 2012, with more than a million jobs created during this period; this sector comprises mainly public entities, like state-owned train, power, and chemical companies. This increase has been a direct impact of the Expanded Public Works Programme (EPWP).

The Department of Public Works (2009) introduced the EPWP in 2003 as a part of the National Development Plan 2030, a tool to transition its citizens back to the workforce. EPWP has multiple phases, with each phase lasting about five years and consisting of two main components: public employment and skills training. In 2014, the governing body outlined its goal for the third phase: to employ a total of six million workers and reduce the unemployment rate significantly by 2019 (Mabuza, 2014). The plan partially played out as the CSPS remained the main driver for employment opportunities; nevertheless, the unemployment rate remained at an all-time high. EPWP, in theory, is a substantial plan to reduce the poverty level in South Africa. In the short term, it did what the government expected—increased employment opportunities (five million work opportunities in the first 10 years) and absorbed a half million unemployed workers annually (Karuri-Sebina et al., 2019). However, this number is minimal when compared to the unemployment total—seven million (DSSA, 2020). To fully reduce unemployment, the government would have to increase expenditures manyfold. The current 2019 budget for EPWP is R2.3B (\$157M) per year, only 0.1% of the national budget (Karuri-Sebina et al., 2019). The government acknowledged that EPWP was seen as a short-term measure to alleviate poverty and that a long-term solution is necessary to complement the program.

One innovative aspect of the program is the training provided to the participants. The program is well designed, providing opportunities for the unemployed to make a living and gain transferable skills, allowing them to transition back to the workforce. With respect to the infrastructure segment, a contractor learnership program is provided, enabling labor-intensive workers to attain certificates at NQF levels 2 and 4. After attaining the supervisor certificate at NQF level 4, workers are one step closer to becoming eligible for government contracts, not only creating more opportunity to escape poverty but also helping alleviate South Africa's medium-skills shortage problem. The nonstate sector launched its own NQF level 4 program,

the New Venture Creation Learnership Programme, which addresses the AI threat to the workforce by teaching workers soft skills pertinent only to humans, such as strategic planning, business strategy, and operation and management.

The EPWP's well-meaning intentions notwithstanding, data in the 2019 annual report suggest that the actual amount of training available is insufficient. The program in 2019 provided a total of 11,000 training days to workers in nine cities, a tiny 0.18% of the total six million days those same people worked. Capetown, at 0.99%, had the highest ratio of training days to work days and accounted for 78% of the total number of training days, whereas Mangaung had zero days of training for workers (Karuri-Sebina, 2019). The differences in the training days ratio reflect the lack of standardization across the EPWP program. Even a multifold budget increase would not suffice given the lack of training capacity. As the program enters the next phase, previous performance demonstrates the incapability of transitioning a high volume of workers into the workforce on a permanent basis.

STEM Education

The South African government also seeks to resolve its labor problem through education, since a third of the population are children under the age of 14 (DSSA, 2019). As AI fully emerges, this youth population will be the main driver for the economy, so focusing on the educational system, specifically STEM education, will facilitate a better understanding of South Africa's capacity to adapt to the changes. A DHET study pointed out the inefficiency in the education system, specifically in STEM fields. Compared to other similar middle-income developing countries (e.g., Brazil, Malaysia, and Thailand), South Africa spends the most on education (6% of total GDP compared to the 5.1% average), yet it has the lowest mathematics achievement scores (Manda & Ben Dhaou, 2019).

Despite the government's focus on revamping the education system through myriad new initiatives, for instance the Accelerated Schools Infrastructure Delivery Initiative and the National Student Financial

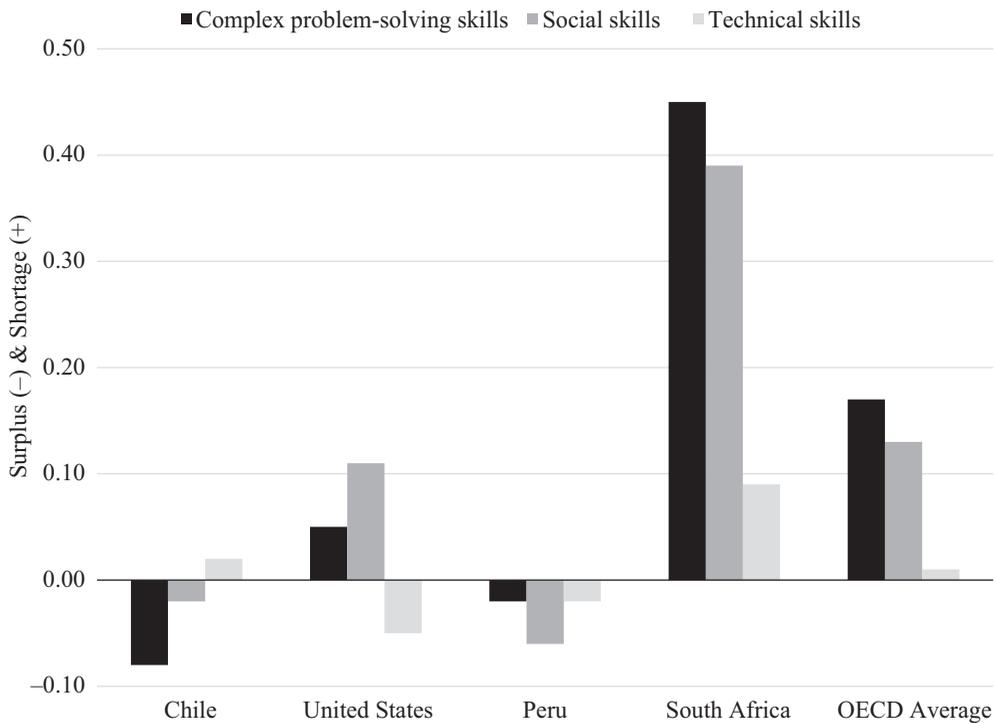
Aid Scheme, hopes for improvement have not been realized. Over the past seven years, the rate for college students who passed math with higher than 50% has been hovering around 20%. According to a WEF report (Baller et al., 2016), South Africa ranked last (of 139 nations in the report) in math and science education and in the bottom three in the quality of the education system at foundation levels. Despite an increase in school enrollment in STEM fields, STEM-related degrees account for only 29% of the total degrees granted by higher-education institutions, a low rate compared to other emerging countries, for instance India (42.6%) and Brazil (33.9%) (Manda & Ben Dhaou, 2019).

STEM education is crucial for the workforce; in the early phase of the upcoming changes, abilities to think critically and to work alongside machines remain the top priorities. According to WEF research (2018), 96% of surveyed South African companies are already adopting big data analytics, and 90% have invested in machine learning. These levels of adoption demonstrate a change in corporate strategies to implement new technologies and leverage computing power in daily operations. Workers with strong STEM foundations will be more flexible in accommodating changes in this era. The current inefficient and low quality of the STEM education system poses a substantial challenge for the country's capacity to adapt to the upcoming changes.

Skill Sets Required Going Forward

In the digital world, where algorithms continue to outperform humans in various cognitive and physical tasks, it is crucial for workers to focus on soft skills. In the long term, these factors will differentiate between humans and robots. As machines take over mundane tasks, it will be essential for humans to be even better at collaboration, flexibility, and critical thinking. Traits important for the South African labor force during this period include having an ability to leverage digital platforms, a high level of emotional intelligence, a capacity for complex problem solving, and a growth mindset (Phillips et al., 2018). Lee (2018) claims that despite its impressive computing power, AI cannot be creative or compassionate.

Figure 2
Skills Need Indicator



Source: DHET (2019).

As indicated in the skills report depicted in Figure 2, South Africa is behind in terms of both social skills and complex problem solving. Comparing South Africa to Chile and Peru, other emerging economies, it is apparent that South Africa has a severe shortage of social skills. South Africa's social skills shortage is around 0.4 while shortages in both Chile and Peru are lower than average, meaning both countries are experiencing surpluses (-0.08 and -0.2, respectively) (Reddy et al., 2019). This shortage is three times higher than the OECD average. Additionally, South Africa faces a shortage of complex problem-solving skills. The shortage ratio is twice the OECD average; combined with the shortage of social skills, this is a warning for the country in terms of its capacity to adapt to the next industrial revolution. The report points out that South Africa's largest skills shortage is in the area of active learning—defined as understanding the implications of new information for both current and future problem solving and

decision making.

In addition to assessing skills shortages, the report measured the knowledge shortages in South Africa, indicating a deficit in computer and electronic knowledge. The report differentiated *skills* “as all types and facets of competences needed by workers to perform their jobs” versus *knowledge* as “familiarity with factual information and theoretical concepts acquired through learning” (Reddy et al., 2019). In a digital world, workers no longer will be restricted to one team or role because things will be moving fast, and such change requires the labor force to be flexible and curious to cope with new situations (Phillips et al., 2018). South Africa's shortage problem in active learning would hinder the country's ability to be adaptive. Additionally, lack of computer and electronic knowledge will prevent workers from utilizing the technology to increase their productivity, in the long term perpetuating the low-growth problem. Assessing the requirements for success in

this era—human skills, active learning, and problem solving—South Africa appears to be in a high-risk situation as its labor force’s capacity to adapt remains limited.

Recommendations

There are multiple views on the impact of upcoming technological changes. Some argue that it will be like previous revolutions, in which, faced with technological advances, humans adapted and more opportunities were created. On the other hand, some like Harari (2016) see these upcoming changes as obstacles, if not detriments, especially for low-skilled labor and low-income groups, unless successfully navigated. South Africa’s future depends greatly on how well this young democracy can undo the damages of apartheid while moving the country altogether forward. Undeniably, these problems are complex and require years and a long series of good policies and programs to fully address. However, there are two immediate steps the government can take: incentivize creation of transitioning jobs and amend the vocational training system. For the long term, it can focus on STEM skills and knowledge for the next generation of workers.

Some countries, such as India, Singapore, and France, already are designing national AI strategies that provide roadmaps for preparing the labor force, regulations, data governance, and so forth. For example, one proposal by the Indian government to mitigate the effect of job displacement that could be implemented in South Africa is creating transitioning jobs. “These jobs ideally would be part of the AI solution development value chain but require a relatively low level of expertise so it can create employment at scale” (Kumar et al., 2018). In the long run, jobs like drivers and tellers will be replaced, but, to get to the full replacement scale, AI needs human support. Tasks, such as data annotation, image classification, and speech transcription, could create mass employment opportunities, buying more time for the government to address the structural problem while adding value to the AI economy. Those transitioning jobs can be anticipated

and prepared through collaboration between education providers and industry.

Similarly, vocational education training can take the forefront in this adaptation period to slow down the disruption and give South Africa more time to upgrade its education. Jin points out how the dual apprenticeship system could address multiple problems within the South African workforce. The proposed system lasts for about three years, during which participants allocate approximately 80% of their time to workplace learning and the remaining 20% to traditional education. Additionally, the proposed apprenticeship system is heavily labor market driven, an appropriate design to counter the fast-changing requirements in the workforce. Participants will gain needed skills to transition in the workforce, while attaining the basic education of the traditional system. This process can be supported by the collaboration of unions whose current vision remains egocentric. Unions’ political agendas drain capital and human resources since their main focus revolves around labor law, wage negotiations, and other issues that do not prepare workers for technological change. Instead of taking a reactive approach and fighting against changes in the workplace, union leaders can mitigate disruptions by reallocating the budget in their research arms to projects that would better foresee, and then equip workers for, upcoming changes.

South Africa is at high risk for disruption from the upcoming changes in the nature of work. Despite having structural problems with a chronic high unemployment rate, high concentration of low-skill jobs, and shortage of medium-level skills, the outlook for South Africa’s future is not completely pessimistic. With a growing youth population and a long history of demonstrating resilience to challenges, the country has a chance to catch up with global leaders, but only if the government creates an appropriate transitioning economy that has the capability to absorb a large portion of the unemployed, upskilling the current workforce and focusing on STEM skills and knowledge for the next generation of workers.

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VOCATIONAL EDUCATION IN SOUTH AFRICA

Xiaming Jin



South African youth are the most vulnerable in that country's labor market, with a strikingly high unemployment rate. This article addresses the vocational education system in South Africa and offers recommendations and implementation strategies to address the impact of youth unemployment transformation. Current challenges and capacities in the South African labor force are analyzed and appropriate measures to mitigate the effect of technological change are suggested.

Introduction

Worldwide, young workers are a crucial population group for boosting a country's economy. However, South African youth are the most vulnerable in that country's labor market, with a strikingly high unemployment rate. This article addresses current conditions of the labor market, focusing on issues related to the high youth unemployment rate and presenting an analysis of the vocational education system as a core element of the problem. After summarizing these key issues, successful case studies from countries with low youth unemployment are discussed and key components of their successful education and vocational training system highlighted. Finally, this article outlines recommendations along with specific implementation strategies to address the economic impact of unemployment and underemployment with an emphasis on youth.

Current Employment Problems in South Africa

Hitting an all-time high of 56.4% in the second quarter of 2019, South Africa, considered an upper middle-income country, has the highest youth (ages 15–24 years) unemployment rate in the world ("Youth Unemployment Rate," 2019). Youth are the most vulnerable subgroup within the South African labor market, accounting for more than 60% of the total number of the unemployed. What makes the situation even worse is that there also has been a decline in the labor force participation rate (the sum of all employed or actively seeking employment divided by the total working-age population as opposed to the unemployment rate, which counts only individuals who are seeking employment), according to the *Quarterly Labour Force Survey* released in 2019 (Department of Statistics South Africa, 2019). As the South Africa National Treasury (2019)

summarized in a recent economic policy document, the nation's current economic trajectory is unsustainable: economic growth has stagnated, unemployment is rising, and inequality remains high. With young workers inherently the future of the country's workforce, the percentage of youth unemployment, increasing from 51.1% at the beginning of 2018 to the highest ever in mid-2019, signals a bleak outlook. Concurrent with this high youth unemployment, employers are having a difficult time finding workers with the appropriate knowledge and skills. Dr. Christie Viljoen, an economist at PwC in South Africa, recently stated that the number one reason for the stagnant economy in South Africa was "the lack of skilled workers" (2019).

Reddy and colleagues (2018) conducted an analysis of various factors, such as employment pressure, priority/strategic demand, vacancy pressure, and wage pressure, that resulted in a list of occupations in high demand (OIHD) for the country. In the resulting report, OIHD are defined as occupations that show relatively strong employment growth or are experiencing shortages in the labor market. The report identified the most in-demand occupations as managers, engineers, and technicians, followed by some blue-collar jobs requiring intermediate levels of skills, such as carpentry, plumbing and pipe fitting, welding, and sheet metal work. The OIHD report makes it clear that South Africa's labor market has a demand for intermediate-level to high-level skilled workers, people who hold a college diploma or at least technical qualifications after high school.

The trend of increasing need for workers with higher education is also supported by other research. The recent report *Getting Skills Right* by the Organisation for Economic Co-operation and Development (OECD) (2017) argues that South Africa has significant imbalances, with an oversupply of low-skilled workers (surplus of manual and physical skills) and an undersupply of highly skilled (shortage of cognitive skills) workers. The *Quarterly Labour Force Survey* (Department of Statistics South Africa, 2019) also reported that more than half of the unemployed population in the country had less than a high school education

level and that this percentage was growing. The conclusion is clear: there is a mismatch between the current skill level of the South African workforce and the current needs of business and industry.

Even though there is an urgent demand for highly skilled workers in the labor market, more than half of the youth in South Africa are still unemployed because they do not meet the skill and/or educational standards of employers. The report, *Higher Education and Skills in South Africa 2017* (Maluleke, 2019), stated that only 33.8% of youth ages 18 to 24 were attending educational institutions; 22.2% were attending school while 11.6% were attending post-school (education and training that occurs after the end of grade 9) educational institutions. Because more than 80% of youth are lacking formal education after grade 9, they have low competency in general, thus are unprepared for the needs of the labor market.

In addition to the lack of education in general, another issue that leads to the skills gap is the poor alignment of the educational curriculum to the needs of the labor market. More than 30% of South African employees are working in a field unrelated to that in which they had studied (OECD, 2017). The major cause of this mismatch is a result of the lack of connection between the content of classes and industry practice, making it difficult for vocational students to apply their theoretical knowledge in practice.

From the previous analysis it is clear that the main issues currently facing the South African employment market are the rising number of unemployed youth, the widespread lack of appropriately knowledgeable and skilled workers, a high demand for labor in only certain positions (many of which require advanced skill levels), and the mispairing between school teaching and the needs of the labor market. Within this framework, the focus of this article going forward addresses how to prepare the unemployed youth population to match the existing needs in the current labor market, thus creating a sustainable economic growth. For a broader understanding of the education issues facing South Africa, see the article by Dao in this volume.

Current Vocational Education System in South Africa

The public Technical and Vocational Education and Training (TVET) colleges in South Africa provide education for learners who complete at least school grade 9. There were 50 public TVET colleges with 252 campuses in 2017. The full-time equivalent programs in TVET include two certificates. The National Certificate (Vocational) (NC[V]), with four levels in total, is an alternative vocational learning path for grades 9 to 12. Report 191 National Education programs, also known as National Accredited Technical Diploma (NATED) certificates, have six levels (N1–N6), focusing on engineering fields and business. Of the approximately 314,000 TVET students, 58% are studying in Report 191 programs, with the remaining 42% seeking NC(V) certificates.

The TVET colleges emerged from the former technical colleges in 2001. The change was made because the technical colleges were identified as “not effective,” “too small,” and “output quality poor” by the National Development Plan (National Planning Commission, 2012) as well as having weak

financial management, teacher ineffectiveness, poor administration and governance, inadequate infrastructure, poor labor market outcomes, and inadequate responsiveness to needs of students (Akoojee, 2012). The Department of Higher Education and Training created the new TVET institutions to make a difference. Despite these restructuring and funding enhancements, the sector still has not demonstrated much improvement in terms of quality, outcomes, program relevance, and governance and administration (Akoojee, 2010). The primary reason for this failure is that the main goals of TVET colleges, as set by the Department of Higher Education and Training, are focused on increasing student numbers and on expansion; thus, quality is not being addressed as a priority—the institutions simply do not have enough time and money to deal with governance, curriculum, teaching/learning deficits, and resourcing.

South Africa has the advantage of having a National Qualifications Framework (NQF) to make the TVET system more transparent. This framework is used to standardize, classify, register, and publicize the national qualifications, including both learning goals

Table 1
South Africa National Qualifications

Type of Institution	Schooling Completed	National Certificate Level	National Accredited Technical Diploma (NATED) Level	National Qualifications Framework (NQF) Level
Secondary	Grade 9	NC(V) 1		1
	Grade 10	NC(V) 2	N1	2
	Grade 11	NC(V) 3	N2	3
	Grade 12	NC(V) 4	N3	4
Technical colleges	18 months		N4–N6	5
	3–5 years		Trade test	6
University	Year 1	Higher certificate	N4–N6	5
	Year 2	Diploma	Diploma	6
	Year 3	Degree		7
	+1 Year	Honors		8
	+3–5 Years	Master’s		9
	+1–2 Years	Ph.D.		10

Source: Adapted by Maluleke (2019) from the South African Qualifications Authority.

and outcomes, which contain 10 levels in total. The NQF includes three qualification sub-frameworks: 1) the NC(V), 2) the Report 191 NATED certificates, and 3) occupational qualifications and part-qualifications. Table 1 presents the major relationships between the NC(V), NATED, and NQF systems (Maluleke, 2019, p. 13).

As discussed previously, the most in-demand skill levels are above NQF 4, equivalent to N4–N6. However, in 2017 there was a greater than 15% decrease in enrollment from level N4 to level N5 for both female and male students. At the same time, more female students enrolled in N4–N6 programs, whereas a higher proportion of male students enrolled in N1–N3 and non-national certificate programs (Maluleke, 2019). This overall drop, along with a lack of male students at N4–N6 levels, partly explained the deficit of high-skilled workers. In addition, the completion rates for both Report 191 NATED and NC(V) certificates were also very low, at around 60% and 40%, respectively (Qonde, 2019). According to *Getting Skills Right* (2017), TVET colleges currently offer limited support for students with academic difficulties, and this reflects insufficient incentives within colleges to encourage completion. In addition, the coexistence of both NC(V) and NATED routes itself has caused confusion with their overlap. Such complex history and fragmentation of competing qualifications have rendered the whole vocational sector unclear and, therefore, unpopular to both employers and prospective students (OECD, 2017).

In addition to a curriculum that is not aligned with industry needs and a high lack of interest from students to attend TVET colleges, TVET education faces quality challenges. About a quarter of the lecturers in the TVET colleges currently lack teaching qualifications, and more than half have no industry experience. There are only a few occupational lecturers who have artisan qualifications (mostly in the electrical and automotive trades). Moreover, 40% of the teaching staff have short-term contracts, giving them little incentive to make longer-term investments in skills and qualifications (OECD, 2017). Another factor is that some lecturers who have no industry

background appear to create a feeling of inferiority, both about themselves and about what colleges are doing. Some lecturers with industry experience have reported frustration because they are obliged to teach a curriculum that lacks alignment with industry standards in order to help students pass their exams (van der Bijl & Taylor, 2016). Therefore, the inadequate engagement of the teachers in the TVET colleges has limited the quality of vocational education. However, if those lecturers who do possess industry experience are provided the opportunity to assist in the development of the curriculum, this gap can be closed, resulting in a better alignment of curriculum to industry standards (Razak et al., 2015).

To sum up, as a component of the education and training system designed for intermediate-level skills development, the conclusion here is that the TVET colleges should find approaches to achieve better labor market outcomes, attract more students after grade 9 to join in the system, improve teaching quality, and achieve a higher completion rate, especially at N4–N6 levels.

The Dual System Approach to Addressing the Education to Employment Link

There are a variety of recommendations that, if implemented, can help improve the overall quality of vocational training and mitigate the employment knowledge gap. One key recommendation is to ensure that all TVET education includes a mix of academic knowledge and skills-oriented learning that relates directly to the work area. TVET education can be reframed as education that offers more skills training than academic knowledge (Kusin, 2015). Such “dual system” training, a model combining 80% time spent on workplace learning, supervised by a trained artisan, with 20% traditional school-based courses, can lead to better labor market-oriented skills formation (Eichhorst et al., 2012). Dual systems normally last from 2 to 3.5 years, where the provision of knowledge and skills is closely linked to the acquisition of necessary job experience. The South Africa government should consider following the lead of successful dual system programs as a

solution to its vocational education issue.

One of the most successful examples of the implementation of a dual system is that of the German Vocational Education and Training (VET) program. Both the World Bank (Eichhorst et al., 2012) and the OECD (2017) acknowledge Germany's VET model as high performing, modern, and future-oriented; 51.5% of German upper secondary students enter VET programs as a route to employment (Renold et al., 2018). Germany's high-quality VET system not only helps minimize its youth unemployment, keeping the rate very low, even during recession years, but also supplies German companies with well-trained employees, helping create an industrial powerhouse with one of the most productive workforces. Germany's dual system ensures the matching of skills training and labor market needs; as such, it remains the core of the country's vocational education system.

The success of the dual system in Germany is based on three aspects: high level of standardization, labor market-driven curriculum, and integration of high school graduates. First, the system typically operates under strict regulations and legal standards. The Chambers of Industry and Commerce monitor training quality and conduct the midterm and final examinations as well as the craftsmen's examinations. They also set formal requirements for all companies providing firm-based VET to ensure that an apprenticeship has a pedagogical purpose that is different from normal coursework. In addition, the Chambers make sure that vocational training is occupation-led instead of company-based, and all certificates are standardized across all industries throughout the country. Such high levels of standardization enable VET certificates to be transferred across companies, thus serving as keys to access jobs in the occupational labor market (Eichhorst et al., 2012).

Second, the dual system is based on co-determination between employers' associations and trade unions with regard to regulation, curriculum design, certification, and funding. Employers and unions have the right to draft proposals for occupational training programs and negotiate provisions governing

apprenticeships through collective agreements to ensure that their interests, which are the same as those of the broader labor market, are taken into account (Wieland, 2015). With more than 60% of the graduates employed by their training companies, the dual system functions as the main pathway for youth labor market entry in Germany (Solga et al., 2014), evidence that companies prefer to train their own labor supply through the program. According to the Federal Institute for Vocational Education and Training (2018), at the end of 2017, 427,227 companies participated in the apprenticeship system—19.8% of all companies in Germany. With all the workplace-led and skills-oriented training, the dual system is very reactive to the labor market and ensures a smooth school-to-work transition.

Third, the dual system functions as the major nonacademic route for high school graduates by giving them formal access to the labor market as skilled workers, craftsmen, or clerks, thereby helping to limit the number of unskilled employees to a consistently low proportion within the labor market. In addition, because dual apprenticeships exist in nearly all branches of the German economy, this model plays a significant role in initial training for those graduates transitioning into vocational-oriented occupations.

The dual system is popular not only in Germany but also in Austria, Switzerland, and Denmark. Although there are some minor differences between the countries' dual systems, the major characteristics are identical: the apprenticeship contract with the training firm, having both firm-based training and school-based components, the system's governance by both government and the social partners (employer associations and unions), and standardized training through vocational training acts and training ordinances (Solga et al., 2014). In recent years, additional countries in Europe, such as Spain, Greece, Portugal, Italy, Slovakia, and Latvia, have started adoption of the structures of the dual educational system. The model also has drawn interest in a number of Asian countries such as China and South Korea as well as in the African nation of Mali. Collectively, the success of a dual system approach in these varied countries

suggests that such a system can help address both youth unemployment and the lack of a skilled workforce in South Africa.

Adopting a Dual System in South Africa

With the challenges of a rising youth unemployment rate; a huge skilled worker deficit, especially for certain OIHD; and a lack of a corresponding education curriculum with qualified faculty oriented toward the youth population, South Africa should consider adopting a more functional vocational and employment educational model such as the dual system. This new approach should be based on the German and other successful models from around the world. Moreover, because reforming the vocational education system is a complex process, it is critical to ensure that the new model incorporate the industry skills component into the TVET colleges. The following set of recommendations and guidelines addresses the implementation of a comprehensive dual system of vocational education in South Africa.

The first step is to raise awareness of both South African government officials and industry leaders for the need to work together to address the issue of the unemployed youth generation through the implementation of a dual system of education and training. Existing projects, such as the VET partnership between Germany's Steinfurt-Warendorf District Craft Trades Association and Umfolozi College in South Africa, operating since 2015, have shown improved training and cooperation between training programs and the private sector in South Africa (Wieland, 2015). Another project, funded by the German Federal Ministry of Education and Research, called Trainme (iMOVE, 2018), which is aimed at developing the training of vocational schoolteachers in South Africa, also has shown some success. Those projects can serve as foundational examples and as a starting point to demonstrate the value of a dual system. However, awareness of the benefits of implementing a dual system at a national scale still requires effort. Further promoting a dual system through conferences and forums to discuss the possible transformation of the currently inefficient TVET colleges is needed.

Second, it is important to advocate the positive impact of implementing a dual system to both students and parents. The reformation of vocational education can be successful only if it is accepted by parents, students, and the broader society. Successful examples of adopting the dual system, such as the partnership of Schaeffler Romania and the German Kronstadt Vocational School, are the best cases to present to students. Kronstadt, opened in 2012, is the first vocational school in Romania to use the dual system, and the practical training takes place mainly within the automotive parts manufacturing company, Schaeffler Romania. Ivan and Albu (2014) conducted extensive interviews with both instructors and students of the program and concluded that the implementation of the dual system has room to improve but is "indeed an important step towards economic growth and social inclusion due to the multitude of benefits it brings in the society and in each individual's life" (p. 81). One interviewee stated that students are willing to work at Schaeffler because they are accustomed to the environment and workmates. In addition, the practical training has helped them form a strict schedule and learn the true meaning of real work. They have learned to adapt to work more easily and smoothly and have the skills required to do the job. Due to the success of the Kronstadt model, many other counties in Romania have begun to adopt the program.

Wieland (2015) pointed out that programs aimed at raising vocational training's acceptance within society can be successful when they are able to show results that justify confidence in the VET system. Thus, the experiences gained from the Schaeffler example provide useful publicity to raise awareness of the value of a dual system in South Africa and are powerful in helping to change the main prejudice, that vocational education is only for students who cannot get into universities. It, therefore, is critical that accurate data be maintained and that results are publicized for the general public to understand how the dual model works in increasing employment and quality of life.

Third, partnerships with companies require that the industry partners clearly

understand and see the value of this model to their bottom line. Currently, the apprenticeship programs in South Africa are all in the automobile industry. As an example, since 2017, Porsche has trained hundreds of young men and women as service mechatronics (positions that combine precision mechanical engineering, electronic control, and systems thinking in the design of products and manufacturing processes) through a project organized by a nonprofit organization, Don Bosco Mondo, together with its Don Bosco Salesian Institute Youth Projects in Cape Town and the Porsche importer in South Africa, LSM Distributors. This project efficiently unlocked career opportunities for young adults in the automobile field, the major developing industry in the country (Rauter, 2016). Global companies like Porsche will become the forerunners of the dual system in South Africa and enhance its social acceptance. The Porsche example demonstrates that a dual system of education and technical training with an apprenticeship has worked in South Africa and, therefore, would be increasingly beneficial for industries and young adults if adopted more broadly across other industries.

The fourth step is to expand from one industry to other select industries that envision potential for further growth but have been restrained by a lack of skilled workers. A useful strategy to begin this process is to identify businesses currently operating in South Africa from countries already implementing a dual system. The government can approach these companies to help implement the system with a variety of incentives, including tax reduction, the ability to partner with the Department of Higher Education and Training in the development of guidelines and policies for the implementation and management of the program, and security in the knowledge that they will have future access to a highly trained workforce. South African companies can learn from these early adopters how to design a training curriculum and increase their understanding of the economic benefits for themselves. Studies done in Switzerland following the implementation of the work-based education model have concluded that such training results in a net benefit to over

66% of companies in short term (Stumpf and Niebuhr, 2012). Over the long run, benefits are highly dependent on a specific company's training and the standardization that develops throughout an industry. With the results from the German companies in South Africa, it is possible to compile a labor market-driven curriculum that originates from actual market demand. This approach will encourage more businesses to contribute to vocational education if they see that they have ownership in the curriculum, resulting in a greater yield in employing highly skilled workers.

Lastly, reformation in education is always a complex undertaking, especially when it is in the vocational education arena, which combines both the formal education system and the labor market. One of the major advantages of a dual system is that it has high levels of standardization under strict regulations and legal standards. To ensure the quality of industry training of students, proper regulations should be set in South Africa. For example, the German Chambers of Industry and Commerce are in charge of the training quality in the industry and make sure that training in the firms is industry-focused as well as transferable to other companies. Similarly, in order for South Africa to take the best advantage of a new vocational education model, the education ministry (at both national and regional levels) and social partners (companies and unions) need to collaborate to design policy and procedures governing the model, with specific attention paid to topics such as curricular standards, certification requirements, financial support for student apprentices, and evaluation and assessment systems. It is recommended that at the national level this collaborative effort between TVET colleges, individual companies, and industry representatives be coordinated by the Department of Higher Education and Training.

Conclusion

In summary, given the severity of the youth unemployment problem and the lack of a trained workforce, especially for midlevel skilled positions, South Africa would benefit immensely by developing stronger vocational

education programming. Specifically, the Departments of Employment and Labour and of Higher Education and Training should work together to resolve the issues through raising the awareness of government officials, industry leaders, and educators of the need to implement a dual system of education and training. Advocating the positive impact of such a reformation to students, parents, and companies by starting publicity campaigns,

designing more training projects for teachers, and establishing proper regulations and legal standards will contribute directly not only to the issues of high levels of unemployment, especially among the youth of South Africa, and specific skills shortages in select areas but also to the enhancement of the economy more generally, a goal all South Africans will readily embrace with an eye toward helping to resolve longtime inequity issues.

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THE RACIAL UNDERPINNINGS OF HOUSING DISPARITIES IN SOUTH AFRICA

Kevelis Matthews-Alvarado



This article explores the unintentional harmful consequences of governmental policies meant to diminish racialized housing disparities. The need to better consider community-based solutions to address housing segregation and the entangled disparities is discussed. Empower Shack and Hustlenomics are posed as two successful and growing examples of positive systematic interventions.

Introduction

The May 2019 issue of *Time* featured articles on social inequalities in South Africa, with a cover story entitled, “What South Africa Can Teach Us as Worldwide Inequality Grows” (Baker, 2019). The international magazine cover was a jarring aerial photograph juxtaposing Johannesburg’s affluent suburb of Primrose with the crowded, under-resourced township of Makaanse, the two communities separated only by a highway. This image visually showcases extensive spatial inequalities within South Africa. The inequality currently ingrained in the system of spatial segregation was historically intentional. White South Africans own 72% of the land, while constituting less than a quarter of the population. Communities and cities are textured with visible forms of segregation and sharp disparities in structures and resources. When black South Africans come to cities, they are coming into spaces which “have been designed by, and primarily for, white people,

whose dominance in the social formation have been reflected in the colonial, segregation, and apartheid [times]” (Lemon, 1991, p. 1). Thus, the spatial landscape is the product of conflated layers of policies and practices throughout time.

The issue of housing in South Africa is complex and interconnected. Today, many of the housing inequalities predate but were exacerbated by apartheid. The legacy of segregation, racial inequality, and cycles of disadvantage remains pervasive, with implications across different spheres. Where one lives impacts employment, education, safety, health, access to resources/amenities, and overall quality of life. Thus, these racialized disparities within housing translate to all facets of life.

In this article, I focus on how the housing landscape and spatial dynamics were deliberately created, organized, and racialized. I explore the general history of housing segregation in South Africa and more

specifically the ways in which housing in the urban centers and surrounding areas of Cape Town and Johannesburg was organized. Furthermore, I analyze the consequences of policies meant to diminish housing disparities and investigate new approaches and solutions. Despite contemporary attempts to rectify injustices, some have failed and induced further harm, forcing the need to center a community-based approach when implementing new solutions that address housing segregation and interwoven disparities.

Historical Background

While apartheid legislation was notoriously racist, many regulations targeting nonwhite populations were implemented before the apartheid regime in 1948. Lemon (1991, p. 2) argues that racial segregation is built on systems and practices that stem from the settler-colonial period, begun when Europeans entered the Cape in 1652. Some forms of pass laws, which regulated movements of nonwhites, date back to the mid-1700s. Enslaved people in the Cape had to carry passes authorizing their travel between urban and rural spaces (Savage, 1986, p. 181). More specifically, the Glen Grey Act of 1894 solidified the legalization of residential segregation by establishing an individual land tenure and a Xhosa male labor tax, deterring native land ownership.

South African cities were designed as white hubs and for white use. Much of apartheid rested on the maintenance of this spatial separation, and, as Levenson (2014, p. 14) writes, “this meant the prevention of nonwhites from entering city centers by force if necessary and cloaking this in the rhetoric of legality.” In the 1920s to 1950s, black South Africans were largely prohibited from residing in city centers and instead settled on the outskirts of the cities. Regardless of the accelerated urban influx, little was done to accommodate the growing urban black population. Instead, the government enacted significant exclusionary policies as a response, including the Native (Urban Areas) Act of 1923, the Native Urban Areas Consolidation Act of 1945, and the Native Laws Amendment Act of 1952 (Lemon, 1991, p. 4). The Native (Urban Areas) Act of 1923 segregated urban residential

spaces and instituted “influx controls” against black migration into cities. This forced black people coming to cities to find work in only two weeks, later reduced to three days in 1945. If proof of work could not be provided, they would be forced to leave, pushing them to reside on city peripheries. The Native Laws Amendment Act of 1952 was an amendment of the earlier 1945 act and forced all black people over the age of 16 to carry passes and prohibited black people from staying in urban areas for longer than 72 hours (Lemon, 1991, p. 5). These areas acts established the principles of segregation legislation, further strengthening the exclusionary system and exacerbating disparities. Many early policies of segregation only applied to and specifically targeted black South Africans (Christopher, 1992, p. 573), but historically, both black and colored South Africans have been impacted by segregation. Ultimately, the history of racialized urban development deeply informs the way housing disparities currently are conceived.

By the time apartheid was instituted, there already had been a strong base of a racialized social order upon which the Afrikaner National Party was built. The reorganization of urban areas that occurred during the beginning of apartheid was achieved in tandem with the classification of all persons into racial categories. Racial zoning required different groups to live in specific designated areas (Christopher, 1992, p. 571). The passing of the Group Areas Acts of 1950 and 1966 had more expansive impacts on racial segregation than previous legislation, structuring “distinct apartheid cities” on the remnants of the “segregation cities which preceded them” (Lemon, 1991, p. 8). By 1989, more than 1300 group areas had been established (p. 11). The ultimate goal was to create exclusive racialized space for separate groups, while maintaining a white-ruled social order. Racial zoning and the creation of group areas through residential segregation were manifestations of this. Unfortunately, such disparities have not dissipated much since apartheid ended in 1994.

Cape Town is the oldest urban area in South Africa, and by 1935, Langa and Ndabeni townships became the only places allowable for black African or colored residential housing.

As a result of the Group Areas Act, by 1961, most areas in Cape Town were racially zoned, and black South Africans faced deliberate exclusion from much of the locale (Cook, 1991, pp. 29–32). A massive reorganization of the city in the 1950s left colored people (who made up 54% of the population) with only 27% of land allocations. These long-standing disparities helped frame the current ways in which housing segregation is manifested in Cape Town.

The organization of urban areas is entangled with a violent history of eviction and spatial displacement. One of the most salient examples within the context of Cape Town was District Six, a diverse, bustling neighborhood. In 1966, the neighborhood was declared a white zone and renamed Zonnebloem. The colored people of this neighborhood were scattered, displaced, and forced further toward the outskirts of the city on underdeveloped land. Due to the loss of their homes, many became dependent on local housing authorities for accommodations (Cook, 1991, pp. 32–33). It is estimated that more than 60,000 people were forcibly evicted from District Six by 1981 and moved to an area over 20 kilometers away, known as the Cape Flats. Their homes were bulldozed to make room for new, exclusively white, housing developments (District Six Museum).

Although Cape Town and Johannesburg bear some similarities in the adopted policies and practices of segregation, some elements distinguish the two metropolitan regions. For example, the land on which Johannesburg lies is rich in gold and other minerals, the mining of which contributed to the structure of the city and surrounding townships (Parnell & Crankshaw, 2013, p. 129). But similar to Cape Town, racial segregation in Johannesburg is profoundly ingrained in its residential landscape. Dating back to the earliest land allocations, provisions were in place for exclusively separate locations for black Africans. The Gold Law of 1885 excluded black people from owning and residing on land allocated for mining. Additionally, since the 1960s, housing developments, both public and private, ensured the entrenchment of racial residential segregation in Johannesburg

(Parnell & Crankshaw, 2013, p. 137).

Toward the end of apartheid, barriers into cities, such as pass laws that forced nonwhites to obtain legal permission before entering white areas, began to dissolve (Levenson, 2014, p. 14). Black South Africans were finally permitted to move freely as racialized urban influx control mechanisms diminished (Moolla et al., 2011, p. 318). This relaxation, coupled with the lack of development and industrialization of rural regions, consequently resulted in rapid nonwhite movement into cities (Huchzermeyer, 2001, p. 580). Additionally, the state practice of mass eviction had ceased by the 1980s, which allowed black residents with no other affordable housing option the ability to establish informal settlements on the peripheries of cities (Levenson, 2014, p. 15). Unfortunately, in 1994, there was only one house available for every 43 black citizens, a huge gap compared to one house for every 3.5 white individuals (Ile & Maklva, 2013, p. 111). During the 1980s, the creation of informal settlements and worsening housing backlogs had aggravated the residential problem, such that by the end of apartheid, this was so entangled a crisis that the African National Congress (ANC) had to address it directly (Moolla et al., 2011, p. 319). As a first step under President Nelson Mandela, the ANC established a protective and expansive Bill of Rights in the new Constitution, which includes the right to housing and the right to due process with regard to court-ordered eviction.

Government Intervention and Policy after Apartheid

In 1994, the new ANC government inherited the complex issue of housing and its entanglement with systematic racial discrimination, which deeply impacted not only spatial separation of groups of people but also access to infrastructure and resources. In an effort to improve the long-standing racial inequities, including housing, the ANC government enacted the Reconstruction and Development Programme (RDP), described as “seek[ing] to mobilize all our people and our country’s resources toward the final eradication of the results of apartheid and the building of a democratic, non-racial and non-

sexist future. It represents a vision for the fundamental transformation of South Africa” (Ministry, 1994).

Under this program, the government pledged to build 1 million houses in 5 years, attempting to make cities “more compact and more integrated” (Newton & Schuermans, 2013, p. 580). The ANC also pledged to raise funding for housing from less than 2% to 5% of government expenditure in order to achieve the construction goal (Moolla et al., 2011, p. 139). Colloquially, RDP houses are understood to be government-distributed, formal housing units, which speaks to the expansiveness of the program. In 1997, the Department of Housing released an Urban Development Framework meant to inform the project. These new urban settlements were intended to be spatially and socioeconomically integrated, without discrimination and segregation, to enable people to make ideal residential and employment choices (Newton & Schuermans, 2013, p. 580). This, unfortunately, was not the reality of RDP. The units built during this time were small (average area of 36 m²), composed of an open plan bedroom, living room, and kitchen and separate lavatory. Many of those houses constructed between 1994 and 1999 did not meet standard regulations. Moolla and colleagues (2011, p. 140) note that local municipalities and provincial governments all have different specifications for RDP housing units, which contributed to these discrepancies. Despite this governmental attempt to rectify and improve housing issues within the country, a number of complications surrounding the program subsequently arose.

The ANC had ambitious goals for addressing housing disparities within South Africa; however, in spite of the aims, RDP was unsuccessful in multiple regards. RDP implementation left out a lot of people who should have benefited from this program. Many problems existed within the distribution of RDP houses and were exacerbated by this formal housing policy. Since 1994, approximately 3 million units have been delivered; however, of the homes built, around 610,000 reportedly need to be demolished and rebuilt, according to the National Home Builder Registration Council. This underscores the subpar quality

of the units. The combined costs to fix these structural errors and other minor defects, as well as noncompliant construction, are estimated to be around R5.5B (\$371M) (Levenson, 2014, pp. 14–16). RDP sought to supply as many subsidized houses as quickly as possible, which resulted in compromised quality (Newton & Schuermans, 2013, p. 580).

There has been deep criticism regarding building standards, quality of the units, and lack of services within the housing developments (Moolla et al., 2011, p. 138). Many RDP properties are defined by poor infrastructure and lack of services. Due to design issues with the units themselves and the complications of relocation, many potential residents often opt to sell or rent their unit and remain in informal housing (Goebel, 2007, p. 292). Sometimes this dissatisfaction and frustration can be seen through a rise in protests among unsatisfied RDP residents (Levenson, 2014, p. 19). This was the case in Cape Town’s Cape Flats, where many District Six residents were placed. Moreover, the case of Cape Flats is a display of the cyclical nature of marginalization and RDP’s failure to break that cycle of disadvantage.

With respect to Cape Flats, but more generally as well, RDP housing has unintentionally reasserted issues within the landscape of housing by re-displacing already historically marginalized populations, thereby further enhancing already intense residential segregation. For many black and colored South Africans, land has ancestral roots and connections, which might make leaving particular spaces challenging. Many people who have adapted and built neighborhoods in the places to which they were previously relegated through segregation might not want to be forced yet again to uproot and leave their communities. Moreover, sometimes accepting RDP housing forces families to relocate and increases the cost of travel to employment, which already is a large barrier for low-income South Africans (Levenson, 2014, p. 16). Low-income black and colored South Africans who accept RDP units are placed in sectioned ghettos on the outside of cities, re-inscribing racial segregation in an unforeseen but harmful way. This further displacement may have other financial barriers that come

with the receiving of a government-subsidized unit. Moreover, Levenson (2014, p. 20) says “RDP delivery has reinforced the apartheid era geography of relegation by formalizing peripherally located shack settlements, rendering their far-flung locations permanent.” Essentially, this separation reconstructs and maintains the racialized segregation upon which South African cities were founded. Although unintentional, the result of RDP housing distribution serves to perpetuate the cycles of poverty that it was intended to disrupt. Overall, RDP housing largely focused on home ownership without recognizing the interconnected nature of housing disparities and how they are tied to systematic racism.

Some argue that the rise in informal housing and RDP implementation complemented each other. Despite the delivery of three million units, within the past two decades, “the number of informal settlements has increased more than nine-fold” (Levenson, 2014, p. 15). In fact, the number of informal settlements has skyrocketed from about 300 in 1994 to around 2700 today (Levy, 2019). Thus, even as many RDP units were built, the country saw an exponential increase in the number of people living in backyard dwellings or shacks. Levenson (2014, p. 15) argues that a quarter of urban South African populations live in informal housing and, given the reality of racialized systems of power and oppression, nonwhite populations are adversely housed in under-resourced communities and settlements.

Informal housing can take different forms, such as the occupation of abandoned buildings or shack-like structures. These structures often are erected in the backyard of a property for a relatively low rental price. Most of the land these structures occupy is rented, but that is not always the case. Lemanski (2009, p. 472) cites the growth in these backyard dwellings as an unintentional outcome of the country’s formal housing policies. Arguably, “the government’s housing policy of homeownership only works because backyard dwellings provide sufficient income for poor homeowners to cope with the demands of formal living” (p. 482). RDP housing delivery has unintentionally allowed urban housing informality to grow and thrive as opposed to serving as a remedy.

The living conditions in these backyard dwellings are rife with many issues like lack of access to sanitation. In one case study, Lemanski (2009, p. 477) shows that most landlords lock their toilet at night, and nearly 12% do not give residents access to their bathroom at all, forcing them to go outside. In 2009, approximately 75,400 households lived in backyard dwellings in Cape Town, and they were almost entirely black or colored (p. 473). Again, this showcases the extreme racialized disparities in housing location and living conditions that are observed in postapartheid South Africa today.

In another effort to address the housing plight, the People’s Housing Process (PHP) was a program established by the Minister of Housing in 1998 that sought to minimize disparities in housing by increasing community participation in the housing delivery process. This program aimed to collaborate with nongovernmental agencies in the housing sector to help communities plan and execute the construction of housing units in settlements. Despite good intentions, the idea of community participation was not explicitly defined; consequently, stakeholders lacked proper support and assistance. Some have criticized that PHP shifted the cost and burden of housing delivery onto the poor, who are impacted most directly, under the guise of a “community-based” solution. Other critics have mentioned that PHP participation was limited to the construction of housing, making it a solution that was divorced from other key elements entangled in the historical context of marginalization (Tissington, 2011, pp. 62–63).

In 2008, the Department of Human Settlements passed the Enhanced PHP (ePHP) as a replacement to the PHP program. This new program resulted from many of the issues and limitations with the previous PHP. Arguably, ePHP holds a wider definition of “community participation,” allowing for more choice under the idea of “people centered development” (Tissington, 2011, p. 82). This program seeks to center beneficiaries, including individuals and communities. Widening this scope within housing shifts the focus of the outcome as opposed to isolating the process from the context, as previously described. ePHP seems

to serve as a useful tool for informing and structuring ethical collaborations within the housing sphere.

Moving Forward: New Strategies and Opportunities

“The rich command space; the poor are trapped by it” (Harvey, 2009, p. 173). This quotation encapsulates the historic and contemporary housing terrain, especially the open market. Within the private market, data illustrate that to afford a house (on the cheaper end of the spectrum), a household would need a monthly income over R11,000 (\$747). As of 2010, only 19% of households earned more than R8000 (\$544). This leaves 81% of South Africans out of the formal market, creating a significant gap for households that earn between R3500 (\$238) and R8000 (\$544) (Landman & Napier, 2010, p. 301). This bracket does not qualify for subsidized RDP houses and earns far too little to participate in the formal market. Scholars often refer to this need in terms of “gap housing” (p. 302). It is evident that the government alone cannot properly and fully address the gap within low-income housing options. Ultimately, rectifying housing disparities and disrupting interwoven systematic implications will take the commitment, collaboration, and efforts of many players.

City Densification and Expansion of Rental Opportunities

Densification can establish a framework that centers historically marginalized populations and some issues they face (Turok, 2011, pp. 470–474). Population density can be understood as the number of residents divided by the housing supply. Generally, densification is a complicated and ambiguous process, requiring a balance of competing and contradictory methods to accomplish. South African cities and their density patterns are shaped by racist zoning policies. Thus, density trends in South Africa are inverted, meaning they rise with distance from the center of the city, with the result that the average urban density is comparatively lower in other countries of the same income bracket. Some

argue that denser urban spaces can support more productive and sustainable economies and environments. Other rationales for densification include social inclusion, through increasing access to employment opportunities within a closer proximity. This could possibly bypass some of the burden and cost of public transportation for people moving in from the periphery of the city.

Densification requires changes in both the supply and demand of housing. Turok (2011) argues that the assumption often held by planners with regard to densification is that all barriers to housing are connected to a lack of supply. The easy solution to this is to build more housing to accommodate a higher density. He writes, “the approach appears to be ‘if houses are built, people will come,’ without questioning which people will come and in what number” (p. 475). Failure to consider interconnected social issues, like household income, may cloud perceptions of demand. Turok provides a comprehensive list of considerations and implications for plans to help densify South African cities: 1) better comprehension of tensions between the central objectives of densification is necessary; 2) more nuance within density targets is vital; 3) additional knowledge about existing housing dynamics and how they may perpetuate harm is needed; 4) household attitudes and preferences are poorly understood (access to jobs and amenities, housing costs/parameters of affordability, relationship to land, etc.); and 5) much uncertainty surrounds the condition of vacant and under-used land, its ownership, and the infrastructure/developmental capacity (p. 476). As stated, there are many under-considered factors surrounding the main dialogue of densification. City densification must be considered within a framework of social inclusion in order to reduce, as opposed to induce, further marginalization.

Expanding rental housing options is a strategy that is gaining traction across South Africa. Buildings architecturally designed to house larger numbers of residents, in conjunction with state-subsidized rent, could be a strategy for city densification. Rental complexes can be designed with multiple floors and comfortably accommodate more people

for any given building's footprint. Proponents of this rental model argue that properly run properties would be more sustainable than RDP houses, especially if they were privately administered. Steen Villa in Cape Town is a good example of a state-subsidized rental complex managed and run by a nonprofit organization with high rent collection rates and large community satisfaction. However, most people residing in Steen Villa would not be able to afford the rent without subsidy. This is why some suggest moving government funding from RDP projects into state-subsidized renting options. Projects like Steen Villa could be readily implemented in cities across the country (GroundUp, 2018).

Despite the positives, this rental model still has weaknesses. What happens when people cannot meet rent due to unforeseen financial hardships? The simple answer is eviction, but that is intimately tied to structural inequalities that access to urban housing should be addressing. Routine eviction practices adversely affect already historically underprivileged populations. Often, subjugated populations do not have the privilege of economic security and forcing people onto the streets for failure to meet rent only replicates cycles of disadvantage, instead of disrupting them. The real potential for such financial hardships within the housing context reveals a further need to implement rent payment security strategies in conjunction with housing projects like Steen Villa.

Community-based Upgrades: Empower Shack and Hustlenomics

Community-based solutions generally are the most appropriate approach for the local context in which they are created, for, when it comes to interrupting systems of inequality, there is no one size fits all. Due to the prevalence of self-constructed housing settlements like the backyard dwellings, another promising approach is the renovation or improvement of these informal structures and surrounding amenities. The improvement and formalization of such housing are a community-based approach, easily adapted to accommodate various needs in different

communities, and resources can be distributed efficiently through centering community involvement.

Empower Shack

Empower Shack is one such project that seeks to renovate settlements, increase access to basic services, and center the communities in the process of distributing public space. This was a project created through Urban–Think Tank (UTT), the interdisciplinary, research-based, design practice founded by Alfredo Brillembourg and Hubert Klumpner. Empower Shack seeks to create more dense structures, providing an opportunity and framework to move from one-story to two-story units (UTT, 2019). This technique serves as a more efficient use of land by accommodating more people on the same building footprint. Empower Shack also works with informal settlements to connect their construction with renewable energy, sustainable resources, and community skills training. Experts erect and build the framework with affordable and durable materials while providing community workshops that allow community members to complete the inside of the units.

Additionally, Empower Shack allows residents to be woven into the digitalized planning process for new developments. Residents are able to modify the position of their house with an interactive map, automatically reconfiguring the adjacent homes to fit the new pattern. These structures are funded through a microfinance scheme, where individuals put up 10% to 25% of the construction costs and microfinance providers cover the rest of the cost through microloans of 36 months (UTT, 2019). Overall, Empower Shack seems to be a sustainable scheme that could work on a national scale with the proper support.

Hustlenomics

Hustlenomics is a project started by a local entrepreneur from Soweto named Nhlanhla Ndlovu and follows the same framework of renovating informal housing, giving community members levels of choice and resources to improve living conditions (SAB

Foundation, 2018). Remarkably, Hustlenomics creates pivotal opportunities for women and youth in the community by teaching them to make durable, recycled, and inexpensive bricks. This alternative costs less than traditional bricks and can be manufactured in a third of the time. These community members then learn how to create sustainable homes using those materials. This project is financed within a shared-home model: Hustlenomics as an organization splits the rental income with the household until the costs for building the home are recovered; then, full ownership is passed to the household. This model offers a sustainable rental to ownership path for low-income households.

Hustlenomics has won various awards, including the SAB Foundation Social Innovation and Disability Empowerment Award (2018) and the SAB Foundation Social Innovation Award (2019). Ndlovu has mentioned that he plans on using these award earnings to invest in a brick machine that would expand capacity of Hustlenomics and speed up production time. Hustlenomics is a radically promising model that centers local communities while also prioritizing the most vulnerable or marginalized within the community (SAB Foundation, 2018). These innovative grassroots efforts are empowering and promising. Ultimately, with the proper social, political, and economic support, such home-grown solutions can profoundly begin to disrupt many of the entangled issues surrounding housing inequality and its implications.

Conclusion

The perpetuation of housing disparities is inextricably linked to the system of racism interlaced within the history of South Africa. The nation's contemporary racial landscape is indicative of continued white imperialism and exploitation, leading to particular experiences of marginalization attached to black identity (Christopher, 1992, p. 573). The ANC government has tried to remedy disparities within housing by passing policies like RDP, PHP, and ePHP, all of which largely failed for a number of reasons, including unfavorable floor plans and infrastructure, flaws in distribution strategies, focus on home ownership, and failure to account for interconnected issues impacting ownership. Consequently, backyard dwellings skyrocketed after the release of RDP. Thus, the ideology of community-based solutions serves as an appropriate framework to develop interventions. Empower Shack and Hustlenomics are two examples of community-based solutions that function successfully and create positive change in their respective neighborhoods. Both projects center community involvement in renovating informal housing. Ultimately, resolving these flawed housing systems and reducing the built-in oppression will take a multilayered approach. The movement for liberation more generally, and fair housing more specifically, must be led by those on the margins. The affected communities must be prioritized and centered to produce and execute ideas and solutions that are the most impactful and approach justice for those communities.

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COMBATING CORRUPTION IN THE SOUTH AFRICAN PUBLIC HEALTH SECTOR

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Corruption in the public health sector threatens the health and well-being of South Africans, and inadequate accountability and enforcement by the government allow for injustices to prevail. This article discusses how the vulnerabilities of the South African public health system allow corruption to persist, evaluating current efforts to mitigate corruption and offering recommendations to improve tactics in the fight against it.

Introduction

Corruption plagues South African governance and politics, and, despite the country's robust set of laws and policies to mitigate it, the lack of transparency, accountability, and law enforcement further exacerbates the issue. Corruption, specifically in the public health system, threatens South African society because it undermines the government's ability to uphold the Constitution, which states that access to health care is a basic human right. Fortunately, the extent of corruption has become more apparent to South Africans. In October 2019, President Cyril Ramaphosa launched the Health Sector Anti-Corruption Forum, aimed at harmonizing anticorruption efforts across government and civil society organizations and facilitating collaboration and information to prevent, detect, and prosecute corruption in the health sector. At the forum, advocate Andy Nthibi, head of the Special Investigating Unit,

reported that fraud, waste, and abuse in health care expenditure amounted to about R39B (\$2.2B) per year, money that otherwise could have been used to treat patients and support health in South Africa (The Presidency, 2019). Additionally, of the top 10 contributors that were responsible for 53% of irregular expenditure, four of them were departments of health (Auditor-General of South Africa [AGSA], 2017).¹

Ranking 176th in the world in terms of health care outcomes versus per capita spending (de Beer, 2018), the South African health care system proves inefficient in government health spending, and corruption only contributes to the issue. With just 50% of government total health expenditure supporting the 84% of South

¹According to AGSA, irregular expenditure is expenditure that was not incurred or did not comply with legislation. While further investigations are needed to be performed to determine whether the root cause of the expenditure was due to corruption, it is correlated to corruption.

African population who rely on it (Department of Health, 2003), the public health sector already suffers from government negligence and insufficient provision. As an illustration of the magnitude of the problem, the South African Institute of Race Relations gathered more than 100 media reports about incidents of negligence, corruption, and mismanagement in the public health sector, with extreme cases leading to death and disability (Roodt & Fleming, 2018). Failing to address corruption and hold offenders accountable risks the South African public health system collapsing. To mitigate these threats, the South African government must promote transparency, accountability, and good governance, which will enable health departments and providers to be efficient in allocating their resources to improve access, quality, and financial protection in the public health sector.

Why Is Corruption a Significant Issue in the Health Sector?

Corruption, defined by Transparency International (2019) as “the abuse of entrusted power for private gain,” manifests itself at various levels in society in many different forms, including but not limited to fraud, theft, bribery, cronyism, nepotism, and embezzlement. It corrodes the social, political, and economic fabrics of a society and undermines the people’s trust in the government, in other institutions, and in each other. Health care systems, because of the substantial amounts of public money involved, are especially vulnerable, and, without procedures ensuring transparency and accountability, such systems may well deteriorate and inflict detrimental effects on the health and well-being of the people they aim to serve. For example, corruption leading to an increase in the prices of medical supplies, life-saving drugs, and equipment makes health care unnecessarily expensive, if not unobtainable, for those in need. With uncertainty in the face of information asymmetry, that is, when patients have far less information than doctors about their clinical condition and needs, and when numerous parties, starting with the government all the way down the supply chain to the patient, are involved, opportunities for corruption are rife (Hussmann et al., 2006, pp. 3–13).

The South African public health sector is not immune to the pandemic of corruption. Within the past decade, South Africa underwent a crisis called state capture under the infamous Jacob Zuma administration. State capture is a type of political corruption where “powerful individuals, institutions, companies, or groups within or outside a country use corruption to influence a nation’s policies, legal environment, and the economy to benefit their own private interests” (Transparency International, 2019). In South Africa, when state capture is discussed, the attention has been focused mostly on institutions such as the South African Revenue Service, South African Airways, and Eskom, South Africa’s public electricity utility,² due to the large sums of money being directed to these entities. However, the national and provincial health departments have a combined budget amounting to around R190B (approximately \$10.5B) per year (Heywood, 2017). As discussed in the Health Sector Anti-Corruption Forum of 2019, R39B (\$2.2B), or a staggering 20% of the government’s budget, is subject to corruption. Therefore, the South African health care system warrants serious attention as it, too, demonstrates vulnerability to corruption and theft.

Historical Context

The current health care system reflects South Africa’s political administration and economic capabilities as well as the nation’s health status; however, inequities between the private and the public health sectors and weaknesses in governance that create an environment conducive to corruption can be attributed to the legacy of apartheid. Under apartheid, the South African government forcibly separated the population based on race and designated black South Africans to live in Bantustans, also known as the homelands. Each Bantustan managed its own health department separately but overall was controlled by the national government in Pretoria (Coovadia et al., 2009). The apartheid system institutionalized disparities within the health care system because of the government’s

²For an analysis of Eskom, see Petros’ article in this volume.

lack of prioritization to support the public health care that largely supported nonwhites. This resulted in substandard medical care for those relying on an underfunded and under-resourced system. Hospitals designated for black, mixed race, and Indian citizens often were overcrowded, poorly equipped, and understaffed compared to hospitals reserved for whites. For example, in 1981, there was 1 physician for every 330 white South Africans, whereas in contrast, there was only 1 physician for every 91,000 black South Africans (Kon & Lackan, 2008). The poorest quality of medical care was in the homelands, where black patients sometimes were assigned to white army conscripts learning to be hospital corpsmen. Instances of sick or injured people being turned away by hospitals or refused transport in ambulances due to race also were prevalent (Wren, 1990).

In 1994, the new democratic government, spearheaded by the African National Congress, began to address the disempowerment, discrimination, and underdevelopment that weakened the health system. The new constitution established access to health care as an inalienable human right, guaranteed regardless of race and socioeconomic status. As apartheid was dismantled, the health system underwent major restructuring involving the desegregation and consolidation of health services: 14 health administrations merged into 1 national and 9 provincial health departments, which currently make up the South African health care system. The National Health Act of 2003 elaborates on this promise by providing a framework for the health system, accounting for the priorities of the South African constitution and laws on the national, provincial, and local health departments (Republic of South Africa, 2004). Currently, the National Department of Health (NDoH) coordinates health care delivery at all three levels. The national level focuses on policy, the provincial level on managing and allocating budget funds, and the local level on public health safety and primary care. All levels share responsibility to create conditions for the general population to be as healthy as possible. Although the democratization of South Africa has decreased overall state

vulnerability to corruption by redistributing power from the elite few, the expansion of state services provides new opportunities for corruption and hampers the nation's progress toward overcoming the sheer disparities in the health care system.

While the South African Constitution states that access to health care services is a right for everyone, good governance, accountability, and transparency are necessary to safeguard universal health care for all. The current government claims to provide substantial investment in health care, yet corruption persists in South African governance and politics, resulting in mismanagement and inefficient use of resources. South Africa spends about 8% of its GDP on health care, almost twice the World Health Organization recommendation of 5%, yet the nation is ranked 176th in the world in terms of health care outcomes per capita spending (de Beer, 2018), with worse outcomes in the public compared to the private health sector. This only encapsulates how their funding may be misallocated or siphoned due to corruption.

Overview of Corruption

The characteristics that make the health care sector susceptible to corruption include the large amount of public money involved, the numerous actors and complexities between their interactions, and asymmetric information. These vulnerabilities, accompanied by lack of accountability and transparency, present themselves in the South African provincial health departments, the procurement process, and poor stewardship of health officials and workers managing the system.

Corruption in Provincial Health Departments

Just as Willie Sutton robbed banks because “that’s where the money is,” the same principle applies to the South African health sector. In an interview, a key public health expert claimed that because “provinces are the level where services are delivered and because of the requirement to manage large budgets and complex systems, there is a greater potential for fraud and corruption” (Rispel et

al., 2016). A report compiled by Corruption Watch, a nongovernmental organization (NGO) that seeks to combat corruption in South Africa, claims that of the reports they received dealing with corruption in the health sector, roughly 40% of those reports involved health departments, predominantly provincial government departments of health (Rauch & Johannes, 2015). A content media analysis conducted from 2009 to 2012 posits the same conclusion, with its results demonstrating that 45% of the reports dealing with corrupting activities occurred at the provincial level (Rispel et al., 2016).

The large budgets located in provincial health departments call for a greater need for the government to assume responsibility of ensuring financial accountability. A report consolidated by the auditor-general of South Africa from 2016 to 2017 found little improvement over four financial years in internal controls in national and provincial government departments (AGSA, 2017). Insufficient internal controls in provincial health departments may hinder financial oversight and facilitate unethical use of budgets.

Procurement Corruption

Medical procurement—the acquisition of products, pharmaceuticals, and equipment—is prone to corruption due to the complexities of delivering these materials from suppliers to patients. The NDoH manages the advertising, awarding, and monitoring of pharmaceutical tenders, and provinces request their needs to the NDoH, whereas contracted suppliers deliver directly to depots or health facilities (Magadzire et al., 2017). Since all levels of government, suppliers, and health facilities are involved in the procurement process, the health sector attracts the potential for corrupt activities to occur. In fact, the head of the Special Investigating Unit reported that the area with highest risk of corruption, fraud, and abuse is in supply chain processes (The Presidency, 2019).

A key weakness in the procurement system contributing to corruption is the absence of a strong monitoring and evaluation process as to where medicines are directed. To reform the health sector and enhance access and use

in both the public and private health sectors, South Africa adopted the National Drug Policy (NDP) in 1996. The World Health Organization suggests that for successful implementation of the NDP, the country must have a system for monitoring and evaluating its impact. However, no official comprehensive review of the South African NDP and its impact has been conducted since its adoption (Pharasi & Miot, 2013), resulting in the government's failure to enforce its own corruption prevention policies.

As a result of the of the deficient monitoring system, pharmaceutical stockouts, especially of antiretroviral treatments for tuberculosis and HIV, are common at primary health care facilities. Corruption, along with mismanagement, labor disputes, and limited oversight of pharmacists, contributes to drug shortages (Bateman, 2013). Stockouts affect one in every five health facilities in South Africa, and, with approximately 420,000 South Africans relying on antiretroviral medicine (Stop Stockouts, 2013), procurement corruption puts many at risk of developing and transmitting drug-resistant viruses, ultimately increasing the risk of illness and death. For instance, in May 2011, the Mthatha depot, located in the Eastern Cape province, was unable to deliver antiretroviral drugs to the 100,000 patients who depend on them for their treatment. A sting operation by the Hawks, South Africa's Directorate for Priority Crime Investigation, discovered that the depot was rife with corruption involving three of the depot's pharmacy assistants and a municipal official who were in a "theft-for-sale" scheme. Consequently, R220,000 (\$12,000) worth of medicines was stolen (Bateman, 2013). Fortunately, these health care workers were held accountable for their corrupt actions and were arrested, but, without transparency and enforcement of the law, like activities may endure under the radar, thereby affecting patients at the end of the supply chain.

Deficiencies in Leadership and Accountability

All public service departments are required to develop and implement fraud prevention systems. In a study conducted by the Public Service Commission (2007),

a sample drawn from both national and provincial departments ranging from health to education to housing to agriculture was analyzed for their implementation of fraud prevention plans. The report found that more than 39% of the departments had not yet reviewed their plans at all, and only 29% reviewed theirs annually. The report also suggested that management accountability and the implementation of these plans could be improved by delineating the roles for fraud prevention among departmental staff. The poor enforcement of regulations perpetuates a culture and an attitude that people can escape the consequences of corruption. A clinical director in a public tertiary hospital expressed this frustration by noting that although policies have been developed to provide technical guidance during procurement processes, they are simply ignored (Rispel et al., 2016). The scant awareness of these fraud prevention plans contributes to minimal will to combat corruption within public health departments.

Due to inadequate accountability, health departments often allow those who commit malfeasance to remain in office and thereby run the risk of continued corruption. The now infamous Life Esidimeni tragedy exemplifies this issue. In 2015, the Gauteng province Department of Mental Health transferred 1200 mentally ill patients to facilities that were falsely certified and hence unsuitable for the patients' conditions. Evidence suggests that senior officials such as Dr. Makgabo Manamela, the department's director, may have had personal financial ties to the facilities to which the patients were transferred. Investigators of the incident thus suspected that corruption was the main cause of the tragic incident. While the department argued that the decision to transfer the patients ostensibly aimed to save money, a health ombudsman concluded after the fact that it almost certainly would drive up the costs ("How 143 Mentally Ill South Africans...", 2018). Although 143 patients died over 9 months due to neglect and mismanagement by the providers, none of the officials involved was fired (Heywood, 2017). The Life Esidimeni scandal is just one example of how corruption can lead to death and disability of patients, but without stricter accountability, other similar

incidents may continue to jeopardize the lives of additional South Africans.

Current Efforts to Mitigate Corruption

Several organizations in South Africa are currently attempting to combat corruption in the public health sector. These organizations can be categorized generally as law enforcement, civil societies and NGOs, and health sector regulators. To decrease the levels of corruption in the South African health sector, these organizations must address the weaknesses conveyed in the previous section.

Law Enforcement and Criminal Justice Agencies

Respect for the rule of law is required for fighting against corruption. Since the end of apartheid, the South African government has introduced a plethora of anticorruption laws and regulations to tackle almost all aspects of corruption, and the country also cooperates with other nations by being a signatory to the United Nations Convention against Corruption, the Southern African Development Community Protocol against Corruption, and the African Union Convention (Pillay & Mantzaris, 2017). The government also promulgated key laws such as the Protected Disclosures Act of 2000, also known as the Whistle-blowing Act, and the Prevention and Combating of Corrupt Activities Act (PRECCA) of 2004. PRECCA is comprehensive, classifying a wide range of acts as corrupt and criminal, and addresses corruption with regard to supply chain and procurement violations, public contracts, suppliers and agents, politicians, and administrators—all of which interact within the complicated health care system (Pillay & Mantzaris, 2017). The government also protects whistleblowers who disclose unlawful or corrupt conduct in their workplace by the Protected Disclosures Act. Although these anticorruption laws provide a strong basis for the prosecution of offenders, they are highly contingent on the political will to enforce them and thereby prosecute criminals.

South Africa's decentralized approach toward fighting against corruption poses a

challenge for assessing their institutions' effectiveness. While criminal justice agencies, such as the Public Protector, the Hawks, and the Special Investigating Unit, have specific roles regarding anticorruption, no single institution that is solely responsible for fighting corruption exists. Compared to these organizations that have a reactive approach to corruption, auditing institutions, such as the AGSA, have a proactive strategy in dealing with corruption; they are charged with detecting potential irregular expenditures and making them publicly visible through published reports. These audits provide the opportunity for other agencies to pursue investigation if there is a flagrant indication that corruption could be happening.

With limited budgets, personnel, and powers, it is difficult for these agencies to focus solely on corruption in the health sector. In addition, while all of these organizations work toward the common goal of fighting corruption, ambiguity as to which institution is responsible for dealing with which particular instances results in duplication that may produce varying or conflicting results (Pereira et al., 2012). This diffused and potentially overlapping responsibility thereby weakens the effectiveness of anticorruption efforts.

Civil Societies and Nongovernmental Organizations

NGOs and independent agencies also partake in the fight against corruption. They empower communities to come together for collective action by giving them platforms to voice their concerns at all levels of government. Corruption Watch, a nonprofit organization and an accredited chapter of the global civil society organization Transparency International, provides an online platform for the public to report corrupt activities via a hotline, starts investigations on the reports of alleged acts, analyzes information to identify patterns, and mobilizes people through campaigns against corruption (Corruption Watch, n.d.).

Another nonprofit organization fighting against health care corruption, Section 27, is a human rights organization that focuses on access to health care services and other socioeconomic rights. Their name is

based on Section 27 of the South African Constitution, which guarantees the rights to health care, food, water, and social security. They collaborate with other social justice, law enforcement, and professional health organizations to research, advocate, and improve South Africans' socioeconomic conditions. Just like Corruption Watch, they publish reports to inform South Africans of how their rights are being violated by corruption. As of 2018, Section 27 had received 657 cases, and of those cases 123 were health related, ranking second behind education (Section 27, 2018, p. 14). The organization's 2018 annual report also highlighted efforts in exposing corruption in private ambulance and medical equipment procurement, the Life Esidimeni tragedy, and illegal stem cell treatment trials. In 2017, a private general practitioner signed a multimillion rand contract with the Free State Department of Health to conduct illegal and unproven stem cell therapy trials on patients, and Section 27 reported these activities to the Health Professions Council, South African Health Products Regulatory Authority, and the NDoH, with the intention to suspend the experimentations (Section 27, 2018, p. 27).

While these civil societies perform diligent work to shed light on corrupt activities that risk the health of South Africans, their resources and capacity are limited as they are but small NGOs. As a result, they investigate only a select number of reports and move forward only with cases that have the greatest positive impact. In addition, their primary functions are educating, advocating, and lobbying; therefore, they do not have authority to execute full investigations. Although their efforts against corruption are impactful, because they influence both the public and state authorities, they are not enough to fully address the problem.

Health Sector Regulators

Health sector regulators play an important role in protecting the health and safety of the public as they ensure strict compliance, regulate standards and policies aligning with the government's priorities, and prevent corruption in the health sector. According to the Medical Schemes Act developed by the South

African Parliament, the Council for Medical Schemes is mandated to regulate health plans in a fair and transparent manner. The council accomplishes this by informing the public about their rights and obligations regarding medical plans, handling complaints raised by members attentively, and advising the Minister of Health of necessary interventions to attain public health objectives. In September 2019, the council suspended five senior officials for allegations of corrupt and unethical conduct reported by whistleblowers. These allegations include, but were not limited to, collusion in the appointment of, and irregular spending on, service providers (Cronje, 2019).

Furthermore, to promote accountability, the South African government established an independent body called the Office of the Health Ombud under the National Health Amendment Act of 2013. A health ombudsman, also known as a health service commissioner, works with citizens to investigate and deal with their complaints regarding public agencies in an economical and fair manner. The health ombudsman's role in investigating the Life Esidimeni tragedy in 2015 has been applauded. He discovered that no plan existed to ensure that the money that had been saved from the termination of the 40-year contract between the Department of Health and Life Esidimeni for providing mental health services actually was used for the patients' benefit, making room for regulatory oversight and corruption to occur (Durojaye & Agaba, 2018). Ombudsmen are one, but only one, element in a range of organizations and efforts required to be successful in the anticorruption campaign.

Recommendations

The South African government has a robust set of anticorruption laws and a progressive constitution that guarantees the right to have access to health care services. Therefore, South Africa does not necessarily need additional legislation. Instead, the government must first realize the magnitude of the problem and fully take advantage of the strong legal framework that it already possesses. While the anticorruption forum held in October 2019 was a crucial initiative, more coordination and integration of anticorruption

work across all organizations are necessary to efficaciously tackle the multidimensional issues involved. South Africa must further strengthen accountability, increase transparency, and empower civilians as the problem of corruption still prevails in the public health care sector.

Bolster Accountability and Increase Transparency

Increasing accountability and transparency go hand in hand. When more information concerning health authorities' decisions becomes more accessible to the public, then the detection of irregularities will be easier. South African health departments already have the necessary policies, such as the NDP and fraud prevention plans, in place that push for a monitoring system in provincial departments transactions, including procurement. Beyond these existing policies, regular performance evaluations must occur to ensure that public officials operate in the interest of their citizens.

Corruption Watch suggested that one way to prevent procurement corruption is to apply open contracting, which uses government transparency to foster participation between public bodies, business, and civil society. By making procurement information accessible, businesses can compete fairly to win contracts, and civil society can monitor the process to identify tender irregularities and investigate corruption. Open contracting can help combat corruption by showing who is buying what, from whom, and at what price. For example, in 2012, Indonesia's Open Tender platform, which analyzes the metadata of major public contracts, detected corruption risk in a contract to supply medical devices to hospitals in one of its provinces. Journalists and a civil society organization uncovered an overpricing scam involving several public officials. As a result, two men were sent to prison, and the governor of the province is still under investigation as a suspect (Amin, 2017). South Africa can adopt the same approach in its medical procurement system to avoid pharmaceutical stockouts due to corruption.

Review of another project that introduced a district health planning and reporting system, centering around an annual review

and analysis of health services and financial performance in the Eastern Cape, North West, and Mpumalanga provinces, showed that the implementation of a monitoring system helped curb potential abuse and corruption. The study concluded that instead of restricting financial personnel as accountable for budgets and medical personnel as accountable for services, a system that brings both together for shared responsibility is essential to prevent corruption and enforce accountability (Collins, 2005). Financial data and service utilization statistics in procurement or provincial health systems help increase transparency and focus attention on areas most prone to corruption.

Encourage Civic Participation— A Lesson from Brazil

An essential component in any democratic government is active citizen participation. As the public becomes more educated and aware of governmental decisions, public officials will be held more accountable for their decisions. A well-informed public ensures that the government is truly acting on behalf of public and not private interest. A successful mechanism in mitigating corruption and encouraging effective monitoring is municipal health councils. In Brazil, these councils enable citizens to supervise and supply feedback on the country's public health system. These councils are present in nearly all of Brazil's municipalities and are legally empowered to examine public accounts, demand accountability, and influence how resources are spent. The existence of municipal councils correlated with reduction in the incidence of corruption in public health programs. This relationship is significant over time. With each additional year of a health council, corruption incidence is reduced by 2.1% from baseline values (Avelino, et al., 2013).

However, the decentralization of power to council members comes with responsibility that they operate on behalf of the public. The success of health municipal councils relies on the assumption that local bureaucrats are qualified to make decisions with limited supervision from the central government and that it is easy to hold these officials accountable. Since South Africa has already established the Office of the Health Ombud, its role can be reinforced by having health commissioners in every province and municipality, like Brazil. With the health ombudsman engaging with health professionals and citizens, a broader coalition can be formed to pressure politicians to listen to citizen voices.

Conclusion

Corruption poses a serious threat to the lives of South Africans, who rely on a public health care system that is already under-resourced. With evidence showing the incompetence and venality of public officials in health departments, combined with a significant lack of accountability, calls for more government intervention to protect citizens' rights to health care are louder than ever. Given existing racial and socioeconomic disparities, failing to uphold stricter accountability will continue to perpetuate these inequalities in future South African generations. Overall, the vulnerabilities in the South African public health sector are not amenable to a single solution; rather, the government must collaborate with all health system stakeholders, including providers and professional associations, to effectively reduce corruption in a comprehensive manner. Addressing corruption would improve the stewardship and management in the public health system and provide better health care for all South Africans.

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HIV AND AIDS IN SOUTH AFRICA: EMPOWERING INDIVIDUALS TO MAKE WIDESPREAD CHANGE

Ariel Pawlo



For over three decades, the HIV and AIDS epidemic has been ravaging South Africa with only limited success in controlling the spread of the virus. Pre-exposure prophylaxis provides a novel opportunity simultaneously to progress toward the end of the epidemic and to empower marginalized groups by giving them more control over their health. This medication will serve a dual purpose by protecting individuals and beginning to unravel the sociocultural forces that allowed the epidemic to flourish at its onset.

Introduction

In the late 1980s, seemingly healthy men and women began dying from preventable diseases when their destroyed immune systems could not be helped by typical treatments. Diagnosis rates of tuberculosis and pneumonia increased as research slowly found the cause of the immune deficiency and catapulted the human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) epidemic into the global spotlight (Getahun et al., 2010). With the first cases developing in marginalized and underrepresented populations, the world largely ignored the disease. This neglect resulted in a distinct lack of funding and research until large populations were afflicted, public figures came forth to confess their own HIV status, and stricken individuals began to support each other. Unfortunately, the research and the treatments developed in the 1980s were not available in the South African public health system until 2003 and remained inaccessible

to many impoverished and rural populations (Henry J. Kaiser Family Foundation, 2019).

In South Africa, the epidemic began in the middle of apartheid, with the first confirmed deaths from AIDS occurring in 1985 (South Africa History Online [SAHO], 2011). The cultural conditions of the time, including poverty, lack of education, and poor medical services, created barriers to treatment access, which allowed disease to spread through vulnerable populations. Inaccessible health care and the cost of treatment, both in time and money, have resulted in over 7.7 million people, or 14% of South Africans, infected and living with HIV (UNAIDS, 2019). South Africa's epidemic is the fourth worst HIV epidemic in the world, closely following its neighboring countries of Botswana (#3), Lesotho (#2), and Swaziland (#1) (Central Intelligence Agency, 2016). Currently, only 4.8 million people—less than 65% of those infected—are receiving treatment for HIV due to the seemingly insurmountable barriers to health care. With

so many people not receiving medication, the disease continues to spread, with 2,400,000 new infections each year (UNAIDS, 2019).

An epidemic of this magnitude is fueled by more than a lack of access to health care; sociocultural factors like racial and sexual prejudices play a significant role. South Africa has a long history of prejudice that has systematically prevented colored and black South Africans from accessing health care. Black South Africans had a 16.6% HIV prevalence rate in 2017; this rate is significantly higher than that in colored South Africans, with a 5.3% prevalence rate, and white South Africans, with a 1.1% prevalence rate (Simbayi et al., 2019). South Africa also has a strongly patriarchal society that limits women's autonomy, as evidenced by a 25.8% HIV prevalence rate among women aged 15 to 49, significantly higher than the national average (UNAIDS, 2019). When considering the sociocultural norms and the history of South Africa, the most effective way to end the epidemic is to empower marginalized groups through preventative treatments that will protect individuals before exposure to HIV and simultaneously work to close the sociocultural inequities.

What Is HIV/AIDS?

The HIV attacks and slowly destroys T cells, the cells in the immune system that fight disease (Division of..., 2019). As the HIV infection progresses, these cells become infected and die, and the afflicted person slowly becomes more susceptible to other, opportunistic infectious diseases. Symptoms usually do not show up until 5 to 10 years after the infection event. If left untreated, HIV progresses to AIDS in 10 to 15 years (World Health Organization, 2017). Progression to AIDS indicates that a person has fewer than 200 T cells per cubic millimeter of blood and the infected person no longer has a functioning immune system (Division of..., 2019). This immune deficiency leaves the person vulnerable to opportunistic infections, including tuberculosis and pneumonia, which are common comorbidities.

HIV can be transmitted through body fluids, including semen, vaginal secretions, and

blood, and most often is sexually transmitted (World Health Organization, 2017). HIV is a retrovirus; it can never be entirely eliminated once the infection takes hold because it incorporates its own genetic information into the host's genome. There currently is no cure for the virus; it is treated using antiretroviral therapies (ARTs) that block steps in the pathway of integrating the virus's genome with the host's genome (Warnke et al., 2007). An infected person must continue to take ARTs for the remainder of their life. Treatments have improved since they were first created so that infected persons can reduce their viral load (the number of viral particles in a blood sample) to undetectable levels with firm adherence to their treatment plan (Division of..., 2019). Administration of ARTs prior to exposure to the virus can prevent the infection from taking hold and save individuals from the burden of a lifelong disease and protect their bodies from a lifetime of medications.

Due to the extended incubation period until symptoms become noticeable and the fact that HIV/AIDS is just one of a long list of dangers that could destabilize daily life, the disease is not a pressing issue for many South Africans. People need to worry about feeding their families, working, and many other responsibilities that are more salient to daily life than HIV/AIDS. Thus, it is often ignored and forgotten (Trinitapoli & Weinreb, 2012). Sociocultural barriers have created a host of other problems that the impoverished population must face before even considering testing and treatment for HIV.

Historical Context

The prejudice and racism that underlie the inequalities and barriers to health care that many South Africans face have deep historical roots. Discrimination began in 1652 with the colonization of South Africa and the consequent enslavement of the natives. The enslavement of South Africans disenfranchised them in ways that weakened their connections to the land and to their families and completely decimated their sense of self (SAHO, 2017). The end of slavery did not restore their familial connections nor did it alleviate the prejudices colored and black people endured.

The apartheid regime came to power in 1948 and systematically oppressed everyone who was not white based on the relative darkness of their skin. Legal institutions directly disenfranchised the colored population by cultural and geographical segmentation. These structures of legal and social oppression created a system that placed a large portion of the population at an extremely high risk of suffering an epidemic.

The key factors that created the perfect epidemic conditions were consistent through most of the country's history: a social hierarchy that segregated the population by skin tone and a patriarchal society that further marginalized women. Apartheid formalized the social hierarchy that previously existed and created a system in which the lower classes were arguing and battling against each other to get every little step closer to the top tier. This class system caused prejudices between all groups classified as different by the apartheid government and created a lasting social segregation that is only just beginning to come undone. History also acts as proof that South African women "accepted their subordinate and inferior position [to men] in society... as natural and as a fact of life that cannot be altered" (Coetzee, 2001, p. 301). This mentality limits women's autonomy and disables their ability to speak up for themselves in all areas of life. In sexual relationships, South African women are expected to prioritize the pleasure of their partners; thus, they often cannot or will not ask for their partner to use a condom (Jewkes et al., 2003). It is also possible that discussions of condom use and sexual history require a greater intimacy than is allowed by South Africa's society; consequently, a segregated and patriarchal society likely puts women at more risk for contracting HIV ("Factors That Contribute...", 1997).

At the end of the apartheid regime, when the disenfranchised populations were at their weakest, an era of denialism toward HIV/AIDS began that allowed the epidemic to fester and swell into an uncontrollable problem. When Nelson Mandela became president in 1994, his priorities needed to be stabilizing the military and political climates, sorting out economic policy, and reconciling racial tensions. HIV/

AIDS was such a minor issue compared to these that it was ignored in the confusion amid the change in power. Much like the lives of individuals in South Africa, at the national level there simply were more pressing issues to be dealt with before HIV/AIDS. The unfortunate result was that the country adopted denial as a psychological defense mechanism; the quality of life was finally improving for the disenfranchised groups; thus, they would deny anything that said otherwise (Breslow, 2013). Former president Thabo Mbeki (1999–2008) is a perfect example of this behavior; he denied the link between HIV and AIDS for years and questioned the usefulness of ART. His doubts, which were themselves a product of the country's history, caused him to limit testing and drug availability that were freely donated (Chigwedere et al., 2008). He is not alone in his denial; it was commonplace for deaths due to AIDS to be claimed as tuberculosis or pneumonia to avoid the shameful diagnosis (Getahun et al., 2010). South Africa's state of denial during this time caused approximately 334,000 people to die prematurely from AIDS and at least 35,000 babies to be born with HIV infections that could have been prevented. By the end of 2005, two years after international help was accepted, South Africa had only 23% of HIV patients on treatment as compared to greater than 70% in Botswana and Namibia (Chigwedere et al., 2008).

The era of denialism ended in 2009 when Jacob Zuma became president, at which point the national focus could shift away from issues of stability and toward other threats. Zuma enacted new legislation to increase ART access for pregnant women, children, and those also suffering from tuberculosis. However, a few people continue to criticize Zuma's impact on the epidemic, despite the huge increases in testing and treatment that came out of his presidency, due to his promotion of promiscuity and clinical misinformation. He claimed that showering after unprotected sex would protect him from HIV, and he publicly discussed having multiple sexual partners, which is one of the easiest ways to spread the disease (SAHO, 2011). Independent of these claims, funding for the fight against HIV/AIDS from South Africa itself surpassed that from foreign

sources during Zuma's term as president. The country has high hopes that Cyril Ramaphosa, president since 2018, will reduce corruption, thereby creating an environment in which equality can flourish, funding for the epidemic can continue to increase, and the underlying causes of the epidemic can dissolve (Cohen, 2019).

Segregation and a highly patriarchal society set up the epidemic and created some of the proximate barriers to health care and education that allowed the epidemic to flourish in a subset of the population. Directly treating only HIV and AIDS will not break down these sociocultural barriers; thus, a different strategy must be used to achieve this broader goal. Poverty, substance abuse, lack of access to health care and education, and sexual abuse all are barriers to achieving proper HIV protection and treatment. All these areas are sources of inequalities in South African society; they vary along the same lines as the racial and sexual hierarchies that thrive in South Africa. These fundamental societal issues directly increase the prevalence of sexually transmitted diseases like HIV ("Factors That Contribute...", 1997). Such an inequitable society is ripe for epidemics in the poorer parts of the population. A new tactic that can break down these barriers should be used to begin to close the inequalities, end the HIV/AIDS epidemic, and help South Africans protect their society from future threats.

Status of Current Efforts

Many countries have poured money into ending the HIV/AIDS epidemic in Africa. However, the United States and South Africa itself have done the most in fighting the country's ongoing epidemic. Although the country denied the connection between HIV and AIDS and procrastinated during the early years of the epidemic, South Africa now contributes over half of the funding going toward the epidemic (Avert..., 2019). The United States created the President's Emergency Plan for Aids Relief (PEPFAR) in 2003, which benefits many countries in Africa. The funding from these two sources and other international sources goes toward expenses for the epidemic, including setting up medical facilities, buying and distributing medication,

and educating the public about the disease. PEPFAR has made significant progress in educating South Africans while adapting to the local norms and taboos surrounding health and sexual education (Henry J. Kaiser Family Foundation, 2019). These interventions have resulted in a 10-year increase in the average life span of South Africans (Cohen, 2019), which comes from 90% of those living with HIV knowing their status, 62% of those living with HIV receiving ART, and over 50% of those living with HIV being virally suppressed (UNAIDS, 2019). Ultimately, the combined efforts of PEPFAR, international aid programs, and South Africa itself, further supported by aid from other countries, have made great strides toward controlling this epidemic. However, these strategies have run their course, and new methods must be utilized to bring an end to the epidemic.

The successful deployment of foreign aid in education has been instrumental in beginning to quell the epidemic, but schooling will not be able to end it because current programs primarily use the same limited behavioral change theory. Existing educational programs all use the Health Belief Model, which posits that individuals act rationally based on the information that is available to them; thus, educating individuals who are at risk theoretically will change their risky behaviors. This theory is based on perceptions of the susceptibility and severity of the potential negative outcomes, the benefits, barriers to making behavioral changes to avoid the negative outcome, and a person's own self-efficacy. When education of the risks and benefits does not change a person's behavior, the failure is blamed on a lack of self-efficacy, which is, in turn, blamed on socially embedded factors such as empowerment and socioeconomic status. Multiple surveys have confirmed that most people in sub-Saharan Africa understand how HIV is transmitted. Consequently, the educational programs likely have run their course because the people who have not changed their behavior either see too many barriers or lack the self-efficacy to make the necessary changes (Trinitapoli & Weinreb, 2012). The education strategy, therefore, should be changed to address those barriers

and build self-efficacy in order to continue progressing toward the end of the epidemic.

The promotion of self-efficacy is the country's best chance to end the epidemic, as it will have a lasting influence on the population and does not require decades of legislation and cultural change to enact. Foreign aid has temporarily bridged the gap between the public and private health care sectors. However, as aid begins to decrease, the bridge will begin to crumble. In 2020, the PEPFAR budget request was almost \$2 billion less than the program's 2019 total budget (Henry J. Kaiser Family Foundation, 2019). With less funding coming in from international sources, South Africa will need to adjust their methods for tackling the epidemic. Targeting self-efficacy will provide a long-lasting change that can be passed down to future generations through small acts and lessons from parents to children (Venter et al., 2015). The HIV/AIDS epidemic goes far beyond the disease and its physical spread; sociocultural norms like the marginalization of colored people and women have prevented key populations from taking action to protect their own health. Completely closing the gap in health care will require many more years and corrective legislation, but this process can be facilitated by encouraging and promoting the self-efficacy of these key groups. As funding decreases, a long-term strategy such as this will benefit South Africans more than continuing to use the same transient methods.

The Future Lies in Pre-exposure Prophylaxis

Pre-exposure prophylaxis (PrEP) for HIV infection involves taking an ART medication prior to an exposure event to prevent the contraction of HIV. It is similar in concept to taking antimalarial medication before going to an area where that disease is endemic. Currently, approximately only 45,000 South Africans are on PrEP of the millions of people who are at risk for contracting the disease. The country also is limited to the use of tenofovir in both the brand-name, Truvada, and generic forms. These medications can be taken daily for constant protection or taken temporarily following risky encounters (PrEP Watch, 2020). PrEP in South Africa to date has been

limited mostly to clinical trials to assess its efficacy and uptake in key groups, yet it should be made available to all citizens. Models have shown that the initiation of widespread PrEP, especially in more forms than just the pill, would have a remarkable effect in terms of reducing HIV incidence rates and saving lives for generations to come (Venter et al., 2015).

These medications work by killing the virus before it can enter and infect healthy cells. Having PrEP in the body before HIV is present prevents the HIV infection from taking hold and allows the body to eliminate it just like the common cold or another viral infection. At-risk groups where PrEP is indicated include anyone who is HIV negative, people who inject drugs, men who have sex with men, women ages 15 to 49, and anyone in a relationship in which only one partner is HIV positive. Further factors to consider are the number of concurrent sexual partners, HIV status of potential or past partners, history of condom use, commercial sex work, and recurrent use of postexposure prophylaxis (PrEP Watch, 2020). The group for which HIV can relieve the largest burden is pregnant women and breastfeeding mothers, who can pass HIV on to their children through vertical transmission. In the next 10 years, as PrEP begins to roll out, it is predicted to prevent 48,000 to 136,000 new cases of HIV via vertical transmission, not including the new infections these people will prevent simply by being HIV negative (Joseph Davey et al., 2019). PrEP can have a similar influence on every high-risk group. Therefore, it needs to be available to the South African public just like ART treatment once HIV is acquired.

The efficacy and uptake of PrEP have been studied in many subgroups with a few variations in the delivery method, yet one thing is clear: its success depends on each individual. The average efficacy of PrEP across many studies is about a 51% reduction in the chance of contracting HIV; however, this level directly varies with adherence to the medication (Bekker et al., 2016). These same studies found that those who were aware that they were at higher risk were better at following through with medication adherence. "Easier" regimens, whether a daily pill, a silicone ring inserted in the vagina, an antimicrobial gel, or

a monthly injection, are crucial to maximizing the effectiveness of PrEP (Walensky et al., 2012, p. 1505). There are conflicting reports¹ about which regimen will evoke the greatest adherence; ultimately, all the data imply that the regimen must be determined on a case-by-case basis, depending on what is easier and better for each individual. Some of these options are commercially available but not yet in South Africa, whereas others are nearing the end of their clinical trial phases. As these options become available, they should be introduced into the existing clinics to allow each person to get a customized PrEP system that integrates best into their life.

PrEP should be made available to at-risk groups because it will put the means of risk management in patients' hands and give them some control over their experiences. Taking PrEP is a choice marginalized people can make to have control over their HIV status even when they cannot control other events. With their limited autonomy, "[PrEP] is one of the few female-controlled HIV prevention methods" (Joseph Davey et al., 2019, p. 1392). In an uneven power dynamic, PrEP may be the only way a woman can protect herself from acquiring HIV because most methods need not be present during risky encounters. Having multiple PrEP options available to work seamlessly into the lives of those at risk allows individuals options to protect themselves without directly disrupting social norms. This opportunity will prevent added threats from their environment while letting them take control of a part of their life. Maintaining control over even one aspect of life is empowering: it is a step, however small, toward breaking down three centuries' worth of discrimination and prejudice irrespective of gender.

PrEP provides numerous benefits to individuals and to the fight against the epidemic that make it a better long-term option than continuing to push education. In addition to all the potential forms of PrEP that will be available in the next few years, this method has proved itself to be adaptable and ethical. PrEP can be used intermittently during and

after periods of high HIV acquisition risk and stopped when the risk disappears. The shorter and potentially intermittent time span of taking these medications puts less strain on the body than the lifetime of medication required once HIV is contracted. PrEP also requires a checkup only once every three months. This is something that can be planned, alleviating stress and avoiding HIV testing after potentially frequent risky behaviors. Furthermore, the only currently approved medication for PrEP, tenofovir, has relatively few side effects, with only about 1 in 10 patients experiencing any negative reactions (Bekker et al., 2016). At the clinical and population levels, the benefits of PrEP far outweigh any consequences of potential adverse reactions (Walensky et al., 2012). Because of this, PrEP raises no additional ethical issues than do other HIV prevention methods like condom use or male circumcision (Venter et al., 2015). PrEP has many positive traits that benefit all genders at risk of infection.

Like any medication, PrEP has some downsides that can increase the risk of its use, yet none of its potential consequences is greater than its benefit. Any kind of treatment begets the potential of microbial resistance, which applies to PrEP, postexposure prophylaxis, and regular ART treatment. Microbial resistance potentially occurs if PrEP is taken at suboptimal levels, in which case only some of the viral particles will be destroyed while some will adapt to persist in an environment with low concentrations of the medicine. Luckily, tenofovir has a high barrier to creating resistance. The new forms of PrEP that are in testing do not yet have information about their abilities to prevent resistance. Microbial resistance has been reported only in those who were unknowingly infected with HIV prior to beginning a PrEP regimen. PrEP also can take one to three weeks to become effective and must be continued for four weeks after a risky encounter (Bekker et al., 2016). This delay in effectiveness makes intermittent PrEP more difficult but can be avoided by using PrEP continuously until the risk is completely gone. Another potential issue is that clinics often are busy and impersonal because they are overwhelmed with patients facing a variety of ailments (Venter et al., 2015). Although

¹Bekker et al., 2016; Joseph Davey et al., 2019; Henry J. Kaiser Family Foundation, 2019; Simbayi et al., 2019; Venter et al., 2015; and Walensky et al., 2012.

PrEP offers no immediate relief for clinics, it is hoped that it will reduce the number of HIV tests required and eventually reduce the number of those seeking treatment for HIV. The pros of taking PrEP outweigh the risk of developing resistance.

In addition to the benefits of PrEP, it also is feasible and cost efficient in South Africa. The medication can be distributed easily at already existing facilities and can be adhered to as long as individuals understand their risk factors and how to best use their chosen form of PrEP. Many manufacturers source their materials through sellers with royalty-free agreements that are more cost efficient than other vendors (International Partnership for Microbicides, 2010). The International Partnership for Microbicides also is working to develop a three-month vaginal ring to replace their one-month ring, which would further reduce materials and costs required for protection. These are just two examples of the ways in which manufacturers and distributors are working to reduce costs to make PrEP even more cost efficient than its initial daily pill form. As it stands, with only the daily-pill PrEP available, PrEP is expected to pay substantial dividends in terms of HIV cases avoided and the associated health care costs. Over the next five years, PrEP would cost

about \$6 billion for 50% of all eligible women, a mere fraction of the total budget for the fight against HIV in that time span (Walkensky et al., 2012, p. 1505). PrEP will be effective in the fight against HIV, and it will be cost efficient initially and even more so in the long run.

Conclusion

All available evidence suggests that PrEP should be the clear first choice in South Africa's battle to defeat HIV. The use of PrEP, in any of its forms, will begin to empower women especially, by giving them back some control over their bodies in a society that does everything to take that away while simultaneously working directly to end the HIV epidemic. Racism and a patriarchal society have marginalized black and colored South African women and created the perfect environment for an epidemic to thrive. To date, the epidemic has been brought under control, but the strategy must change to bring it to an end. The best way to fight an incurable disease that destroys the immune system is to prevent individuals from acquiring the disease. PrEP is a cost-efficient and effective method to both end the epidemic and make progress toward eliminating the sociocultural factors that allowed it to flourish.

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SOUTH AFRICA'S EDUCATION DILEMMAS

Hanna Skinner



South Africa has made progress in attempting to address and alleviate the social barriers and systemic inequality born out of apartheid. However, the current education system continues to fail poorer students, thereby perpetuating class inequality. This article examines the issues most prevalent in South Africa's public education system and provides possible solutions that can alleviate the high levels of disparity present.

Introduction

South African citizens have a constitutional right to education, and their Bill of Rights mandates that the government must proactively ensure that education is available and accessible to all. However, beginning at the primary level and continuing into secondary education, a vast majority of South African children are being denied access to quality education within the state-run system. The goal of this article is to understand how public education functions within current South African society and the extent to which it has been shaped by the legacy of apartheid. More specifically, this article explores the policies and measures enacted within the South African public education system during the postapartheid era and how they have led to devastatingly high levels of education inequality. Through examination and analysis of data and qualitative accounts, this article seeks to demonstrate how the inherent inequality and

instability present in the current educational system have led to the country violating their own constitution. The government must recognize and then address the inefficiencies and lack of accountability within the system to ensure that quality education is available and accessible to all.

The History of Postapartheid Education

Under the South African apartheid regime, which controlled the country from 1948 until 1994, schools were strictly segregated based on race under the Bantu Education Act (Shepherd, 1955). Following the end of apartheid and the beginning of South African democracy, the Department of Education (DOE) published two white papers that shaped the foundation of the current education system. The *White Paper on Education and Training* (1995a) created the framework for a new education system that would break down the racial barriers erected

during apartheid. This paper established two principles for the new system. The first indicates that education and basic training are human rights and that the state has an obligation to protect these rights regardless of race, gender, socioeconomic class, age, and location. The second principle states that “Parents have an inalienable right to choose the form of education which is best for their children.... The parents’ right to choose includes choice of the language, cultural or religious basis of the child’s education, with due regard for the rights of others and the rights of choice of the growing child” (p. 16). This DOE paper outlined the choices parents were now open to explore on behalf of their children’s education, including the language of instruction. While the government policies addressed in this paper sought to break down systemic racism in the educational system, in postapartheid South Africa, race has been replaced by wealth and status as the most significant grounds for inequality.

Spaull’s report (2013a), *Poverty & Privilege: Primary School Inequality in South Africa*, explains how school wealth strongly correlates with literacy, reading and math scores, school infrastructure and resources, class size, teacher attendance, language familiarity, and much more. The most vulnerable population is, unfortunately, still poor black South Africans. Apartheid may have ended; however, damaging spatial segregation policies persist. Much of the black population is still constrained to live within the townships their ancestors were forced into during apartheid, leaving substantial geographical, socioeconomic, and, as a result, educational, distance between black communities and previously white-only wealthy residential areas. Today, those expensive residential areas are no longer white-only as wealthy black, colored, and Indian families have moved in. However, the historically black townships remain predominantly black and continue to be excluded from the privileged education system the wealthier districts enjoy. The geographical separation of poor blacks from wealthy neighborhoods and the steady increase in higher school fees have resulted in a growing inequality that continues to divide the haves and have-nots of South Africa (Yamauchi, 2011). Unless resolved, the perpetuated

inequality within the education system will have detrimental effects not only on South Africa’s future human capital and labor force but also on the society as a whole, with increased levels of poverty and crime.

The ramifications of an unequal education system are far reaching and go well beyond the classroom or the school. According to the World Bank report, *Overcoming Poverty and Inequality in South Africa* (Sulla & Zikhali, 2018), the poor educational infrastructure of South African public schools has created an unskilled labor market, thereby contributing to high levels of unemployment and poverty. If poor students continue to receive an insufficient education, their life will be limited to a cycle of poverty and unemployment. While similar percentages may be typical throughout the developing world, South Africa is classified as an upper-middle-income country by the World Bank, which raises concerns about how the government responds to the prevalence of extreme poverty and inequality within the country (World Bank, 2019). It also is concerning, considering how South Africa’s education system compares to lower-income countries in sub-Saharan Africa. According to the World Economic Forum’s *Global Competitiveness Report*, South Africa’s primary education system was rated 126th out of 138 countries in 2015–2016. It ranked lower than neighboring countries Zimbabwe, Kenya, and Swaziland (Schwab, 2016). It is evident that this level of educational quality is almost uniquely South African; as such, it requires a greater level of understanding in order to identify the root issues.

Postapartheid policies were designed to reverse inequalities in earlier education spending. According to UNESCO, as of 2017, 18.73% of total government expenditures was allocated toward education, comprising 6.13% of GDP. To put this into context, the average share of the European Union GDP going toward education for the same period was 4.8% (UNESCO, 2017). It is apparent that despite a large increase in funding, the South African education system continues to significantly underperform, making it imperative to understand how and why that funding is not improving the quality of education.

The government's postapartheid approach toward funding consisted of implementing a fiscal formula that would increase levels of access to education without putting undue pressure on the South African government's financial resources. The result was an "equitable shares formula" that would divide up shares of educational resources and allocate them to the provinces and local governments based on the weight of specific demographic factors, including total population, student enrollment, and economy size. Schools were not mandated on how to spend the funds, as it was understood that different locations would have different fiscal needs such as health related resources in schools or language assistance (Levy et al., 2018).

A second DOE white paper, *Organization, Governance and Funding of Schools*, outlined how funding should be structured and the schools governed. The main takeaway was that each public school should be controlled by a governing body with widespread responsibility and control. These governing bodies would consist of selected parents or guardians of current students; teachers; learners (in secondary schools only); nonteaching staff; the principal (ex officio); and members of the community elected by the governing body. This paper also highlighted the hiring structure for new employees within education: "The Ministry of Education's position is that all teachers in public schools who are paid by the provincial education departments should be appointed and employed by the departments on the recommendation of and in consultation with school governing bodies" (DOE, 1995b, p. 17). The reasoning for this proposal was that the governing body should be involved in the selection process of the teachers who will educate their children. Prior to the publication of this white paper, the hiring of educators was controlled by the Educators Employment Act of 1994, where the entire appointment process took place within the DOE itself (Volmink et al., 2016).

In summary, funding for education has remained a constant proportion of South Africa's GDP but at a much higher percentage rate compared to other countries in the upper-middle-income bracket. Therefore, the

question surrounding inequality in South Africa's public education system does not necessarily directly correlate with the amount of money being allocated to education; rather, it reflects how and where that money is being spent internally. In other words, the education problem in South Africa is not caused by a lack of dedicated funding but by how the funds are spent and on other key factors, such as the lack of accountability within the education administration, the South African Democratic Teachers Union (SADTU), and the immense number of public school teachers underperforming and not meeting the proper standards in order to fulfill the crucial role they play. The remainder of this article addresses the critical issues facing public education in South Africa today, while exploring how they can be alleviated in the future.

Current Problems in South African Education

The following subsections outline the most detrimental, systemic problems within South African public education. Together, inadequate teacher training, ill-advised teacher placements, poor teacher engagement and classroom relations, and, finally, a disorganized SADTU have led to an unfavorable learning environment, thereby restricting progress. In order to understand how to reform education, we must understand why the system continues to fail.

Teacher Training

To comprehend South Africa's dismal underperformance in education, it is imperative to understand how teachers are trained prior to being considered for the role and the criteria by which they are judged. On a basic level, teachers can be considered for a position only if they have registered through the South African Council for Educators (SACE). The recognition criteria for SACE requires that potential educators have obtained either a matriculation teaching qualification over the course of three years or a two-year certification in teacher education for pre-primary school phases (SACE, 2020). On its face, the criteria seem legitimate; however, it is critical to

investigate the two-year to three-year teacher training programs in order to fully grasp the quality of the teacher labor pool within South Africa.

Insufficient teacher training within South Africa is a significant contributing factor to the country's poor educational performance. According to a study conducted by the nonprofit JET Education Services, there are substantial problems within education training: "Three out of five of the Higher Education Institutions that were sampled provided no English language, literature, or linguistic education for teacher trainees not specializing in this subject, despite poor English language proficiency among teacher trainees being a ubiquitous concern" (Robinson, 2019). This finding demonstrates a violation of the constitutional promise that instruction will occur in all official languages, respecting the parent's choice to designate the language in which their child will be taught. This is a real concern, especially given that on average 62% of South African teachers teach in a classroom where, at minimum, 10% of their students speak a first language that is different from the language of instruction. This is the highest percentage of any Organisation for Economic Co-operation and Development country or partner ("5 Of the Biggest Problems..." 2019). The government administration is failing to adhere to basic rights as outlined in the constitution by not prioritizing this important factor within the teacher training curriculum.

In addition to concerns regarding the language of instruction, teachers are ill prepared for basic studies they themselves are expected to teach. When comparing South African performance to other countries in the region, Spaul found that between 1994 and 2011, grade six mathematics teachers had similar levels of content knowledge to the average teacher in developing countries, such as Mozambique, Zambia, and Malawi, and had substantially lower content knowledge than teachers in Kenya, Zimbabwe, Uganda, and Tanzania. Similarly, rural mathematics teachers in South Africa had significantly lower levels of content knowledge than rural mathematics teachers in Swaziland, Tanzania, Uganda, and Kenya (Spaul, 2013b). Even more strikingly,

a 2007 study found that 79% of South African mathematics teachers for 11 and 12 year olds scored below the level expected of their own students; the test included simple calculations of fractions and ratios (Spaul, 2013a). This sort of discrepancy raises the question as to how the South African Department of Basic Education (DBE) can expect students to learn and perform when their teachers are not competent in the material they themselves are expected to teach.

Teacher Placements

Another fundamental issue is the failure of school administrators to place teachers in positions that match their skills and training. Teachers are trained in specific phases of learning, including the Foundation Phase, Intermediate Phase (IP), and Senior Phase. (For comparison, these phases are similar to elementary, middle, and high school levels within the United States.) According to the study conducted by JET Educational Services, "Among 776 NQTs, newly qualified teachers, in their first year of teaching in 2014, 189 found themselves teaching in the IP, although almost two thirds of these had not specialized in this phase" (Deacon, 2016, p. 16). Clearly, there is a lack of organization within the education system in which teachers are not being matched according to their level of training. This is an inefficient way of placing teachers properly, resulting in students being taught by a less than qualified educator. Not only is this misplacement an issue in terms of age specifications but also there is a lack of connection between the academic subjects that teachers specialize in during training and what they end up teaching. Of the same 776 newly qualified teachers, "over two-fifths of the English specialists and more than a quarter of the Mathematics specialists were not teaching those subjects, even while these subjects were being taught by non-specialists at other schools" (Deacon, 2016, p. 16). It is evident that school governing bodies are not assigning teachers into appropriate positions, which in turn diminishes teachers' ability to properly educate their learners.

The consequence of inadequate and ineffective teacher training and placement is that it further diminishes the teaching

profession, as teachers' own concerns continue to be ignored. If teaching is not treated as the vitally important profession it is, then the field no longer will be able to attract top candidates, and the overall quality of teachers will continue to diminish. Teachers enter the labor market unequipped as a result of an inefficient training program and, upon hiring, their specializations and language preferences are not taken seriously in the placement process. As a result, their students cannot perform in the classroom, because they are being denied a teacher who is actually able to meet the classroom criteria themselves. Teaching is seen as a low status career, thereby unable to attract top candidates into the field. The longer this cycle continues, the longer the education system within South Africa will continue to underperform.

Teacher Engagement

One approach to determining the quality and engagement of South African teachers is by monitoring their physical presence in the classroom or, more simply put, their attendance. Teacher absenteeism has been a startlingly and concerning trend over the past 5 years, with cases increasing from below 8% in 2011 to above 10% in 2017/18 ("South Africa's Education System...", 2019). Most concerning of all, teachers are absent on average more often than their students. According to a joint survey between the National Association of School Governing Bodies and Amnesty International in 2018, 32% of respondents reported that schools in their area had a problem with teacher absenteeism (Amnesty International, 2020). When a teacher fails to show up for school, the material will never be covered or covered poorly by a substitute.

Frequent failure to show up and teach sends a negative message to young, impressionable learners about expectations and work ethic. While these statistics are concerning for the nation in its entirety, teacher absenteeism is especially profound in certain demographics. Compared to other provinces, Northern Cape had the highest percentage of primary school teacher absenteeism at 16%, followed by North West province at 13.9% and Eastern Cape at 13.2%, revealing that

teachers are much more likely to be absent in the more rural and township provinces, which have higher levels of poor and black students ("South Africa's Education System...", 2019). This phenomenon further proves the need to prioritize improvements in schools that are located in the more rural and township provinces; not all South African schools are created equal, and it remains evident that rural schools face the greatest challenges.

The hiring and retaining of teachers are important components of the education system. One challenge school administrators face is the lack of teaching professionals available for hire as a result of a brain drain, as many South African teachers emigrate in order to find better opportunities abroad. A contributing factor to teacher emigration is the low wages offered at home compared to those abroad. According to one article, South African teachers earn a meager \$19,452 (R273,209) on average, which is significantly lower than the global average of \$27,175. Not only are teachers confronted with lower wages but also they often are burdened with administrative tasks, which detracts from time spent in the classroom. This has resulted in only 66% of classroom time being spent on teaching, which is dismal compared to 78% in other countries ("Mass Exodus...", 2019). Another factor contributing to job dissatisfaction stems from being forced to work in fields outside their area of training. The combination of these factors often leads teachers to be less engaged.

The South African Democratic Teachers Union

One of the greatest challenges preventing progress and equality within the education system is the SADTU. Out of the 390,000 teachers in South Africa, 250,000 are members of SADTU (Murray, 2016). Additionally, SADTU is a member of the Congress of South African Trade Unions (COSATU), and they have leveraged their partnership with the African National Congress and the Communist Party of South Africa in order to obtain access to positions in Parliament and the Cabinet (Volmink et al., 2016). Due to their strong participation rate and overall status with COSATU, SADTU has obtained legitimate

political power within South Africa's governing bodies. However, the linkage between SADTU and political parties is problematic for a host of reasons.

Its political influence enables SADTU to resist accountability measures that could potentially keep the organization in check. SADTU frequently employs "cadre deployment" practices, in which they leverage their power and ability to offer loyal and active union members opportunities for higher-paying and more prominent positions, such as principals, school administrators, or DOE roles. According to *City Press* (May 2, 2014) "crooked SADTU officials are selling not only principals' posts, but are manipulating the education system across provinces to control teachers' appointments, retirement packages and transfers in return for bribes of as little as R6,500" (Volmink et al., 2016). SADTU has ensured that so long as you are a member, you can be appointed to whichever position you desire based on your militancy or the amount of money you pay upfront; selection for these important roles is not based simply on competence or professional suitability. These practices enable and perpetuate corruption within the education system, and, without significant change, they will continue to hinder any possible progress.

The lack of accountability within SADTU relates to how they operate as an organization; SADTU has embraced the same model used by industrial unions, which is rare for teacher organizations in more developed countries. SADTU functions in a way that essentially treats its teachers as members of the working class who need protection from harsh working conditions. In many ways, this downgrades the idea of the teaching profession, making many teachers more vulnerable and the job itself less desirable. This model also increases tensions between SADTU and the DBE. SADTU sees DBE as a "capitalist exploiter of labour," and the conflict between these two forces is not over policy and school rights but rather over power and control (Volmink et al., 2016). The relationship between SADTU and DBE is strictly conflictual, and therefore the real interests of both teachers and students are not being addressed properly; the consistent infighting

and power struggles have not led and will not lead to real policy change. An industrial union model is not well suited to the best interests of teachers and students; instead, it prioritizes money and militant loyalty to the union.

Available Options to Explore

This section outlines a few suggestions for the South African DOE to consider in order to improve the education system. A shift toward the Collaboration Schools model, reorganized funding and a move away from trade unions, and implementation of a sustainable Teach For America (TFA)-style program in South Africa all could contribute to a more progressive and successful public education system.

Collaboration Schools

The future of South African education is not all bad, as many new initiatives are enriching the learning experience for children regardless of geographic location or socioeconomic status. Collaboration Schools are one example of a successful initiative. These schools were piloted in the Western Cape and are largely influenced by academies in England and charter schools in the United States. These schools are funded by the state but are run by independent operators (Ark Schools, 2020). SADTU strongly opposes Collaboration Schools; however, parents and teachers alike have been impressed with the results. Collaboration Schools inject much needed competition into the market while proving to be a stronger alternative to the current public educational system. They also serve as incubators for new approaches to teacher training and hiring, instructional practices, and curricular innovations. Other prominent examples include the SPARK School and the African School for Excellence, both located in Johannesburg. These schools operate as low-cost private schools, spending the same amount per pupil as the average public state school. Students enjoy longer class days, small classroom sizes, and a combination of whole-group instruction and targeted instruction in an effort to meet the needs of all children. SPARK Schools excel in numerous facets of the educational model; they rely heavily

on Scholastic's PRIME math curriculum, which is based on the math standards used in Singapore, South Korea, and Hong Kong. Additionally, their literacy program is based on Britain's literacy standards, physical education is incorporated into the school schedule to ensure healthy bodies and minds, and they incorporate a selection of secondary languages, including Zulu and Xhosa, into the curriculum in order to foster "social emotional learning" (SPARK Schools, 2020). While it is clear that these schools are private for a reason, the fact that South Africa spends such a significant proportion of their total GDP on education relates back to the greater question: If the funding is there, why are there so many inefficiencies and cracks in the system leading to extreme inequities and poor results? The approach to learning and the connections between teacher and student are what distinguish these high-performing low-cost schools from the public school system. The DBE in cooperation with the SADTU should study these learning incubators and apply key successful strategies to a larger scale in order to address some of the concerns this paper has laid out. Specifically, the way in which these schools offer longer schedules, smaller class sizes, instruction in a variety of languages, and a more effective curriculum needs to be studied to determine how these strategies can be brought to scale.

Restructuring of Funding and Teacher Unions

While the brain drain and teacher shortage continue to hamper the ability of the South African DBE from restructuring classroom dynamics and teaching methods, there are ways in which they can foster an environment that encourages smart, driven, and talented professionals to explore a teaching career. The government is overspending in the wrong areas. By way of example, the bureaucracy of the DOE is too large and therefore accumulating too much of the funding. If a portion of the budget could be diverted away from the overwhelmingly large bureaucracy and spent on improving the physical structures of public schools or ensuring classrooms are stocked with an appropriate number of textbooks, the

school system would more accurately reflect the promising outcomes of the low-cost private/charter schools, discussed previously. Not only would the classroom learning experience be enhanced with access to better resources, but also teachers would be more inclined to show up and pursue this important profession.

There are additional concrete action items that DBE can implement in order to work toward solving the education problems facing the country. First, DBE must work to bridge the gap between themselves and SADTU in order to build cohesion and properly work on policy changes. Next, SADTU, as the dominant teachers union, should shift from an industrial union model to that of occupation unions in order to discourage party allegiance and better suit the real concerns teachers have. Professionalizing the SADTU in South Africa will provide access to better training and more say in curriculum decisions. In doing so, the DBE also must eliminate cadre deployment practices by holding those who adhere to corrupt practices accountable. Lastly, DBE must re-evaluate and fix the education and training programs for emerging primary school teachers, which could be achieved with the help of a newly structured South African teachers union.

TEACH South Africa Expansion

One initiative that could shift the future of education in a more positive direction would be an expansion of a TFA-style program that could be customized for South Africa. While there is an existing TFA-style program in South Africa known as TEACH South Africa (TSA), it is a smaller-scale operation. Given the current level of brain drain, with the brightest educated minds leaving the country to pursue professions abroad, the DBE should implement a program designed to encourage promising young leaders to stay. The premise of this recommendation is to mirror the scale and efficiency of TFA, while applying and tailoring it to the specific needs and wants of South Africa, in order to constitute a Teach for South Africa (TFSA) program.

TFA has an impeccable track record and therefore has built a strong reputation within the United States. Over 29 years, they have

built a coalition of 62,000 alumni and corps members throughout the 50 regions they serve. Currently, their network includes 14,000 teachers; 3700 school principals, assistant principals, and deans; more than 300 school justice advocates and leaders; 500 policy advocates; and nearly 200 elected officials (TFA, 2020). Their mission focuses on ensuring that teachers who participate in the TFA training and classroom experience use the skills they gained and carry them forward throughout their career, whether as a teacher, principal, politician, or social justice advocate fighting for improved education quality. According to the TEACH South Africa website (2020), the existing TSA model in South Africa has placed only 553 ambassadors in 287 schools across the country since their launch in 2009. The current website for TSA is easy to follow and gives information about the application process and their mission; however, they clearly have not been able to establish themselves well enough to supply a greater quantity of teachers. A rejuvenation of TSA would make an insurmountable difference, so that the existing program can mirror the prominence and efficiency of TFA.

Following the TFA model, TFSA would be laid out as a series of consecutive steps. First, the organization would take a hands-on approach to recruiting top students from the best universities throughout the country. Students who express interest in TFSA would apply online, starting in the early fall of their senior year. The application process would involve numerous rounds of interviews along with written essays, as is standard procedure in the United States model. Following admittance into TFSA, college graduates would begin a summer intensive program where they would acquire the skills needed to teach and lead their students. The TFSA program would place emphasis on intensive language learning so that the language barrier in schools is addressed. Following completion of a TFSA

training program, college graduates would be placed with an underserved school where they will gain teaching experience and work with the surrounding community for a few years. Implementing a TFSA program not only will help limit the brain drain and encourage the best and the brightest young minds to teach in their home country, but also it will strengthen and professionalize the teaching core for future generations.

Conclusion

While the South African government has taken measures to drastically increase access to education for learners throughout the country in the postapartheid era, it has failed to ensure education is equal for all regardless of geographical location or socioeconomic status. There are significant disparities regarding access, quality, and outcomes dependent on school atmosphere and resources. Many of these discrepancies stem from the inconsistencies and inefficiencies regarding teacher training and placement and issues surrounding the environment within the SADTU. The unnecessary instability present within the administrative bureaucracy of the DBE is what continues to hold the country back in terms of educational progress, thereby violating the foundation they outlined in their constitution. Steps along the lines, as discussed previously, in three major areas of improvement— Collaboration Schools, restructuring of funding and unions, and teacher development programming—would go a long way toward resolving South Africa's underperforming educational system. In order to cultivate the bright minds of South African youth and provide students and teachers alike with more opportunities to work together and build a stronger South Africa for future generations, public education should be prioritized, thereby delivering on the government's promise of equality.

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RESTRUCTURING SOLID WASTE MANAGEMENT IN SOUTH AFRICA: OPPORTUNITIES FOR ECONOMIC GROWTH AND DEVELOPMENT

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South Africa is failing to manage the waste that its rapidly growing population is generating in urban areas. Existing waste infrastructure is deteriorating while environmental degradation, per capita energy demand, and unemployment continue to rise. This article examines how economic value can be derived from organic waste via anaerobic digestion methodologies to create a solution that synergically solves many problems related to a legacy of historically unsustainable development within the country.

Introduction

South Africa is a rapidly developing nation, but one that is largely failing at waste management. Effective management of municipal solid waste remains critical to the advancement of complex human settlements. South Africa cannot continue to grow effectively without proper attention given to collecting, storing, processing, and converting waste. The mismanagement of solid waste threatens and accelerates environmental deterioration, creates human population health risks, and contributes to unsustainable development of any given locality (Ferronato & Torrett, 2019). Continued population increases will only exacerbate the current situation.

Waste management in South Africa is primarily an urban problem. Most waste in rural areas is individually generated and organic; as such, it can be incinerated, composted, or stored in a dump with few environmental or public health-related consequences. However,

as populations grow and industrialization increases, the amount of waste and its material complexity (e.g., polymers, metals, and glass) tend to increase as well. In response, local governing authorities and private enterprises need to develop strategies to collect, transport, store, and process the waste. Instead of resolving its waste-related problems, South Africa's chief municipalities have chosen to avoid prioritizing the need for waste-related infrastructure for two main reasons. First, local governments in South Africa have argued that there are other pressing issues, including health care, unemployment, and poverty, that all require funding and attention. Second, the economic potential of waste has not been fully realized by governing authorities. I argue that, when effectively managed, waste can unlock economic value and transform South Africa's landscape.

Drawing primarily on the example of Johannesburg, this article explores how greater value can be derived from the waste stream and

added to the economy via effective management principles. When properly implemented, waste-to-energy methods can help unlock the economic value of waste. More specifically, in urban areas the successful implementation of anaerobic digestion (AD) methods of organic waste, including but not limited to food waste, can increase opportunities for economic development in the form of entrepreneurial opportunity as well as serve as a source for job growth. Such an approach to managing municipal waste offers a promising solution to a nested set of environmental, health, and economic issues facing South Africa's urban citizens.

The Current State of Municipal Solid Waste Management

South Africa first recognized waste mismanagement as a national concern with the 2008 passage of the *National Environmental Management: Waste Act, 2008*, under the auspices of the Department of Environmental Affairs. Prior to this measure, there was no formal direction on waste-related matters at the national level. Motivated by an increasing concern for environmental sustainability and good public health, both rights guaranteed to citizens under the constitution, a primary goal of the *Waste Act* is to reduce waste, promote recycling, and capitalize on the recovery and reuse of waste. The *Waste Act* established national oversight for waste management, while recognizing implementation must occur at the provincial and municipal levels. The *Waste Act* required development of a National Waste Management Strategy (NWMS), created in 2011 as a guide to provide specific tangible and implementable recommendations and action items for government authorities at the municipal level. Despite the efforts at the national level, however, most problems the *Waste Act* intended to solve persist and continue to grow, especially in South Africa's urban regions.

Johannesburg and its surrounding metropolitan area have a population of 10.5 million people. From 1950 (911,000) to 2019 (5.7 million), the population of Johannesburg city alone increased by approximately 500% (United Nations). This growth has overstressed

all forms of public and private infrastructure, including the management of solid waste and, when combined with competition for funding from more pressing concerns, diminishes hope for further investment in the collection, transportation, processing/recycling, and storage of waste materials. A lack of waste infrastructure results in nearly 90% of all waste being unrecycled and stored in landfills and open dumps (Department of Environmental Affairs, 2018). The Johannesburg metropolitan area contains four engineered and regulated landfills. Two are scheduled to reach their designed capacity by 2021, while the other two have remaining design lives of less than ten years. In poorer surrounding townships, where data are harder to collect, estimates show that more than half of the waste produced remains uncollected and that 95% of whatever is collected is placed into open and unregulated dumps (Ayeleru et al., 2018). These dumps are major contributors to environmental and health-related matters. These data illustrate a bleak but realistic image of the current state of waste management in South Africa's largest urban ecosystem. The remainder of this article explores challenges that arise within current management practices and an innovative suggestion on how they can be addressed and potentially solved.

Materials Recovery and the Involvement of the Informal Sector

Currently, the informal sector, through the work of waste pickers, collects nearly 80% to 90% of the waste generated in South Africa's urban municipalities. Informal waste pickers are self-employed individuals who scavenge from domestic and commercial sites, waste dumps, and roadsides for recoverable and recyclable waste materials (plastics, glass, metals, and paper products) to sell at private buyback facilities (Greiben & Oelofse, 2009). The government does not pay these pickers for their work, even though they deliver most waste-related services to the community. The remaining collection services in these urban townships are performed by a few charitable organizations, which collect only a select amount of presorted waste deposited at designated pick-up points. Waste pickers

face various hardships due to lack of personal protective equipment, toxic and unsafe work environments, and unfair treatment from purchasing agencies. Furthermore, these pickers are known to face high levels of violence and theft as they often carry valuable materials and cash (Schenck et al., 2019).

Most waste in urban areas is not source separated into organic and nonorganic wastes, which presents a large problem for the waste pickers since the most desirable, and profitable, materials may be contaminated with organic (e.g., food) matter, which decays rapidly and is valueless. This leads to a great deal of effort devoted to manually cleaning the materials. Once materials are collected and separated, they are transported to trading points referred to as buyback centers. These often are private enterprises known for nefarious practices and underpaying the pickers (Hettiarachchi et al., 2018). The buyback facilities serve as a bridge between the informal and formal sectors. The centers sell the cleaned, separated, and organized waste to manufacturers and other downstream recycling facilities.

Although the overall recycling rate in South Africa is only 10%, 34% of all nonorganic recyclable materials are recovered from the waste stream (PlasticsSA, 2018). This level of recoverable materials recycling rivals European and American standards, where widely adopted environmental laws and regulations are enforced. This high-level collection of recyclable materials is due primarily to South Africa's waste management system, particularly in poorer and urban areas, being driven by economic incentives rather than by well-enforced, environmentally focused legislation and regulation. High unemployment and a low supply of formal work arrangements force low-skilled and poor individuals to become scavengers (Godfrey & Oelofse, 2017).

The *Waste Act* requires government officials at all levels to increase waste management activity strictly on the basis of its ability to improve the environment and public health, making no mention of the informal workers and their contributions to the economy and society. The *Waste Act* fails to mention the economic impacts of waste management and

how waste resources and the informal picker-based economy can be valorized and leveraged to potentially increase efficiency, reduce waste management costs, and create sustainable value and growth within local economies. Environmental sustainability is a valid reason to motivate waste management practices; however, efforts from government also should leverage existing informal structures.

The Challenges of Organic Waste

A 2016 University of Johannesburg study empirically measured and analyzed the composition of waste in Johannesburg by looking at affluent areas as well as poorer townships. The study concluded that affluent areas of the city produce 14% organic waste by mass, whereas the poorer surrounding townships produce closer to 34% organic waste (Ayeleru et al., 2018). The lack of infrastructure in poorer areas, combined with higher levels of organic waste, leads to larger-scale environmental problems. In open dumps, the organic waste is left to naturally biodegrade. When this process occurs, large amounts of biogas (including common greenhouse gases) are released into the atmosphere, and rainfall moving through the dump creates leachate that enters the water and soil. The waste also creates unpleasant sights and odors for residents nearby.

The organic waste component's tendency to contaminate inorganic waste is a pressing matter for all recycling-related activities, which, if resolved, could at the same time ameliorate existing recycling efforts and increase economic value. An emphasis on greater source separation up-front undoubtedly would induce better recycling rates for the recoverable materials segment in the townships (Hettiarachchi et al., 2018). Currently, there is little value attributed to the organic waste fraction; hence, a method that increases value from this component, while also addressing increasing energy needs, surely can enhance waste management efforts.

Anaerobic Digestion: A Solution in Waiting?

Waste-to-energy solutions in the form

of AD may be the most promising solution to address most of the problems related to organic waste. AD is a process through which organic waste, such as domestic food wastes, farm wastes, wastewater, and other biomass, are naturally broken down in the absence of oxygen. There are two main outputs of the AD process that can be captured and stored (Freese & Han, 2019). The first is biogas, which is composed of methane and other energy-rich gaseous molecules. Another is digestate, which is a nutrient-rich sludge suitable for use as a fertilizer in agricultural applications. AD allows control of an otherwise harmful and environmentally dangerous breakdown of organic matter. AD technology allows for the valorization of organic waste and thereby the ability to realize the economic potential of organic waste.

A diversion of waste from landfills can alleviate current burdens on the landfills specifically and the environment more broadly. The biogas output of AD can help individuals and families meet their energy demands in the form of electricity or direct heating potential from the gas. An example of such an approach exists in the Vhembe district of the Limpopo province. Here, the main feedstock for the digesters is not organic food waste but rather agricultural wastes including manure. The gas is used primarily for cooking and heating purposes (Rasimphi & Tinarwo, 2020). This type of adaptation of the technology can valorize waste material, creating economic pressures and drivers to expand waste management infrastructure. Greater challenges ensue when attempting to implement this technology in urban settings.

In urban areas, a major organized effort must be actively and reliably functioning in order to support any AD project. A potentially useful model for South Africa to consider exists in a project planned for the city of Dar es Salaam in Tanzania. Dar es Salaam has a population, poverty level, and organic waste generation rate similar to Johannesburg. As a result, Dar es Salaam faces many of the same problems as Johannesburg related to waste and the environmental issues it causes. Dar es Salaam's provincial government ordered a feasibility study for the Taka gas project to ease the burden

of waste being illegally dumped or landfilled, while also generating electrical power for the city's grid. The project was never commissioned due to bureaucratic reasons; however, the underlying analysis in the feasibility study still holds (Kumar). The project estimated using 60 tons of organic waste per day to produce 4.91 MWh of electricity daily. The project identified the procurement of source-separated organic biomass as a primary constraint, potentially limiting the project's success. Project managers were aware that poorer areas within the city have only a 20% waste collection rate, which is not separated by type (Mbuligwe, 2002). Thus, rather than initially focusing on domestic sources for their feedstock, the Taka gas project managers planned to go after commercial waste generators, which include restaurants, hotels, and butcher shops. These establishments are known to produce high volumes of organic waste and are forced (via regulation) to maintain good waste disposal practices.

By working with these types of businesses to develop better collection sites and methods, the Taka gas project surveyors were able to predict the critical mass needed for daily operations. The team also partnered with local groups to devise a strategy to collect waste from noncommercial domestic areas with low collection rates. They realized that many poor residents of Dar es Salaam did not have proper waste bins and other personal waste storage mechanisms. As a result, the Taka gas project group suggested partnerships with NGOs to distribute a two-bag system to individuals, one bag for organic wastes and another for inorganic material. According to the study, this method was proven to work in urban areas based on past success in other localities (Mbuligwe et al., 2004). This case study and its subsequent results can be extrapolated as a potential model solution for implementation in Johannesburg. Some conditions, including waste transportation and real estate considerations, disallow an exact adaptation of the Taka project in Johannesburg. However, this project proposal study suggests that it is possible to monitor and regulate the nature of waste in an urban environment that faces similar challenges.

Infrastructure and Policy Issues

The primary driver for developing advanced AD technological infrastructure is for government at all levels to realize the role of waste as an input to create valuable economic outputs through the medium of waste-to-energy technologies. Despite AD's positive characteristics and features in the field of waste-to-energy technologies, it has not experienced widespread adoption and growth in South Africa for a variety of reasons. A lack of funding opportunities and legislative frameworks that encourage alternative energy sources inhibit the growth of a biogas-based industry (Goemans, 2017). Unfortunately the *Waste Act* is not well enforced and in any case lacks attention to the technological and infrastructural support needed for advanced technologies such as AD to thrive (Godfrey et al., 2019). AD technology requires collected and source-separated waste, which is accessible only in small quantities in poor urban areas, notably the townships surrounding Johannesburg. A lack of government support in the form of relevant policies and incentives also makes the adoption of the technology unfavorable. To date, South Africa's government entities have neglected to create well-designed waste collection and disposal service systems to enforce existing policies.

Although the lack of physical infrastructure prevents the technology's implementation and adaptation, there are other important reasons impeding its growth. The abundance of and reliance on coal create market conditions where biogas is not competitive for electrical generation. South Africa's policy of maintaining its own electricity and gas utilities, with large state-owned enterprises, creates a high barrier to entry for new players to enter the market. This is a major structural issue that must be addressed prior to any adaptation of waste-to-energy-based technologies, including the AD of organic waste.

AD technology has characteristics that solve several waste, environmental, and economic-related problems; nevertheless, it has some important structural flaws. First, high capital costs can be an issue when it comes to project type and scale. In the Taka gas project,

there was an estimated \$4 million in capital expenditure for initial commissioning, with an expected payback period of 20 years. Lengthy payback periods like this are common for large-scale capital-intensive infrastructural projects, but they still can serve as a barrier, especially if private funding is sourced. Furthermore, there is a fundamental risk associated with ensuring that adequate feedstock is procured. Many of these plants need a critical mass of biomass in order to meet production goals. If the waste management infrastructure is not planned and developed correctly, there is no guarantee of success. During the planning stage, project planners must put equal effort into enforcing waste management practices and the technology of biogas production itself.

Waste Economics

The potential economic impacts related to the implementation of AD technologies in South Africa's urban areas are vast. This section analyzes the impacts on two levels: first, a discussion of AD technology's ability to valorize organic waste through the creation of markets, and, second, a study of how the economic value can be directly or indirectly realized by individuals participating in the waste economy. The first part introduces the idea that desired outputs create a strong demand for inputs. Biogas's applications, or outputs, include electrical generation, heating, industrial applications, and transportation fuel. In addition, the digestate has an agricultural application for fertilizer production. The second part discusses the entrepreneurial opportunities and subsequent employment creation potential that the introduction of AD technology can have on South Africa.

Market Considerations

A majority of waste management activities currently practiced in South Africa, particularly in the informal sector, are economically driven. The current perspective forces policy makers to view the act of waste management as an expensive endeavor for municipalities and other stakeholders that are responsible for implementing waste management strategies. This implicitly leads individuals to see waste

as a negative-value, cost-generating liability. By attempting to create value out of waste, incentives for players to enter the market present themselves and drive competition, helping to solve all the issues related to waste management (e.g., environmental, health, and employment). AD methodologies for organic waste allow for the valorization of the largest and most underutilized waste fraction. Creating value for waste allows it to be an asset and input into a process that creates highly desirable outputs. The economic opportunity also will encourage players in the private sector to join AD-related projects. The economic effects would be realized not only in the direct organic waste markets but also in the auxiliary markets and existing recycling and materials recovery economy.

Even without the processing of organic biomass via AD methods, there already exists tremendous potential available in the inorganic materials recovery and recycling markets for paper, plastics, glass, and scrap metals. Although it is hard to estimate the market for plastics, paper, and glass, the metals market is heavily monitored by intelligence agencies and alone is valued at about R25 billion (PlasticsSA, 2018). Enhanced organic waste diversion from waste streams via AD technology would reduce contamination and increase the value of the materials recycling markets. Aside from the inorganic material recovery process itself, there are many other auxiliary services that are part of the waste supply/value chain, including collection, separation, processing, purchasing, and transportation services.

The value derived from gas capture of organic waste processing can promote increased source separation. Source separation is proven to increase the results of anaerobic digestion in controlled experiments (De Baere, 2006). Furthermore, the traditional materials recovery markets would grow along with the organic materials market, because a main hindrance to development in the material recovery market is cross-contamination from organic waste. This growth would drive and incentivize entrepreneurs to create ventures in the broadening recyclables markets and auxiliary services. Greater market value for inorganic waste could promote greater

economic incentive to collect previously uncollected waste, primarily in rural areas, requiring manpower and organization best handled via localized small and medium-sized enterprise (SME) participation in municipalities.

The introduction of biogas—a competitor to existing commodities in heating, transportation, and industrial/manufacturing uses—likely would have the largest economic effect on integrating organic waste into the energy marketplace. The potential value of biogas has not yet been priced; however, it can be compared against its most similar substitute, natural gas, a regulated and state-controlled commodity given proper market conditions. The success of an economic approach to waste is highly dependent on the willingness of the government to shift away from very large state-owned enterprises to deliver services to its citizens. These include Eskom and PetroSA, entities that have a stronghold on the electricity and energy markets, respectively. South Africa recently has shifted focus to allow for more private participation within the economy. However, there is continued hesitance to give full control and ownership privileges to the private sector, and Eskom and PetroSA, which have a majority control of the electricity and energy (oil and gas) markets, likely would be resistant to change. The fact that the NWMS specifically calls out for the creation of new employment enhancing SMEs in the waste management space is a promising development, one that may create legislative pressure for the large state-owned enterprises to come to terms with the idea that there might be some smaller players in their markets.

In order to proceed with the development of AD technology, it is important to develop feasibility studies with accurate cost analyses, allowing the determination of the most appropriate scale for the facilities. There is no way to determine what is truly the best method of implementation, given that no specific AD-based surveys have been carried out. A specially designed survey and feasibility study must be conducted by the parties that want to implement AD technology, which would require a highly interdisciplinary team consisting of economists, waste specialists, engineers,

financial modelers, and analysts, among others. This is a key recommendation for the future if this technology is to be implemented.

Incentives to provide rewards and penalties for individuals to participate in waste management practices that support the development of AD technologies and the required infrastructure supporting them should be developed. These should include programs to further increase source separation, collection, and transportation of organic waste from the generation site to the final processing site. The best way to facilitate an organic waste market is to modify the existing healthy recoverable material markets to facilitate organic waste. This leverages existing infrastructure at buyback facilities to handle the exchange and purchase of organic waste. The seller side could be individuals or SMEs set up with the incentivized goal of collecting waste. Organic waste buyback incentives have been proposed by Hettiarachchi and colleagues (2018). They include providing citizens with waste bins, taxing organic products prone to waste at higher rates, and paying the supplier by weight. The purchaser side of the market initially would be the responsible government entity or the commissioner of the initial AD project. As competition increases, more players presumably can enter the purchasing side as well.

Entrepreneurial Opportunities

The expansion of waste and associated environmental services programs presents entrepreneurial opportunities for the creation of SMEs with their associated employment. One of the NWMS's primary goals is to grow the contribution of the waste sector to the green economy by creating 2600 SMEs that will employ 69,000 new workers in waste service delivery and resource recovery (Department of Environmental Affairs, 2011). The NWMS also warns local governing authorities that effective implementation of its recommendations cannot be successfully accomplished by the public/government sector alone; the public sector must partner with and seek the active involvement of private industry, NGOs, nonprofits, community-based organizations, and cooperatives/trade unions. There are many national and international

funds that support entrepreneurial activity in the sustainable development domain, of which waste management is certainly a major part.

South Africa has extremely poor rates of entrepreneurship and business ownership overall, particularly amongst black citizens, which the government has attempted to solve via subsidizing large programs such as the Broad-Based Black Economic Empowerment (BBBEE) program (see the article by Buonasora in this volume). Given that a majority of the waste problems occur in poor areas, where mostly black citizens reside, the potential for BBBEE to be involved in relation to waste management is fitting. Entrepreneurial activity leads to job creation, of which South Africa is in dire need, with unemployment rates exceedingly high. AD technologies implemented in the right ways not only can solve the direct environmental and public health concerns related to the mismanagement of waste but also help potentially address the overall poor economic state of the nation when it comes to the creation of private enterprise and added employment.

The Southern African Biogas Industry Association (SABIA) is a leading group composed of academic and practicing business professionals, which actively monitors the emerging markets surrounding biogas in South Africa. SABIA has published projections for job market growth, if broad-based adoption of organic material waste-to-energy projects are in operation throughout the country (SABIA, 2016). SABIA estimates that by 2030 a conservative estimate of 59,000 new jobs can be created through direct employment (operations and maintenance of facilities) in the biogas market (SABIA, 2016). There are no estimates for the auxiliary services and products markets, which include digestate and fertilizer markets, but they would only add to the employment opportunities. Collectively then, the job creation ability of AD technology can reinforce expansion of and improvements in the waste management domain.

Conclusion

As South Africa's urban areas continue to grow, greater amounts of waste will be produced, and a growing demand for energy

will ensue. Increased waste generation will continue to burden the existing and aging infrastructure. Most waste is landfilled and/or uncollected, leading to organic fractions of waste to degrade, causing environmental and public health issues. Implementing AD technology provides a great solution to many waste-related problems by allowing for the conversion of organic waste into biogas and digestate, high-value products that have many uses.

AD technology has not been widely adopted in South Africa for a variety of reasons. Most significantly, there are legislative and infrastructural blockades that prevent the technology from thriving. A lack of attention in existing waste legislation to advanced technology prevents AD from being recognized as a viable method of solution. At the same time, South Africa's focus on large state-owned enterprises, particularly in the energy and energy services domains, hinders the implementation of a competitive biogas-based

market. A lack of state funding and resources also prevents the inclusion of new technological ventures and endeavors such as AD technology.

The benefits of implementing AD technology outweigh many of the potential costs. Setting up AD technology would result in significant entrepreneurial growth and hence job creation potential. The NWMS calls out for the creation of new ventures related to the waste management industry. New jobs and opportunities would not only be created in the new AD space but also enhance the existing recyclables markets. A reduction in cross-contamination of organic wastes due to increased source separation would allow pickers and other players in the recycling industry greater profits. Taken together, the potential benefits from introducing contemporary AD technologies far outweigh any perceived drawbacks, economic or otherwise, and should be promoted directly at the national and municipal levels if South Africa is to achieve its vision as an advanced economy.

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