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How to create jobs and combat climate change

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South Africa has the dubious distinction of having one of the highest rates of unemployment and inequality in the world. It is also one of the world's most emissions-intensive economies, measured in greenhouse gas (GHG) emissions per unit of economic output. Historically, both during and after apartheid, state subsidies have favoured capital- and energy-intensive industries. What policies are necessary to change the development path to be both more climate- and labour-friendly?

Introduction

The co-existence of high unemployment and high-emissions intensity is not a coincidence. South Africa's history of segregation and apartheid has had profound implications for its development path. Choices were made that favoured investment in capital rather than labour, with growth based, in part, on cheap (coal-based) energy, overlooking its high emissions.

This article, based on our paper[1], outlines the key drivers of South Africa's historical development path. It then considers how South Africa could move towards a more employment-intensive and low-emissions development trajectory.

How the minerals-energy complex shaped industrial and energy policy

Industrial policy has been a central component of state policy in South Africa both before and after the democratic transition. One outcome was an economy heavily based on mining, mineral processing, and heavy industry, subsidised by 'cheap-but-dirty' electricity. This is what Fine and Rustomjee dubbed the 'minerals-energy complex' (MEC).[2] However, for several reasons, the manufacturing sector has performed poorly both in terms of output and employment. Moreover, because of the concentration of heavy industry and with large users of coal-based electricity, the sector is a major contributor to high emissions intensity.

Under apartheid, industrial policy favoured capital-intensive firms. Development was not

[1] Winkler, H. and Black, A. (2021). Creating employment and reducing emissions: Options for South Africa. SARChI Industrial Development Working Paper Series WP 2021-06. SARChI Industrial Development, University of Johannesburg.

[2] Fine, B and Rustomjee,Z: The political economy of South Africa; from minerals-energy complex to industrialization (London: Hurst and Company, 1996)

focused on creating decent work. ‘Bantu Education’ hampered the development of the skills base required for manufacturing development.

Apart from low electricity prices, heavy industry received other forms of government support, including export incentives, tax allowances, subsidies for ‘strategic’ projects, and assistance with dedicated infrastructure. Energy security concerns under sanctions prompted overinvestment in electricity supply. Poor employment outcomes are due in part to high capital-intensity.

The country’s dependency on coal was entrenched in the 1970s with massive infrastructure investment in new coal mines, large coal power plants, coal to liquid fuels plants, and a major rise in coal exports, all strongly supported by the state. The coal-value chain incorporates 120,000 workers, mostly in coal mining. But employment has been declining and projections are that coal-sector-based employment will decline a further 35–40% by 2050.

Over-capacity of electricity generation in the early 1990s led to efforts to attract heavy industry by offering special discounts on already low Eskom prices. This policy continued well after the democratic transition and the Developmental Electricity Pricing Programme (DEPP), offering low electricity prices, was introduced to encourage investment by energy intensive users in ‘beneficiation of downstream industries’. Historically, there was no pressure to reduce emissions – and coal-fired electricity was cheaper in financial terms. The MEC has shaped the energy sector and policy. SA’s emission intensity (emissions per unit of output) in 2018 was 2.5 times the global average, about five times higher than in the US. Four-fifths of emissions are attributable to energy supply and use.

Large firms engaged in the processing of minerals and basic chemicals production were able to exercise market power and charge import parity prices to downstream producers in South Africa, limiting downstream manufacturing development.

Major actors in the MEC depend on coal, which has been the dominant fuel in South Africa’s energy economy. In addition to coal-fired power, about 30% of liquid fuel supply comes from Sasol’s coal-to-liquids conversion facility. The political economy of energy supply, then, is dominated by a duopoly – Eskom and Sasol. Significant actors include coal mining firms upstream and electricity-intensive industry downstream.

Growth was capital, rather than labour, intensive. Manufacturing employment peaked in 1981 at 1.79 million but had declined to just 1.22 million by 2019. The employment intensity of the sector has also been reduced by the dramatic decline of light manufacturing especially in the ultra labour-intensive category, which includes clothing, leather, and footwear. These sectors were adversely affected by trade liberalisation in the 1990s. Labour legislation, in particular the extension of National Bargaining Council agreements to non-parties, has also impacted negatively on firms especially in non-metropolitan locations. The failure to mobilise investment in light manufacturing is in striking contrast to the massive efforts to develop heavy industry over decades.

More recently, the expansion of heavy industry has slowed. There has been a dearth of new investments, as well as plant closures. The MEC is unwinding. Its major pillar was cheap (subsidised) electricity, but this growth path became increasingly unsustainable. Higher energy costs and serious supply interruptions have been a key factor along with rail and port inefficiencies. Coupled with this has been the gradual withdrawal of state support and the poor performance of the mining sector.

South Africa has experienced frequent power outages since 2006. Many older coal plants have failing units mainly because of insufficient maintenance. Even the new power stations, Medupi and Kusile, have not operated consistently due to design flaws. This would suggest a compelling case to build capacity fast – and wind and solar PV have short lead times. Yet these proposals have met resistance.

Renewable energy has been procured from independent power producers (IPPs) in a programme widely considered a success. The fourth bid window of the REI4P was completed in 2015, but then stalled for six years with preferred bidders in bid window 5 (BW5) announced only in October 2021. In July 2022, President Ramaphosa increased BW6 from 2600MW to 4200MW, and procurement has resumed. While renewable energy has grown rapidly and been required to contribute to socio-economic development, it is still a relatively small share of electricity generated. To implement a just energy transition, a much faster pace of investment will be needed.

Opportunities to shift development paths

The current situation, characterised by multiple crises, also offers opportunities for change. The economy contracted by 7.2% in 2020 as a result of COVID-19 and has only partially recovered in 2021. Even before COVID, public debt had been rising fast.

Due to mismanagement and large-scale corruption, Eskom has drastically underperformed and is severely indebted. The supply crisis has led to desperate measures such as the recent proposed use of powerships, with the Turkish firm, Karpowership, reportedly offered a 20-year contract. This has been temporarily blocked by environmental objections.

The crisis has also galvanised action on the unbundling of Eskom with generation, transmission, and distribution to be divided into separate companies. Eskom has developed a just energy transition (JET) plan and has committed in principle to net-zero CO2 by 2050. There is an opportunity to access international climate finance, which would support the JET plan, accelerated phase out of coal, and support for socio-economic development. Political support from Cabinet and the ANC lekgotla gave momentum to this plan in September 2021.

What policy instruments can drive employment-intensive and low-emissions development?

Components of a strategy for employment-intensive and low-emissions development include changing the incentive structure, shifting subsidies, and appropriate regulation. We explore policy instruments to support employment, shifting subsidies from capital- and energy-intensive to employment- and high-mitigation activities, building competitive advantage in light manufactures, and the potential in agriculture.

- **Shift state subsidies from capital- and energy-intensive to employment- and high-mitigation activities**

Shifting subsidies to support low emissions and high-employment industries, rather than emissions-intensive coal-fired power, would be one set of tools for employment intensive and low emissions development. The proper pricing of energy is a first step. There has been limited public debate on fossil fuel subsidies, but estimates are that these amount to between R6.5 and R29 billion per year.

Eskom has a Just Energy Transition office, and includes in its plans repowering coal-fired power stations with other energy. Subsidies might be applied to repowering coal-fired power stations to provide electricity but from renewable energy sources. One feasible option may be to add a levy on power prices to fund localisation of renewable energy and provide training for renewable energy and energy service companies.

Renewable energy can create net employment gains, even as jobs decline in the sunset industry of coal mining. One study of the employment co-benefits found that the CSIR's least-cost pathway could create 1.2 million job years along the renewable energy value chain, more than double the number indicated in the Integrated Resource Plan.

Policy needs to actively promote new development in activities and sectors to build on our potential comparative advantage – labour – and position the country for low emissions

development.

Such policies will have a varied impact depending on employment and emissions intensity of the sector in question. For instance, higher electricity prices or carbon taxes are likely to impact more negatively on high-emissions sectors, many of which are also capital-intensive. Yet South Africa could build comparative advantage in light manufacturing, and create low-emissions employment in agriculture.

- **Supporting employment and reducing poverty**

The incentive structure (accompanied by appropriate regulation) needs to shift in support of greater employment intensity. For example, it is better to subsidise training than capital investment; and worker housing close to workplaces than infrastructure for heavy industry. More comprehensive wage subsidies could change firm behaviour and increase the competitiveness of labour-demanding activities. On the other hand, it makes little sense, in South Africa's high unemployment environment, to offer incentives for capital investment as have been applied to sections of heavy industry, and other sectors. These subsidies also benefit large firms relative to smaller firms.

In terms of reducing poverty, the most effective measures currently in place are social grants. The number of recipients has increased from 2.4 million in 1996 to 18 million in 2020. This comes at huge cost, but the question is whether this could be increased, for instance in the form of a basic income grant (BIG) or universal basic income (UBI). The issue is back on the agenda both in South Africa and internationally. Larger incomes circulating among poor communities are likely to give a major boost to the informal sector. Some of the investment in just transition should flow to supporting job creation.

- **Build competitive advantage in employment-intensive light manufacturing, energy service companies, and hard-to-abate products**

Industrial and other policies need to place more emphasis on supporting light manufacturing both to grow exports and to compete more effectively in the domestic market. Light industries draw on the local, semi-skilled labour force, experience in the region, and established infrastructure. Examples of such industries include not only apparel but also metal products, household semi-durables, and electronics assembly.

There is also scope to support small and medium energy service companies rolling out energy efficiency and small-scale renewable energy services, and find strategic approaches to be part of alternatives to hard-to-abate products.

- **Agriculture – a sector to create low-emissions employment**

Agriculture is a very labour-intensive sector both in terms of employment per unit of output and in terms of its employment multiplier. The destruction of the peasantry through land dispossession has limited the sector's employment potential but opportunities still exist. Since 1994, developments in agriculture have contributed to rather than ameliorated SA's unemployment problem. There has been a dramatic decline in support to the sector, which has aggravated employment losses in formal agriculture. Also, the pace of land redistribution has been slow and of limited effectiveness.

In South Africa, agriculture accounted for 9% of emissions in 2017, a share that is relatively high in relation to its contribution to economic output. There is considerable mitigation potential in land use, through measures that enhance removal of CO^2 by sinks through restoration of sub-tropical thicket, forests and woodlands, restoration and management of grasslands, and commercial small-scale forestry firms.

With greater and more focused support, the agricultural sector could play an important role in

addressing not only rural poverty, but also South Africa's employment problem, without adding significantly to GHG emissions.

Conclusion

South Africa faces huge challenges as the country attempts to chart a course to address pressing socio-economic issues. At the same time, it needs to contribute to climate action. The policy instruments proposed above can be thought of as a policy package – coordinated across industrial, energy, climate, and other policy domains.

Historically, the economy has been on a development path that has given rise to the minerals-energy complex. This distorted growth path locked South Africa into low employment and high emissions development, and it has proved difficult to shift direction. The adjustment costs are high and there are also strong political economy interests in support of the current trajectory. The shift to a new development path has already begun, although not on the terms decision makers would have liked. The minerals-energy complex has begun to unwind as electricity prices rise and supply falters. The mining sector has also contracted due in part to infrastructure constraints and poor regulation.

A shift in incentives could tilt the playing field towards employment-intensive and low-emissions growth. This means reducing incentives to capital-intensive and high-emissions heavy industry, ending direct and indirect support for cheap electricity, and removing fossil fuel subsidies. Industrial policy should be focused on our real comparative advantage – labour. It might also reindustrialize light manufacturing. Agriculture can create employment, while contributing to carbon removals by sinks and some mitigation of sources of emissions.

An integrated employment and mitigation strategy is required to shape (or reshape) the development path of the economy. This means aligning the two objectives, seeking synergies across industrial, energy and climate policy, while managing trade-offs. Such a strategy is more aligned with South Africa's real comparative advantage – labour - and will produce more rapid, sustainable and inclusive growth. In the past there was a connection between high emissions and low employment intensity. We argue that employment-intensive growth and a low emission strategy can complement each other.

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