

Between energy and politics: Ruin, renewal, and the contours of state power in post-apartheid South Africa

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Abstract

South Africa's energy system is in the midst of significant change and disturbance. On the one hand, a decrease in available generational capacity means that planned blackouts, known as load shedding, have increased to record levels over the last few years; on the other, the country has instituted an ambitious agenda to decarbonize its energy infrastructure. These processes have both caused upheaval across the country's cities and raised questions regarding the politics of infrastructural provision and development. This article contributes to these debates by exploring the confluence between infrastructure, urban development, and (geo)politics. In particular, we put concepts from critical infrastructure studies (ruin, renewal) into dialogue with Gramscian traditions of political economy in order to analyze what the ongoing breakdown of South Africa's energy system reveals about shifting power dynamics within the state apparatus. Likewise, we ask whether multi-scalar processes of infrastructural renewal will produce more equitable energy futures. We posit that the energy crisis is creating the pressures and policy space for a considerable reorganization of South Africa's governance, largely taking the form of decentralization wherein large cities attempt to attain significantly more autonomy vis-à-vis the central state. Nevertheless, as the crisis engenders movements and counter-movements, renewal is likely to be a protracted, and contested, process.

Keywords

Infrastructure, South Africa, energy, decarbonization, state transformation

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Introduction

Immense changes are taking place within South Africa's energy infrastructure as it comes under increasing strain. On the one hand, the country's energy crisis, ongoing since roughly 2018, worsened significantly in 2022 and 2023, resulting in over 540 days¹ with rolling blackouts of varying lengths – locally referred to by the technical term load shedding – across the two years.² The blackouts are caused by a deficit in generational capacity owing to necessary maintenance to existing infrastructure, unplanned breakdowns, and the continuing failure to bring the Medupi and Kusile power plants to full capacity.³ The pair, designed to be among the largest coal-fired plants in the world, was seen by the state as vital to the country's energy future; yet they have gone far over schedule and budget and remain only partially operational (Ziady, 2023). As a result of these issues, Eskom, the state-owned enterprise (SOE) that produces 95% of the country's electricity, has roughly 50% of its capacity available for distribution, a record low (Baker and Phillips, 2019; Yelland, 2023).

On the other hand, a number of ambitious plans to transform the energy system and move South Africa away from coal power, which generates upwards of 80% of the country's requirements, have been unveiled over the last few years. The most significant of these is the Joint Energy Transition Investment Plan (JET IP). Launched in November 2022 at the 27th United Nations Climate Change Conference (COP 27) by President Cyril Ramaphosa, the JET IP is an elaborate 5-year agenda that creates a framework for decarbonizing the country's energy and productive systems. Broadly, the JET IP lays down the conditions and investments required to fully implement South Africa's climate commitments. It creates a plan for spending the 8.5 billion USD energy assistance package (the Joint Energy Transition Plan (JETP) – see Omarjee, 2022) pledged to South Africa by the US and EU at COP26, while acknowledging that an additional 86 billion USD in funds⁴ will be necessary for the full transition (The Presidency, 2022). This comes on the heels of other initiatives, such as the decommissioning of coal-fired Komati power plant in Mpumalanga and its replacement with a renewables plant funded by the World Bank (Eskom, 2022; World Bank, 2022).

The current infrastructural moment across South Africa's energy system can thus be understood as the confluence of two broad trends: a push toward *renewal* in the form of decarbonization initiatives like the JET IP, and the reality of ongoing *ruin*. These trends have caused massive upheaval across the country, though their effects are particularly noticeable in large urban centers⁵ for two main reasons. First, South Africa's cities are home to a growing share of the country's population (42%), economic activity (60%), energy consumption (54%), and emissions production (39%) (Baker and Phillips, 2019; Sustainable Energy Africa, 2020). Second, cities serve as command-and-control centers for some of South Africa's most important economic sectors (e.g., mining, finance, manufacturing). Therefore, considering their significance within broader structures of accumulation and power, we contend that major cities represent points at which the dual trajectories noted above find their most acute expressions.

On a quotidian level, the effects of the trends have been considerable. Neighborhoods have been left without water when load shedding occurs (Patrick, 2022), large and small businesses have been hit by additional costs related to diesel procurement for generators or solar power installation (Siwele, 2023), and many residents face struggles such as blown appliances, planning daily tasks around power availability, and gridlock due to nonfunctioning traffic lights (Woosey, 2023). Yet even as South Africa struggles under a lack of energy availability, the Hendrina, Camden, and Grootvlei power stations – which account for roughly 10% of total installed capacity – are scheduled to go offline in the next few years

as part of the country's climate change commitments (Erasmus, 2022). At the structural level, the specters of transformation and decarbonization have raised significant questions regarding national accumulation strategies and responses to existing inequalities, many of which are articulated through and within cities. As Maggott et al. (2022: 9) detail, South Africa's energy system has historically been based on the 'exploitation of cheap, black labour' as it was designed to power the country's particular form of racial capitalism, which today has shifted to take the form of a financialized Minerals-Energy Complex⁶ (MEC) (Ashman et al., 2013; Surborg, 2012). Additionally, while the post-apartheid era has seen the construction of energy infrastructure on a large-scale, load shedding has predominantly affected urban township residents, given their neighborhoods' more frequent outages/reductions, dependence on electricity for daily tasks, and inability to set up alternatives to grid-based power, ultimately reinforcing extant (racialized) marginalizations (Lowe et al., 2023; Maggott et al., 2022). The transformation of the energy system has thus made visible the oft hidden sphere of infrastructural provision (Larkin, 2013), and engendered debate on both the current form that the system takes and possibilities for more equitable energy futures.

This article contributes to these debates by exploring the convergence of infrastructure, urban development, and (geo)politics. Moving beyond the immediate drivers and effects of the energy crisis, we focus on two questions that have arisen from the current infrastructural moment: (1) what does the energy system crisis reveal about shifting power dynamics within the South African state? and (2) are emergent formations producing more equitable/just energy systems or reinscribing existing racialized, colonial legacies of power?

In answering these questions, we bring together perspectives from critical infrastructure studies and Gramscian traditions of political economy. From the former, we draw on two key concepts – *ruin* and *renewal* – in order to both organize the analysis and examine current energy sector developments in a manner attuned to their material, semiotic, and temporal dimensions. Likewise, we build on the literatures' conceptualization of infrastructure as reflecting and recursively (re)inscribing particular orders and power relations into space and society, which of course also co-constitute (Lesutis, 2022). Indeed, the literature has long held that such systems are directly related to socio-political trends and the nature of state–society relations. Few places exemplify this more than South Africa as apartheid was a project that “depended upon and was conjured into being by specific infrastructures of power” (von Schnitzler, 2018) and the state has placed major emphasis – materially, politically, discursively – on infrastructure provision in its post-apartheid nation-building program. As Hill (2017: 29) summarized: “just as states produce infrastructure, infrastructure produces states”.

From the latter literature, we draw and develop on Gillian Hart's (2002, 2014) conceptualization of South Africa's post-apartheid governance crisis in the context of Gramscian state theory. In particular, we build on Hart's view of local government as the key site where the contradictions present in South Africa's political, economic, and social spheres manifest most visibly – and add to this conceptualization by arguing that the importance of cities within this framework has increased significantly. This combined perspective allows us to utilize energy infrastructure as a lens from which to understand the shifting contours of state power/organization and broader state–society relations in the present environment of transition. Similarly, it allows us to highlight the socio-political barriers to creating more equal systems of energy generation, transmission, and diffusion.

In this article, we argue that the energy crisis has emerged from – and accelerates – the particular form of governance that has developed in the post-apartheid era: in simple terms, a combination of top-down neoliberalism and state capture.⁷ Likewise, we contend that

processes of infrastructural ruin across the energy system have both created pressure and opened up space for significant political restructuring, particularly decentralization and devolution of power to the municipal level, although the manner in which this manifests is subject to locally situated path dependencies and power dynamics. Nonetheless, as the energy crisis engenders movements and counter-movements, renewal is likely to be a protracted and contested process with actors across different levels aiming to strengthen their positions. Finally, the character of renewal – influenced by domestic dynamics including the authority of actors operating through varied incentive and political opportunity structures, competition between cities for financing and capacity, as well as the power differentials in the negotiation process of initiatives like the JETP – is thus far limiting its effectiveness in terms of inducing more inclusive outcomes, in a manner that intensifies extant patterns of societal struggle.

The rest of the article will proceed as follows. In the next section, we detail the theoretical framework. We aim to highlight the intrinsically political nature of infrastructural ruin and renewal, and put this into dialogue with Hart's (2002, 2014) conceptualizations of South African governance. Subsequently, we turn the framework toward the energy system, evaluating the manner in which infrastructure has been created, presented, and leveraged as a political tool during the post-apartheid period, before analyzing the effects of the energy crisis on political structures. Following this, we detail the ongoing processes of (and plans for) systemic renewal and examine how these are affecting the character and shape of state power. Finally, we reflect on the multi-scalar socio-political barriers to creating more just systems and implementing plans like the JETP.

Infrastructural politics in time and space

As noted in the introduction to this special issue, the last decade or so has seen a significant increase in the scholarship on global infrastructure in the critical social sciences. This literature has, for the most part, focused on how infrastructure and related systems underpin global economic, political, and social geographies (Anand et al., 2018; Harvey and Knox, 2012). As Larkin (2013: 275) notes, not only does infrastructure bind together different scales (e.g., local, national, etc.) by enabling, shaping, or constraining the circulation of goods, people, and ideas, but the infrastructure systems themselves can become symbolic of particular configurations of power. In essence, the material nature of infrastructural systems conveys intrinsic political power as infrastructures are made visible by actors aiming to benefit from their construction, for instance via inauguration ceremonies or campaign speeches (Reboredo and Gambino, 2022; von Schnitzler, 2018).

Within the emerging literature on infrastructure, diverse understandings of ruin and renewal exist, though they are brought together by a foregrounding of political practices in each (Beasley-Murray, 2017; Howe et al., 2016; Kimari and Ernstson, 2020; Velho and Ureta, 2019). Moreover, they are understood as both moments and processes. Howe et al. (2016: 5), for instance, conceptualize ruin as a paradox of infrastructure in that even as “infrastructure is generative, it degenerates”. Processes of degeneration – and accompanying political consequences – vary on a case-by-case basis yet they are always intimately tied to “forms of governance and experience”. The creeping ruin or degradation of certain infrastructure systems can thus be seen as the deterioration, materially and symbolically, of state power/legitimacy and rationalities of rule. In her study on public housing in Cape Town for instance, Lemanski (2020: 18) highlights how failing infrastructure can serve as a landscape of struggle and contestation. While the state attributed the origins of infrastructural problems within public housing stock as “inappropriate citizen behavior”, the citizens on the

other hand perceived the state as failing in their duty to deliver services to the poor. In the author's words (Lemanski, 2020: 18), processes of ruination "mirror, and to some extent [contribute] to, a break-down in the state-society relationship". Yet ruins also provide the discursive and material scaffoldings for new projects in that these can either recycle discourses/imaginaries used in past projects or, simply stated, build on top of the old.

As Aalders (2021) suggests, the ruins of older infrastructures – built during colonialism – continue to shape the current drive towards connectivity on the African continent, particularly in terms of the spatial visions they produce and the highly centralized, top-down character of decision-making processes (see also Enns and Bersaglio, 2020). In South Africa, it is the internal colonial system (Wolpe, 1975) created via apartheid legislation that continues to cast a shadow on infrastructure projects – both in terms of new constructions and retrofittings. For instance, new power stations must interface with grids created during the previous era, likewise path dependencies related to coal-powered energy have limited the space for reform (Lawrence, 2020).

For Howe et al. (2016: 3), renewal forms a second paradox of infrastructure as it highlights that infrastructural solidity is more "apparent than actual"; in other words, it must be constantly repaired in order to fulfill its promise. Yet as with ruin, processes of renewal are always imbued with political imperatives. Indeed, it is in this coming together of the old and new that retrofit and renewal become significant, and politicized, practices. For instance, as highlighted by Velho and Ureta (2019: 434), in the case of Santiago, Chile, where "repair usually comes with concepts of normalization, and is not really centered on fixing a failing infrastructure, but on maintaining the kind of rule originally associated with it", although it must be noted that multiple motivations, dependent on the actors, are often involved. Questions regarding renewal – and its politics – are particularly important in post-colonial contexts since formal political channels may be inaccessible to large segments of the population (due to historical reasons/path dependencies), including the underemployed, informal workers, or formerly marginalized communities. Focusing on infrastructural renewal can illuminate areas where ostensibly political questions become technical fixes that maintain structures of power (von Schnitzler, 2013).

Finally, processes of ruin and renewal can become imbricated with geopolitics, linking the local to the global. For instance, as Kimari and Lesutis (2022: 67) document, large-scale developmental megaprojects in Kenya – discursively positioned as sites of national infrastructural renewal – have become what they term "symbolic geopolitical architectures of development" via the inclusion of a variety of Chinese state actors operating across different levels (from policy banks financing the project to on-site Chinese contractors hired by SOEs). The politicization of Chinese lending (and service delivery) patterns across the developing world means that projects like the Standard Gauge Railway, the Thinka highway, and the Jomo Kenyatta International Airport-Westlands expressway are placed at the center of broader geopolitical competition – largely via discourses related to debt management, for instance the "debt trap diplomacy" narrative (see Carmody, 2020) – even as they transform places and spaces within Kenya.

In South Africa, the JETP functions in similar fashion. Throughout the Ramaphosa presidency, South Africa has ostensibly sought to position itself as a neutral party between the two emerging geopolitical blocs of the current moment in international politics – the 'West' and 'China' (Reboredo, 2023), although recent events like abstaining from a UN vote condemning Russia's annexation of Ukrainian territory and participation in the Mosi II naval exercises with Russia and China, which coincided with the one-year mark of Russia's invasion of Ukraine, have led to condemnation by Western politicians and diplomats. The JETP and its associated infrastructures can thus be understood as creating new points of

reliance for South Africa with the US and EU, and may provide leverage for Western countries in terms of applying pressure on South Africa's foreign policy. Indeed, while the JETP was agreed upon in the context of Ramaphosa's investment drive (Smit, 2023) – ideally bringing in necessary capital to the country's ailing systems – and the administration's desire to strengthen relations with traditional partners following the Zuma administration's embrace of the BRICS (see Reboredo, 2020), it can be seen as tying the country's infrastructural future to particular visions of modernity/international politics (see below).

Applying the critical infrastructure literature to the South African case thus allows for analysis of the practical as political and highlights how infrastructure serves as a useful lens for understanding the multi-scalar structure of societal politics. However, for deeper insights into the ways in which the energy crisis affects the South African state, the particularities of the country's current political moment must be foregrounded. It is here where the understandings of South Africa's post-apartheid political landscapes put forth by Hart (2002, 2014, 2015) are useful. Building on Gramscian notions and the post-Gramscian intellectual project, Hart's scholarship is attentive to both materiality and meaning, laid out along particular historical and geographical contours.

In the case of post-apartheid South Africa, Hart has pointed to four major political tendencies that have intensified since the mid-2000s: (1) proliferating expressions of discontent manifesting as protests (often directly related to infrastructure and service provision), (2) growing tensions and splintering within the African National Congress (ANC) (South Africa's governing party), (3) increasingly visible populist politics across scales, and (4) increasingly fruitless efforts to manage growing inequality and rising government expenditures at all levels. Yet throughout the period, the ANC has been able to, in Hart's (2015: 7) words, 'keep a lid on things' via social grants and infrastructural provision among other programs, preventing political rupture. We argue that processes of ruin across the energy system can be understood as shattering the ability of the ANC to juggle the overlapping tendencies and create both the pressures and space for transformation within the state. This is because ruin across the energy system – unlike other infrastructures, for instance road or rail – is highly visible across society and massively disruptive to the material and discursive underpinnings of a political project. We agree with Hart's (2014) conceptualization of the local level as the site in which these processes are most visible and manifest most strongly, yet argue that the energy crisis places large cities at the heart of the emergent contradictions since these serve as centers of political, economic, and social power and thus have significantly more capacity to push for renewal. Stated differently, we view the energy crisis as generating changes in the nature of multi-level governance. As Steytler (2017) notes, since 1994, South African governance has broadly settled into an hourglass shape wherein the national government and large metropolitan regions exert substantial power, to the detriment of the provinces; however, it is important to note that the exact distribution of power is dependent on the policy or issue area. This is especially significant in areas where unclear distributions of power exist (see Anciano and Piper, 2018). However, given Eskom's dominance over the energy system, combined with the developmental mandate given to municipalities, we view the energy sector as largely fitting the hourglass mold.

We argue that as the energy crisis makes it increasingly more difficult for the ANC to mitigate the intensification of the varied tendencies described above, space is created for a shift in autonomy toward the major cities as these aim to move away from the national energy grid. In a sense, mismanagement from the top levels, along with the negative consequences of extant ANC policies (and bids to regain control), is leading to pressure for a re-working of governance and regulatory arrangements. Yet rather than being a singular process affecting the country evenly, locally situated factors (e.g., technical capacities,

funding, alignment in imperatives between actors) will shape the character of transformation. For example, the character of intra-city competition with regard to the renewal of the energy system (see below) means that in certain areas (e.g., the Western Cape (WC)), provincial governments will gain further autonomy.

Ruin and (post)apartheid energy politics

Energy infrastructure was central to the apartheid project as the core of the economy centered around the MEC (Fine, 2018). Indeed, as noted above, von Schnitzler (2018) argues that infrastructure – of all types – was both emblematic of and crucial to apartheid. As a system of social engineering, separate infrastructures were created in the service/production of the internal colony. Evans (1997: 7) argues that infrastructure's centrality to the project was most visible in urban areas, as different projects were mobilized to “disorganize” opposition movements – which were largely based in cities (Robinson, 2008). South Africa's townships themselves highlight how apartheid-era planning and infrastructure followed the logic of security; indeed, beyond their barracks-like footprint and dormitory function, electricity was initially limited to floodlight poles so as to enable surveillance (von Schnitzler, 2018). It is unsurprising, then, that energy infrastructure became one of the many battle grounds of the struggle to end apartheid; on the one hand, bombings by uMkhonto we Sizwe, the armed wing of the ANC, often targeted power plants; on the other, activists within the townships included non-payment for electricity and contestation of energy charges into broader rent boycotts (von Schnitzler, 2018). Considering the wide-ranging exclusion of black South Africans from formal energy provision throughout the period, one of the main achievements of post-apartheid governance has been the extension of electricity to the majority of the population. Electricity access stood at 84.39% in 2020, compared with 58% in 1996. However, industry remains the main energy user at 50% of consumption, followed by the residential sector at 23% and services at 18%.

Chipkin (2007) has traced how discourses set forth by the post-apartheid state portray the ideal citizen as one who is empowered to transcend the confines of the old system via access to basic services and housing. The discourse thus portrays the country's racially determined barriers, and the apartheid era as a whole, as receding via infrastructure provision. Wafer (2012) and Lemanski (2020) both show how the extension of urban infrastructure and services during the post-apartheid period has been intimately tied to discourses of citizenship and belonging. Yet even as the post-apartheid infrastructure development plans sought to transform locales, they created their own inhibitory conditions, creating significant disparities between narrative and reality. Many of the housing redevelopment plans of the 2000s, for instance, concentrated vulnerable and marginalized populations away from centers of formal economic activity, which limited their effectiveness in terms of inducing sustainable growth and instead reproduced patterns of exclusion and the need for informal livelihood strategies (see Charlton, 2017). Levenson (2022) has shown how the logic of evictions and housing delivery has been entwined or co-constituted in the post-apartheid setting. Indeed the South African government has interpreted the Cities Alliance's “cities without slums” initiative as mandating mass clearances. Examples like this highlight how infrastructures (in this case water, transportation, sanitation, electricity), though often portrayed as impartial technical solutions to economic or political questions, function to bend human routines, experiences, and practices around them (Howe et al., 2016) and become a central political terrain. Infrastructure therefore has become a major cause/location of the proliferation of discontent – which leads to its increasing visibility in South African politics.

The central reasons for processes of ruin in South Africa's energy infrastructure, we argue, are contingent on the nature of state transformation in the post-apartheid era; in particular, the combination of neoliberalism and state capture which has emerged in that country: in other contexts this has been termed "Afro-neoliberalism" (Lee, 2014). It is important to note that neoliberalism in South Africa has been implemented in a context deeply imprinted by the state-led character of economic organization in the apartheid era. Therefore, while the Growth, Employment and Redistribution (GEAR) suite of macroeconomic policies adopted after the beginning of democracy leads to the widespread deregulation, increasing privatization of state enterprises, and liberalization across diverse sectors, the frameworks of apartheid's *national capitalism*, including parastatals like Eskom, remain highly relevant today. Indeed, it is these which were largely leveraged toward state capture.

Through the policy dynamics established by GEAR in the initial post-apartheid era, the South African state appeared to be characterized by a particular form of internationalization which could be seen as external state capture through processes of "negative autonomy" (Carmody, 2002), where the state appeared autonomous from the domestic social forces. However, that autonomy was in fact reflective of embeddedness with transnational forces, including South African conglomerates as they unbundled and transnationalised once the spatial constraints on their operations posed by apartheid were lifted (a process that Hart (2014) terms de-nationalisation). Through time, however, the inequality this economic strategy created engendered pressure for a shift in policy under the Zuma administration, in particular to a "developmental state strategy" (see Marais, 2013). Ostensibly an attempt to align remaining SOEs (including Eskom) with what the administration termed national commercial interests, the South African developmental state in reality served as a cover for a new form of state capture by the Gupta brothers and others in Zuma's inner circle. This conjuncture is sometimes reflected in the neologism "Zupta" to reflect the merger of interests between the President's political network and the businessmen (Bond, 2017).

Considering the nature of South Africa's system of accumulation, the aforementioned financialized MEC, securing access to energy and generational infrastructure was crucial to the state capture project. The Gupta brothers owned the Optimum coal mine from 2015, in addition to many other facilities and investments across the country, and managed to plunder the state coffers for years, with little oversight (Mahajan, 2019). As Dodd and van der Merwe (2019) detail, the Gupta network used connections with the state (e.g., ministers, officials, directors of SOEs), creating an assemblage of looting that stretched across the central government. The report of the *Judicial Commission of Inquiry into Allegations of State Capture, Corruption and Fraud*⁸ concluded that Zuma himself "knowingly and willingly facilitated audacious looting and wanton mismanagement at [Eskom] during his almost nine-year rule" (JGL Group, 2022).

According to the report, Gupta-linked firms entered into irregular contracts worth R14.7 billion over the years. Thus, there appeared to be a shift from the logic of negative autonomy to the "suspended state", where the state appears to float above society with little connection to its imperatives and needs (Samatar and Samatar, 1987). This conjuncture is one of the reasons why the ANC has been losing popular support and highlights how the energy crisis affects political society in varied ways. Likewise, the state capture saga has deepened the fragmentation of the party itself, with different blocs emerging along personal and ideological lines (Bowman, 2020).

Beyond the so-called Gupta leaks, which comprised 100,000 emails detailing state capture released to investigative reporters amaBhungane and The Daily Maverick, the ANC has also been beset by corruption scandals across all levels of government; for instance,

parastatals PRASA and Transnet have been involved in a number of questionable contracts relating to infrastructure like port facilities and railway development. These instances have furthered disillusionment across vast swaths of the population and significantly damaged the party's hegemonic position (in a Gramscian sense) (see Reboredo, 2023). Johannesburg, for instance, is now governed by a "rainbow coalition", including the far-right Freedom Party and the anti-immigrant party. Likewise, as per a recent poll, the ANC has been losing support in other urban areas and is now behind the Democratic Alliance (DA) in terms of broader urban support (Schreiber, 2022).

In a sense, this could be read as a moment of state-building as institutions are transformed, plundered and perhaps rebuilt in a dialectical fashion, mirroring trends in the energy sector. Of course the direction of reform is non-deterministic, with a variety of potential outcomes possible as the state may flip backwards and forwards from being more internally to more externally oriented as has happened in Zimbabwe, for example, (Carmody and Taylor, 2003) depending on which was more favorable for regime survival. Returning to Hart, we can understand the vast changes underway in the country's political system as both produced by and producing the energy crisis. All four of the political tendencies identified above have become more pronounced in the period since 2018, and the ANC appears to be at its weakest point of the post-apartheid era heading into the 2024 general elections.

Pathways of renewal

Considering the velocity with which load shedding increased between 2021 and 2023, there are now many plans to address it which emphasize the renewal of the energy system more broadly. Per one Johannesburg urban planner, while the municipality knew the trend was coming, 2021/2022 was a tipping point (personal correspondence, urban planner, Johannesburg, March 2023). Likewise, the newfound momentum builds on the loosening of regulations regarding municipalities generating or procuring their own electricity by the central government (Arnoldi, 2022).

Many, though not all of the plans, rely on renewable energy procurement. Yet the politics of green energy in South Africa once again highlight how the energy crisis both mirrors and accelerates processes of state transformation. As Baker (2017) notes, South Africa was once a leading destination for investment in renewables. This was done through the Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP). Writing in 2016, Death (2016: 176) noted that "South Africa's [RE IPPPP] has been widely praised for kick-starting the renewable energy industry in the country, and wind and solar energy now produce 5.2 gigawatts of South Africa's electricity supply". Nonetheless, between 2015 and 2018, the RE IPPPP stalled for a number of reasons: primary among these were political opposition and Eskom's refusal to sign energy purchase agreements for projects awarded under the fourth round of bidding (Baker, 2022).

As a South African energy industry analyst noted, Eskom, throughout the 2010s, opposed independent power producers, viewing them as a threat to their profitability (Personal Correspondence, Energy Analyst, Johannesburg, 2018). However, the utility was not alone in its resistance to RE IPPPP-led renewal; indeed, the wide-ranging character of opposition highlights the varied political landscape in which renewal efforts are taking place. Baker (2022) documents how certain factions within government and the private sector – largely associated with former president Jacob Zuma – and some trade unions also supported Eskom's opposition. The National Union of Metalworkers of South Africa (NUMSA), the country's largest, stands in opposition to RE IPPPP, describing

the program as largely serving the interests of foreign and locally-based white capital (Cloethe, 2018; Kamanzi, ND). These dynamics underscore the manner in which actors operating in the context of a fragmented political landscape can affect policy making and disrupt top-down approaches. This situation is not limited to the energy sector; in fact, as Charlton (2009) has shown, competing rationalities (i.e., logics and imperatives) have likewise affected housing provision. Yet in the energy sector, the fragmented landscape helps explain why reforms attempted in the past, for instance in 2001 when the cabinet approved “managed liberalization” which would include an Eskom unbundling and a diversification of the primary energy sources, have failed to reach the implementation stage (Lawrence, 2020: 3).

We contend, however, that the emergent crisis conditions have changed the energy landscape significantly since 2001 and even since 2018, though in a manner that produces pressure for further fragmentation rather than concentration of power. As stated above, the energy system has been deregulated to a certain degree with the changes to South Africa’s Electricity Regulations on New Generation Capacity legislation in 2020. In particular, municipalities are now able – should their finances be in good standing – to produce their own power. These factors, combined with the mandate established early in the post-apartheid era that local government is to be developmental in character (that is, highly proactive in ameliorating the spatial legacies of apartheid), have created the space for large municipalities to construct localized energy systems.

Over the last year or so (roughly stretching back to August 2022), a number of large municipalities have floated plans to move away from Eskom via decentralized energy generation (Businesstech, 2022; Chambers, 2023). These have differed significantly in terms of energy sources, Johannesburg, for instance, plans to recommission 74 MW of diesel-powered gas turbines and deploy smart meters that limit how much energy residents can use while Cape Town has published a tender for 200 MW of renewable energy (Kornik, 2023). Similarly, Durban plans to issue a proposal for 400 MW of energy, although the veracity of these claims has been contested (Sguazzin, 2022).

The scattershot nature of Municipal Energy Master Plans (MEMPs) is not lost on those participating in them. As per the Johannesburg planner, it appears as though “everyone has their own plans” yet the current situation reflects and hastens a growing unevenness between metros, particularly in terms of “which [cities] can get financing, capacity, etc” (personal correspondence, urban planner, Johannesburg, March 2023). Large cities are one of the few administrative bodies capable of using the newfound freedom to procure or produce energy. While MEMPs are becoming more common, many municipalities lack the ability to implement programs whether due to financial issues, lack of managerial capacity, technical skills gaps, or aging distribution infrastructure (Arnoldi, 2022). It is also important to note that despite these plans, the central government retains significant power in the form of access to financing, capacity, and through regulation and most plans are currently focused on shorter term goals, for instance mitigating load shedding.

Nevertheless, some provinces, particularly the DA-led WC, have sought to send a political message via new generational capacity – aiming to add 750 MW of supply by 2025 and 5700 MW by 2035 to cover local economic expansion (Sguazzin, 2022). Broadly then, the crisis can be understood as creating the conditions for further fragmentation of both infrastructural and political systems. Indeed, whether or not the plans discussed here reach full implementation, it is clear that there is an increasingly visible shift toward decentralization in terms of both energy generation and the governance of transmission and consumption. Following our arguments above with regard to the political nature of infrastructure provision, a more active role for provinces and municipalities signals a political shift that leads to

greater autonomy for large municipalities and changing the “hourglass” shape of South African multi-level governance (Steytler, 2017). However, the shift is likely to be fragmented in nature, with proactive provinces like WC gaining autonomy through cooperation with the city of Cape Town. This may also be the case in Gauteng, where recent reports indicate that the province has signed a memorandum of understanding with City Power – the power utility owned by the City of Johannesburg – to leverage newly planned generational capacity. Per City Power CEO Tshifularo Mashava, “The intention is that when we push extra load into the grid we can engage with Eskom for a reprieve not only for the City of Johannesburg but also for the other municipalities” (Luvhengo, 2023). However, cities whose goals do not align with those of the provinces may find themselves in a situation where multiple rationalities impede policy clarity and implementation (Charlton, 2009). Processes of energy system renewal can therefore be understood as both driven by but also fomenting further political incoherence across different scales.

Power dynamics and the (re)production of inequality

As detailed above, processes of ruin and renewal across the energy system are linked to, and accelerate, shifts within the state. Yet despite the evident necessity to renovate the energy system, as with other political processes, the character of infrastructural renewal is likely to be protracted and contested across different levels. We argue that the political nature of the power dynamics, involving each of the four tendencies that Hart (2014) identified, (re)produce conditions of infrastructural inequality.

At the local level, disruptions caused by a shift toward small-scale embedded generation (SSEG) – most often in the form of solar power – have spurred substantial debate (Fatti and Khanyile, 2023). The central government has encouraged the installation of SSEG, particularly solar panels, through the introduction of a rebate scheme that covers approximately 25% of the cost of the panels (Ferris, 2023). Yet as Baker and Phillips (2019) note, revenue from the resale of electricity to consumers is a major source of income for municipalities across the country. Ledger (2021) argues that this dynamic has become significant for many municipalities, leading to revenue enhancement being the key determinant of how they implement energy access policies, at times in contradiction to the constitutional mandate of ensuring delivery of basic services. Large urban municipalities in Gauteng and WC are also generally more dependent on electricity sales than peri-urban and rural ones; though per Viljoen and Dube (2023), many municipalities would face collapse without revenue from energy sales. SSEG development, particularly among high- to mid-income households, can therefore threaten the revenue stream that municipalities use to cross-subsidize electricity distribution for the poor (as well as other municipal services). Such a situation therefore foments further inequality and threatens the current service provision model for poorer households, particularly when combined with Eskom tariff increases. In essence, cementing and widening the already massive and (still) racialized gap between haves and have-nots and creating conditions for further protest. In Gauteng province, for instance, where Johannesburg is located, access to solar power for the highest income group has grown from 4% to 12% between 2015 and 2022, compared with from 0.3% to 3% for households with an income of less than 800 Rand a month (Fatti and Khanyile, 2023). Further exacerbating the issue are Eskom’s policies. As Maggott et al. (2022: 13) document, the townships and other historically marginalized urban areas have been at the heart of Eskom’s load reduction strategy wherein power is cut from areas where “residents cannot afford to pay their monthly electricity bills”. This builds on strategies such as the installation of pre-paid meters that cut township residents off from electricity services automatically in case of

nonpayment (von Schnitzler, 2013).⁹ The combination of increasing SSEG generation, shifting policies aiming to mediate Eskom's debt crisis (which itself is partly a byproduct of state-capture, unpaid debts from municipalities to the utility,¹⁰ illegal connections, and poor technical execution, among other factors), and growing unevenness between municipalities foregrounds the challenges in coordinating and implementing a concerted cross-scalar strategy to solve the energy crisis.

At the national level, the energy crisis has been widely politicized, creating political instability on top of the extant technical and political economy issues. Tensions and splintering within the ANC have manifested as an unclear distribution of mandates and persistent inter-departmental disagreements. For instance, President Cyril Ramaphosa recently appointed an Electricity Minister – Kgosientsho Ramokgopa – to take charge of the energy crisis. However, the president likewise walked back a bid to shift certain powers (i.e., energy procurement) away from the highly influential minister of mineral resources and energy, Gwede Mantashe (Hunter, 2023). Mantashe is on record as stating that renewables “[cost] Eskom more money than the government lets on” and has positioned himself as a skeptic of plans to quickly transition the energy system toward these energy sources (Nyathi, 2023). Instead, Mantashe and others within the ANC have preferred options like ship-mounted gas-to-power plants. The Turkish company Karpowership won the bulk of an emergency tender in 2021 and aimed to produce 1200 MW of power via three ships to be docked in major South African ports (Saldanha Bay, Richards Bay, and the Port of Ngqura near Gqeberha). However, the plan has hitherto been derailed by environmental concerns. In essence, the government's inability to set a clear agenda even in the midst of crisis and ruin highlights how the internal fragmentation of the ANC continues to affect policy. Yet these policy failures also create space and pressure for the alternative pathways discussed above.

Finally, significant questions remain regarding international support for South Africa's transition. NUMSA, for instance, has drawn attention to the social cost of transition. The coal mining industry employs as many as 93,000 people across the country, and the decommissioning of Eskom's coal-fired plants will affect close to 124,000, many of whom reside in Mpumalanga and Limpopo, two of South Africa's poorest provinces that still suffer from the legacies of apartheid era policies; in particular, the “Bantustan” (homeland) system that functioned to create impoverished and dependent labour reserves for the dominant (urban) economic cores (Rogerson and Nel, 2016). While keeping Eskom's coal-fired plants operational beyond the mid-2020s will require billions of Rand, as well as new regulations (emergency or not) relating to minimum emissions standards (Eberhard, 2023), ensuring transition without further exacerbating urban–rural disparities requires the construction of alternative livelihood opportunities. Although re-skilling programs have been floated, the implementation process has been beset by many of the same issues affecting the broader transition, that is, lack of policy clarity and unclear distribution of power (Molelekwa, 2023).

Others have pointed out the loan-heavy nature of the JETP – an area where the geopolitics of renewal are highly visible. In the initial tranche, only 3% of the funds will be disbursed in the form of grants, with loans of \$1 billion and \$500 million to be provided at market rates. Considering the South African Rand's long-term trend of depreciation, the state is likely to face onerous repayments in the coming years (Bond and D'Sa, 2022). Increasing the country's debt servicing requirements threatens to further erode the central government's ability to respond to evolving crises, yet South Africa for the most part does not have the capacity or leverage to alter the terms of the JETP. Likewise, as Bond (2023) notes, the JETP was established in top-down fashion, with little to no public participation. Ongoing infrastructural ruin within the JETP framework is likely to spur alternative

politics, including the continued emergence of populist parties like the Economic Freedom Fighters (currently South Africa's third largest party), who have claimed that the agreement puts South Africa "at the mercy of the US and Europe" (Lo, 2022).

The structure of the JETP thus threatens to exacerbate the trends discussed above, including the proliferation of discontent among vast swaths of society, and increasingly visible populist politics. Likewise, coordination issues relating to international efforts to aid South Africa's transition have thus far resulted in further inequality between cities (and thus their populations), as larger, better-connected municipalities are in position to bring in foreign funds and expertise (personal correspondence, urban planner, Johannesburg, March 2023). The power dynamics across the different levels can therefore be understood as deepening extant inequalities.

Conclusion

Throughout this article, we argue that South Africa's energy infrastructure design, delivery, operation and technical problems are fundamentally the result of the particular form of governance – combining neoliberalism and state capture – that has emerged in the post-apartheid era (Bond, 2014; Marais, 2013). In a sense, the macro-level picture presents a clash and confluence of different regimes, manifesting as competing rationalities (to use Charlton's (2009) term) across the state apparatus, and forming a distinct type of assemblage characterized by incoherence. The regimes in question are the socio-technical regime of the energy system, the political regime in power, and the global neoliberal trade, capital and political regime which has emphasized a particular type of static efficiency and cost recovery. The interfacing of these as instantiated in the South African energy system has produced disorganization and crisis, which nonetheless self-reproduces for both technical reasons, path dependencies and political and economic "lock-ins".

We have used the energy crisis as a lens with which to understand the shifting contours of state power/organization and broader state–society relations in the present environment of transition. We have argued that due to the visibility of the crisis as well as its intensely disruptive effects on both the material and discursive underpinnings of the post-apartheid political system, this crisis is fundamentally intensifying extant centrifugal trends and altering power dynamics within the South African state, creating both the policy pressure and space for decentralization, wherein large municipalities attempt to gain, with varying degrees of success, autonomy in relation to the central state. Yet this decentralization parallels the incoherence of broader governance, and its hybrid form threatens to exacerbate racialized inequalities, which are a product of the spatial legacies of apartheid, both across society and between municipalities themselves. Processes of ruin and renewal are thus engendering the construction of novel assemblages beyond the energy system itself and deepening the political tendencies that emerged earlier in the post-apartheid era.

The energy crisis in South Africa in a sense mirrors the broader socio-political crisis of rising poverty, inequality and unemployment – or what might be called "de-development" (Hickel, 2015). The possible, albeit uneven, collapse of state institutions in South Africa can in part be traced to the moral economy of neoliberalism, and its emphasis on individual enrichment (Wiegratz, 2016) (aka the "law of the jungle"), most graphically perhaps represented in the South African case through processes of state looting, including in Eskom. Yet amidst the reality of infrastructural ruin, international agreements aimed at spurring systemic renewal have been signed to great acclaim. As noted above, the particularities of these agreements – determined in accordance with power relations at the global level – may well exacerbate the crisis and construct new pathways of inequality, including the further

marginalization of township residents and other groups via unequal access to alternative energy sources or the destabilization of municipal subsidy structures. Ultimately, the South African situation highlights how infrastructural provision is inherently political, and that politics stretches across and connects scales, from the local to the global.

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Notes

1. 205 Days with load shedding in 2022 and 335 in 2023.
2. This can refer not only to blackouts but also brownouts where the power being transmitted is reduced rather than completely stopped (see below).
3. More broadly, load shedding can be understood as a manifestation of the crisis at Eskom, which, as Baker and Phillips (2019) explain, was engendered by decades of mismanagement, corruption, unsustainable levels of debt, among other factors. For a political economy analysis of the Eskom crisis, see Bowman (2020).
4. Per the document, these will be mobilized through further loans from Western partners and multilateral banks.
5. South Africa has eight ‘metropolitan municipalities’: City of Tshwane, Ekurhuleni, eThekweni, City of Johannesburg, Manguang, Nelson Mandela Bay, Buffalo City, and City of Cape Town (Baker and Phillips, 2019).
6. The MEC, first established in the early 20th century, was made up of a set of core industries, largely metal extractors, energy providers, and their associated downstream firms. It eventually came to function as an alliance between large-scale productive mining capital and the state (see Marais, 2013).
7. As Chipkin (2016: 2) writes, state capture is distinct from the traditional definition of corruption because while the latter describes acts of “illegality and/or the breaking of rules by politicians in order to subvert the public good”, the former occurs when the rule-making process itself is appropriated. On South Africa, see Buthelezi and Vale (2023).
8. Colloquially known as the ‘State Capture Commission’, this was a public inquiry established in 2018 to investigate state capture and corruption during the Zuma administration.
9. As the author notes, “living prepaid” – that is, having a precarious connection to municipal services like water and electricity is now common in townships, which can be understood as a neoliberal reproduction of previous marginalizations. Moreover, the prepaid meters have been the catalyst for a number of service delivery protests (von Schnitzler, 2013).
10. Per Thorne (2023), municipalities owe Eskom approximately R70 Billion, with 20 constituting roughly 77% of the total debt.

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