

Energy transitions in urban South Africa, 1860-2017: Energy Justice and the changing 'energy underclass'

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This paper will:

- Historical perspective to explore justice issues since the 19th century
- Energy transitions involved in the development of South Africa's versions of the modern infrastructural ideal for electricity provision
- Energy justice focus - with particular emphasis on the balance of the brown, red and green agendas within policy discourses and the associated effects on the 'energy underclass'.
- Explore Energy Underclass... the energy poor



Background

- Current energy systems unsustainable (social, economic, environmental)
- Trade-offs between growth, equity and sustainability (Patel, 2006)
 - Generate sufficient power
 - At a competitive price
 - In a clean manner
 - That is distributed equitable and affordable



This is no small task...

(Energy) Justice in South Africa.... ?

- Minerals Energy Complex (Fine and Rustomjee)
 - Cheap coal has been driving the economy
- Extremely large inequalities
 - Second largest in the world, with Gini coefficient of of 59 in 1993 to 63 in 2014
 - Apartheid legacies
- High levels of poverty and unemployment
 - 55.5% of population lives below the poverty line (2015), and increasing again
 - 30.4 million South Africans live in poverty in 2015

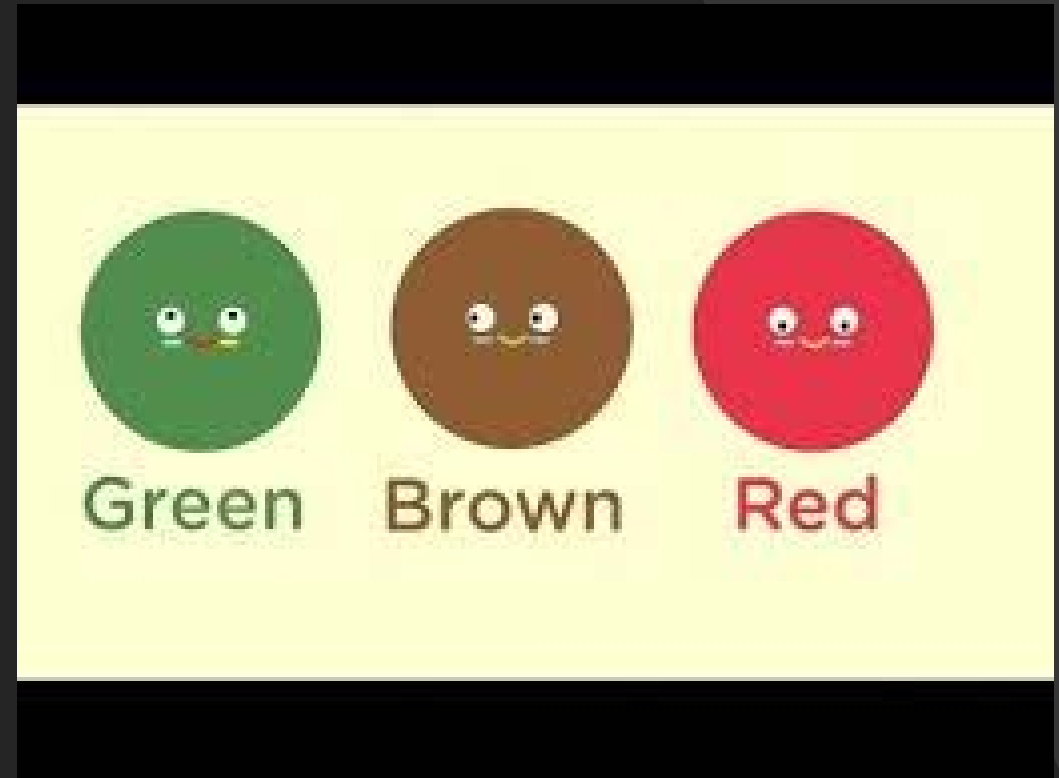
Yet... high levels of electricity connections ... 85.5% of South Africans has access to electricity.

Whether this electricity is affordable is a different question...

From energy justice to colourful agendas.

- Cock 's (2004) conceptual framework of environmental justice
 - Brown agenda – role of energy in establishing basic quality of life (livelihoods, health, well-being, productive uses) (Freund 2001; Khan 2014)
 - Red agenda – social justice and equality of opportunity within the population
 - Green agenda – ecologically sustainable development (ecosystem protection, mitigation of degradation of natural resources, inter-generational equity and environmental justice) (Bolnick et al. 2006).

“**modern infrastructure ideal**” of universal and uniform coverage by a single network (Furlong 2014) ... based on



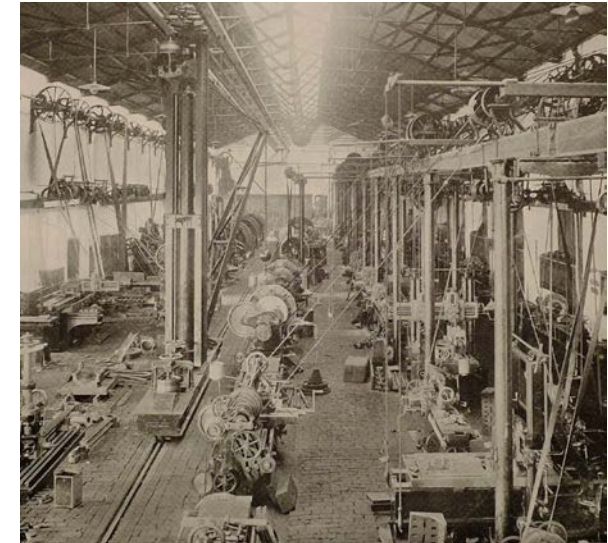
Phase I: The emergence of the electricity network in colonial South Africa (1860-1948)

- Minerals and mining at the core of SA economy
 - Need for cheap electricity
- Electrification
 - mining times equipped with local electricity grids (Gentle 2009) to support diamond and gold mining
 - Urban municipalities - lighting public spaces, provision to retail businesses and residential (white) populations
- 1910 formation of the Union of South Africa
 - creation of an integrated system of electricity generation and transmission regulated by government
- 1922 National Utility established - ESKOM



Phase I agendas

- Red and red agenda - Jaglin and Dubresson (2016, p. 14):
 - national grid was “...an instrument of control essential to the fulfilment of a political regime that has been described by some as racial Keynesian capitalism ... , by others as racial Fordism”.
 - ‘controlled technopolitics’ to describe “the deliberate use of knowledge and technical choices to promote a socio-political vision aligned with that of government”.
 - Socio-political vision of racism and segregation – at root of SA’s inequalities
- No green agenda present
- Energy underclass consisted of the majority of the population



Phase II - Electricity under Apartheid, 1948- 1994



- Apartheid regime - segregation, spatial inequality, exclusion and marginalisation in order to create cheap pools of labour to facilitate industrial growth (Beall, et al., 2000).
- Neighbourhoods identified through 'Black, Indian, Coloured, White' designations (Turok, 2014; Crankshaw et al., 2000; Lemanski, 2009).
- Black/Coloured areas – townships and homelands.

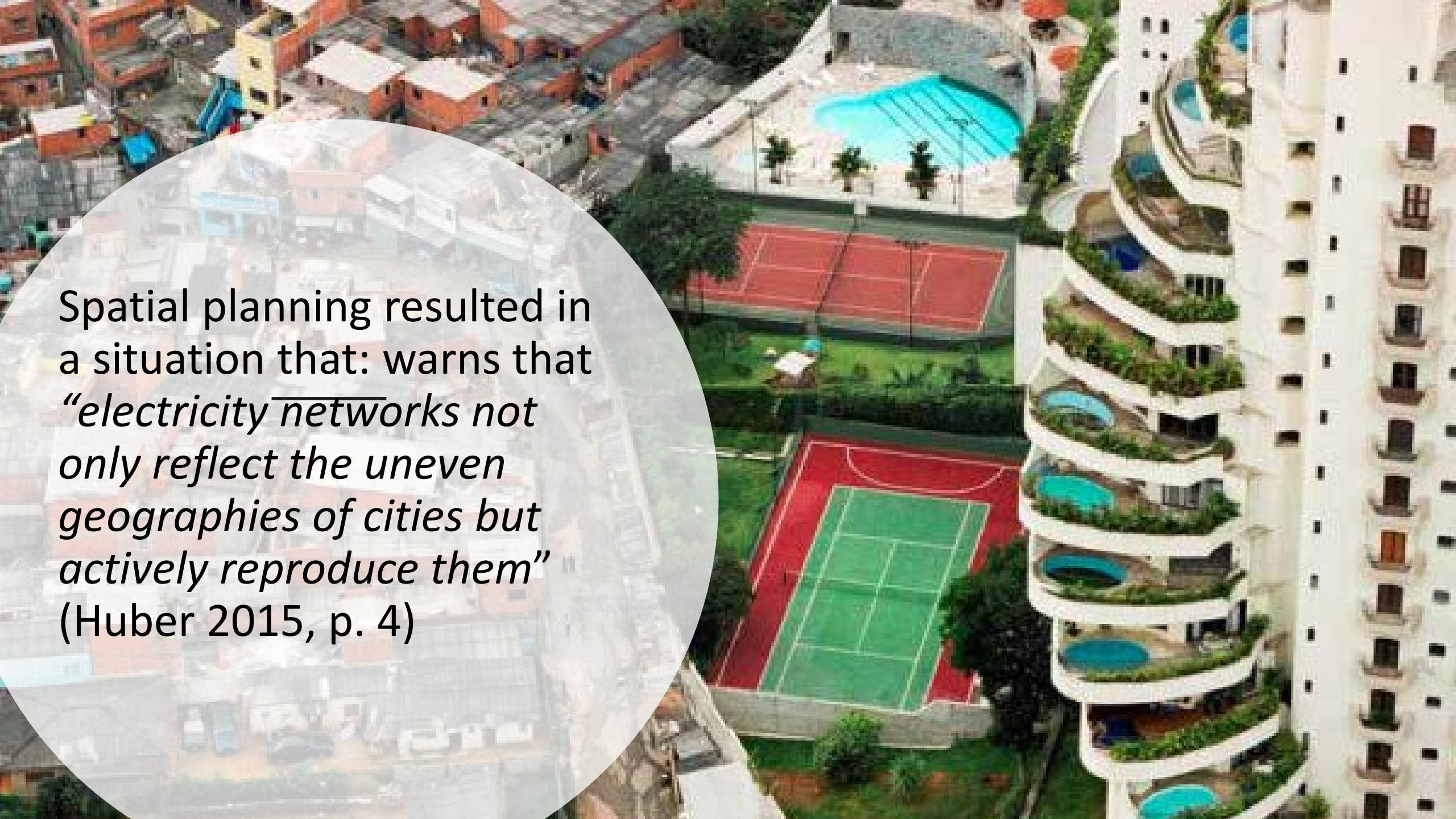
Phase II agendas

- most South Africans were forced to rely on polluting and inefficient fuels to meet their energy needs. No green agenda...
- Brown agenda: Apartheid's political regime created a rather distorted version of the modern infrastructural ideal, whereby 'universal' electricity was supplied to white areas only.
- A very large, racially determined, energy underclass, which consisted of the majority of the non-white population, did not have access to modern energy.



Phase III: Electricity in the Post-apartheid era, 1994-2011

- Post-apartheid focus on rebuilding the country's economy, while bridging the gap between the rich and the poor (Mohlakoana, 2014).
- Strong focus on electricity provision to create business opportunity and well-being, limiting negative impacts of 'dirty' fuels
 - Large scale Electrification Programme.
 - In 1996, 58.2% of households in South Africa had access to electricity for lighting. By 2011, this figure had risen to 85%
 - Increased role for municipalities to distribute electricity – cross-subsidization of pro-poor programmes, metering to increase revenue collection.
 - Free Basic Electricity for indigent households.
- Yet, remaining 3.4 million households without electricity (mostly in informal settlements and rural areas), even more cannot afford it or have poor service delivery

An aerial photograph showing a contrast between urban development. On the right, a tall, modern white high-rise apartment building features prominent, curved balconies with lush greenery and small blue swimming pools on each level. To the left, a dense, low-rise residential area with colorful buildings is visible. In the center, there are recreational facilities including a red tennis court, a green basketball court, and a large blue swimming pool. A semi-transparent white circle is overlaid on the left side of the image, containing text.

Spatial planning resulted in a situation that: warns that *“electricity networks not only reflect the uneven geographies of cities but actively reproduce them”* (Huber 2015, p. 4)





Phase III agendas

The heavy focus on South Africa's post-apartheid government on equality and redress resulted in the pursuing of a very strong brown and red agenda in its energy policy and planning, with the green agenda remaining largely absent.

Active effort to reduce the energy underclass... but with varying degrees of success



Phase IV: Climate Change and renewable energy, 2011-present

- As the 'lion's share' of the country's electricity is generated from cheap and dirty coal
 - South Africa is the 12th highest emitter of greenhouse gases in the world (SEA, 2015)
- Carbon dioxide emissions are to be reduced by 34 per cent by 2020 and by 43 per cent by 2025 (Department of Energy, 2011)
 - Peak, plateau and decline (PPD) approach to emissions – progress insufficient
- Renewable Independent Power Producer Programme
 - 4th bid window in 2016, a total of 6,326 MW of RE capacity had been created 70/30 system – community benefits
 - The current pattern of urbanisation does not match the geography of large-scale renewable energy resources. Communities in areas rich in renewable resources – distributional issues
 - BUT... also a lot of new coal fired plants ...
 - Tension between jobs and environmental impacts
 - Currently being fought in court for Climate Change impact assessments

Phase IV: Climate Change and renewable energy, 2011-present... Cont.

- Small Scale Embedded Generation
 - Potential to provide access to electricity for currently unelectrified households
- Ultimately, the introduction of such systems, and the realisation of associated benefits, depends on the ability of households to pay for the technology and its installation and maintenance.
 - Dominated by Middle-class households.
 - Takes away municipal revenue that could be spent on pro-poor programmes



Phase IV Agendas

- Although good for green agenda, the perpetuation of an 'energy underclass' appears to be a real likelihood from the sustainable energy transition (Bickerstaff, et al., 2013, p.5).
- The emergence of the green agenda has the potential to introduce new processes and implications for the delivery of the brown and red agendas noted in the previous section, and so, once again, redefine the energy underclass.



Conclusions

- The agendas influencing the generation, distribution and consumption of electricity in South Africa are multiple and potentially conflicting.
 - Important justice implications
- The modern infrastructure ideal that has shaped energy systems in the global north may not be the most appropriate way to achieve access to clean, affordable and equitable access to modern energy in the global south.
- Recognition and consideration of the potential uneven and differentiated spatial effects of energy transitions alongside justice considerations need to become integral to the planning and management of such transformations.



- Agendas influencing electricity in South Africa are multiple and potentially
- conflicting
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