

Working Paper 150

The Political Economy of South Africa's Carbon Tax

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Summary

The subject of carbon pricing is rising up the global policy agenda, as countries take action in the aftermath of the United Nations Framework Convention on Climate Change's Conference of the Parties 26 summit in November 2021. South Africa is the only country in sub-Saharan Africa to have enacted a carbon tax to date, and, globally speaking, was ahead of the curve when it started to consider its implementation at the start of 2010.

With a historically energy-intensive and carbon-intensive economy as a core feature of its minerals-energy complex (Fine and Rustonjee 1996), South Africa is the world's 14th largest emitter of greenhouse gases, and the largest emitter on the continent. Its electricity grid is the world's most carbon-intensive, and its primary energy consumption is ranked 17th globally. While the country's Gross Domestic Product is the 30th highest in the world, it is also one of the most unequal. It has a legacy of socio-economic and political exclusion, and marginalisation created by the apartheid history that has persisted in the decades since the democratic transition in 1994.

This paper asks to what extent and in what way has South Africa's political economy shaped the process and implementation of its carbon tax? In answering this question, the report explores and analyses the design and implementation of the tax; the key criticisms to which it has been subjected; the effectiveness of the tax, not least in light of the considerable allowances and exemptions that have been included in its design; the relationship between the carbon tax and other existing climate change policies; and the potential relevance of South Africa's experience for other countries on the continent.

The key findings of this study can be summarised as follows. First, while South Africa's Carbon Tax Act remains the only legally binding mechanism with potential for mitigation apart from the Integrated Resource Plan for electricity, so far the tax has had very limited impact on either reducing emissions or generating revenue. Second, the tax has been subject to lengthy delays, and resistance from the country's carbon-intensive vested interests. It is embedded within a fragmented system of governance, characterised by long-standing tension between key government departments and related institutions responsible for climate and energy policy. Third, while South Africa's minerals-energy complex remains a defining feature of South Africa's political economy, there are growing challenges to its influence, including the growing discourse of the just transition and the projected gradual reduction in coal use. Finally, many companies in South Africa are decarbonising in spite of, rather than because of, the carbon tax. While the tax's effectiveness as a policy instrument is currently very limited, the fact that it has been introduced at all can be seen as a step towards mitigating climate change.

Keywords: carbon tax; mineral-energy complex; climate policy; emissions; coal; just transition; electricity.

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Abbreviations

AFOLU	Agriculture, forestry and other land use
AMSA	Arcelor Mittal South Africa
BUSA	Business Unity South Africa
CBAM	Carbon border adjustment mechanism
CDM	Clean Development Mechanism
COAS	Carbon Offset Administration System
COP	Conference of the Parties
COSATU	Congress of South African Trade Unions
CSP	Concentrated Solar Power
CTL	Coal-to-liquids
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DTI	Department for Trade and Industry
DTIC	Department for Trade, Industry and Competition
EDD	Economic Development Department
ESG	Environmental, social and governance
EIUG	Energy Intensive Users Group
EU ETS	EU Emissions Trading Scheme
FY	Financial year
GDP	Gross Domestic Product
Gg	Gigogram
GHG	Greenhouse Gas
GW	Gigawatt
GWh	Gigawatt hour
IEA	International Energy Agency
IMCCC	Inter-Ministerial Committee on Climate Change
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IPPU	Industrial processes and product use
IRENA	International Renewable Energy Agency
IRP	Integrated Resource Plan
JETP	Just Energy Transition Plan
JSE	Johannesburg Stock Exchange
LTMS	Long-Term Mitigation Scenarios
MEC	Minerals-Energy Complex
Mt	Million tonnes
MW	Megawatt
NCCRP	National Climate Change Response Policy
NCCRWP	National Climate Change Response White Paper
NDC	Nationally Determined Contribution
NDP	National Development Plan

NUMSA	The National Union of Metalworkers of South Africa
OECD	Organisation of Economic Cooperation and Development
PCC	Presidential Climate Commission
PPA	Power Purchase Agreement
PV	Photovoltaics
RE IPPPP	Renewable Energy Independent Power Producer's Procurement Programme
SARS	South African Revenue Service
SET	Sectoral emissions target
SSA	Sub-Saharan Africa
UNFCCC	United Nations Framework Convention on Climate Change
TCFD	Task Force on Climate-related Financial Disclosures
VCS	Verified carbon standard

1 Introduction

The subject of carbon pricing is rising up the global policy agenda, as countries take action in the aftermath of the United Nations Framework Convention on Climate Change's (UNFCCC's) Conference of the Parties (COP) 26 summit in November 2021 and address the fiscal impact of Covid-19.¹ The IMF's new Climate Strategy, published in July 2021, presents a universal minimum price on carbon emissions as a significant strategy for the low-carbon transition (Parry et al. 2021). The two main market-based instruments used for putting a price on carbon and curbing greenhouse gas (GHG) emissions are emissions trading schemes and carbon taxes. The former limit the quantity of emissions allowed, and the carbon price is established through trade in allowances – the most notable global example of these is the European Emissions Trading Scheme (EU ETS). The latter seek to create emissions reductions through the direct pricing of emissions, which, as this paper explores, is the case with South Africa's carbon tax (National Treasury 2010: 27).

There may not be significant additional revenue to be raised from carbon taxation in many countries, including for the time being in South Africa. However, it still has the potential to form part of a more systemic approach to addressing the environmentally-destructive incentives created by fossil fuel subsidies (OECD 2021). Further, as a global regime for carbon taxation begins to take shape, and as large markets such as the EU consider imposing carbon border adjustments on imports, middle-income countries – including South Africa and to a lesser extent low-income countries – have no choice but to take these evolving global developments into account (Falcão 2019).

South Africa is the only country in sub-Saharan Africa (SSA) to have enacted a carbon tax to date, although this is under consideration elsewhere on the continent (World Bank 2020). Globally speaking, South Africa was ahead of the curve when it started to consider implementing a carbon tax at the start of 2010, given that only four countries outside Europe (Canada, the US, New Zealand and Japan) had implemented, or were seriously considering, comparable measures at the time. However, it took until 2019 for South Africa's carbon tax to be finally approved and enacted (RSA 2019). By this time 58 carbon pricing initiatives had been implemented in 46 countries and 31 subnational jurisdictions (Cloete 2020). Many of these have experienced their own challenges and delays – not least Australia, which abandoned plans for a carbon tax in 2014.

South Africa's carbon tax has been put forward as one of the key mechanisms through which the country's emissions reduction commitments could be met (DFFE 2021a). However, the rate at which it has been set – R120 per tonne² – is well below the global benchmark range of US\$40 to US\$80 per tonne in order to be consistent with the Paris Agreement on climate change (Carbon Pricing Leadership Coalition 2017). The first phase of South Africa's carbon tax – originally to run until end 2022, but since extended until end 2025 – contains considerable allowances and exemptions. These were introduced in order for the tax to be acceptable to the country's energy- and carbon-intensive institutions who would be most affected by it. The revenue the tax will generate is also negligible – so far it is estimated to account for only 0.05 per cent and 0.11 per cent of total national tax revenue in FY 2020/21 and FY2021/22 respectively. However, the fact that the country has implemented a carbon

¹ The term carbon is generally used as a shorthand for GHGs, as in the case of South Africa. However, most of the gas emitted by the energy and industry sectors is carbon dioxide (CO₂), owing to the use of coal. This makes CO₂ the largest contributor to South Africa's GHG emissions, accounting for more than 85% of GHG emissions in both 2000 and 2015 (Kalaba 2020).

² Based on an exchange rate of R1: US\$0.07 as an average of 2021 figures.

tax at all could be seen as progressive, given the economy's continued heavy dependence on coal.

With a historically energy-intensive and carbon-intensive economy as a core feature of its minerals-energy complex (MEC) (Fine and Rustomjee 1996), South Africa is the world's 14th largest emitter of GHGs and the largest emitter on the continent, contributing 1.8 per cent of global emissions (WRI 2021). While the country's Gross Domestic Product (GDP) is the 30th highest in the world, it is also one of the most unequal. It has a legacy of socio-economic and political exclusion, and marginalisation created by the apartheid history that has persisted in the decades since the democratic transition in 1994.

As this study explores, political economy both informed the choice of a carbon tax as a policy instrument in South Africa in the first place, and shaped the nature of its negotiation and implementation in various ways. Firstly, given that the country's energy market is characterised by a small number of large coal suppliers, direct taxation was seen as a more effective measure than emissions trading (Nakhooda 2014: 2; Kalaba 2020:10). Second, the tax's implications for the country's business interests and international competitiveness have been at the centre of debates around its design (BUSA 2013). Third, while economic models have warned about the negative impacts of the tax on GDP, they have also highlighted how these impacts could be mitigated by 'recycling' the revenue – using it as a production subsidy (Alton et al. 2014; van Heerden et al. 2016; Cloete 2020). South Africa's carbon tax has been the subject of limited national public discussion, particularly in comparison to other national processes relating to the energy sector and climate change that have received far greater attention.³

This research is guided by the overarching question: to what extent and in what way has South Africa's political economy shaped the process and implementation of its carbon tax? This question is guided by the following sub-questions:

- Why is South Africa's political economy relevant to its carbon tax? (Section 2)
- How was South Africa's carbon tax designed and implemented? (Section 3)
- What have been the key criticisms of the tax, and what implications might these have for its future design and implementation? (Section 3.3)
- What are the implications of the tax's current design for its effectiveness to reduce emissions? (Section 3, 4 and 5)
- How does the carbon tax relate to the country's policy for mitigating climate change? (Section 4 and 5)
- What lessons from South Africa's experience might be relevant to other countries? (Conclusion)

The paper is structured as follows. Section 2 establishes the context of South Africa's MEC as a descriptive and theoretical starting point for understanding the historical and contemporary development of the country's energy- and carbon-intensive political economy

³ Similarly, there are few academic studies that have contextualised the tax within a broader policy and political economy context. The exceptions include Tyler and Hochstetler (2021), Tyler and Mgoduso (2022), Rennkamp (2019) and Baker et al. (2015). In tackling this research gap on the political economy of South Africa's carbon tax, my study contributes to the following overlapping bodies of literature. First, to the literature on climate politics (Tyler and Cohen 2020; Rennkamp 2019; Trollip and Boule 2017; Tyler and Hochstetler 2021; Winkler and Marquard 2010). Second, to grey and academic literature on the evolution of the country's coal industry and the role of fossil fuel subsidies, including the 'just transition' as an emerging national discourse (Burton et al. 2018a; Burton et al. 2018b; Pant et al. 2020; IISD 2020). Third, to research on the political economy of the country's electricity sector, including the growing role of renewable energy within the country's MEC (Baker et al. 2020; Baker and Phillips 2018; Baker et al. 2015; Baker 2014; Bowman 2020). Finally, while various important techno-economic studies on the design and implementation of the carbon tax were written during its ten-year consultation process (Altieri et al. 2015; Alton et al. 2014; Caetano and Thurlow 2014; PWCet al. 2011; van Heerden et al. 2016), some of which helped to inform National Treasury's thinking on this issue, these studies have given less consideration to political economy perspectives.

in which the carbon tax is embedded. This section includes an analysis of the key MEC institutions, as well as important shifts that have taken place in recent decades, including the significance of the just transition in national discourse. Section 3 explores the carbon tax's design, implementation and governance, including its consultation process; how the introduction of numerous allowances and exemptions have undermined its emissions reduction potential; the recent postponement of the tax's second phase; and key criticisms of the tax from various constituencies. Section 4 situates the carbon tax within the broader context of the country's policy for mitigating climate change, particularly the Climate Change Act, and the significant disconnect that exists between key government departments and initiatives. Section 5 explores the alignment, or lack of it, between the carbon tax and the electricity sector, despite the latter offering the greatest potential for national decarbonisation. Section 6 concludes.

The paper's key findings include the following: while South Africa's Carbon Tax Act remains the only legally binding mechanism with potential for mitigation apart from the Integrated Resource Plan for electricity, it has had very limited impact on either reducing emissions or generating revenue. The tax has been subject to lengthy delays, and resistance from the country's carbon-intensive vested interests. It is embedded within a fragmented regulatory system, characterised by tension between the key government departments and related institutions responsible for climate and energy policy. Finally, many companies in South Africa are decarbonising in spite of, rather than because of, the carbon tax, which raises questions regarding its efficacy as a policy instrument.

The methodology for this research is based on an extensive review of grey and academic literature, semi-structured interviews and compilation of quantitative data.⁴

2 The minerals-energy complex and beyond

South Africa is the world's 14th largest emitter of GHGs, its electricity grid is the world's most carbon-intensive (Theunissen 2021) and its primary energy consumption is ranked 17th globally (DFFE 2021c: 124). The country is also one of the world's most unequal, with a legacy of socio-economic and political marginalisation created by its apartheid history which has persisted since the democratic transition of 1994. As of December 2021, unemployment stood at 35 per cent of the labour force, or 46.6 per cent if those who have given up looking

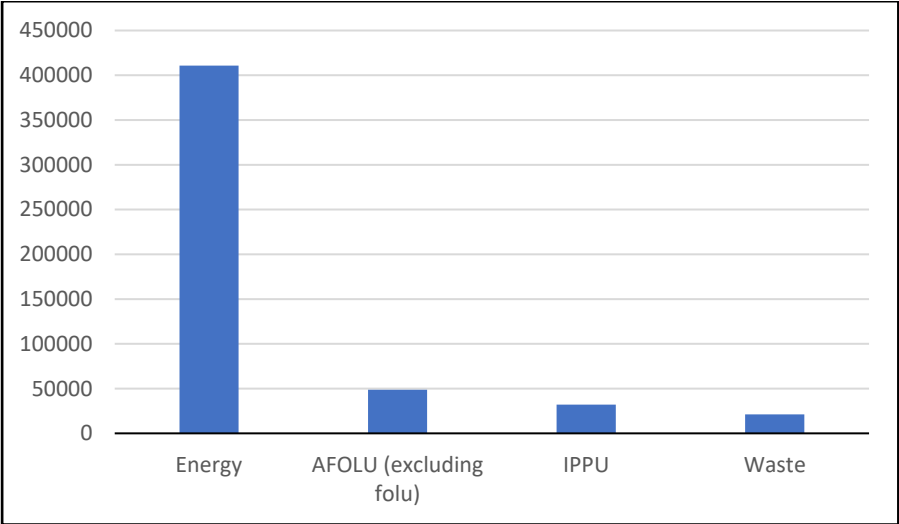
⁴ The literature review particularly focused on developments within the country's carbon- and energy-intensive industries and the electricity sector. The review sought to map the interconnected but often fragmented policies and frameworks that have been developed over time to support national commitments to mitigation. Key sources included: national policy and planning documents on carbon pricing, energy and climate change, and socio-economic and industrial development; reports by South Africa's energy- and carbon-intensive companies, e.g. Business Unity South Africa (BUSA), Minerals Council, Arcelor Mittal South Africa (AMSA), and industry associations e.g. Energy Intensive Users' Group (EIUG); company presentations and responses to the carbon tax consultation; reports by civil society organisations; development finance institutions, e.g. Development Bank of South Africa; commercial banks. e.g. NedBank; and international non-governmental organisations such as the International Renewable Energy Agency (IRENA), the International Energy Agency (IEA), the Organisation for Economic Co-operation and Development (OECD) and the World Bank; national/regional newspapers and industry publications, as well as television and radio interviews. Eight semi-structured qualitative interviews with representatives of South African industry, business, finance, policy, academia, government and civil society were held between December 2021 and March 2022 over Zoom or Teams (see Appendix). Interviewees have not been named in the interest of participant confidentiality. Selected anonymised citations are included throughout the report to illustrate key findings. The semi-structured interviews were supplemented by attendance at five webinars of industry, civil society and government that covered themes directly relevant to the research, also listed in the Appendix.

This research has compiled and drawn on quantitative data, including on national GHG emissions over time; sectoral contributions to GDP; trade statistics, including coal exports; and increases in electricity pricing. Publicly available sources that were consulted include: Statistics South Africa; The South African Reserve Bank; the IEA; World Bank; UNFCCC; government departments; the National Energy Regulator; and company financial reports.

for work are included – a statistic that has been exacerbated by the Covid pandemic (Statistics South Africa 2021).

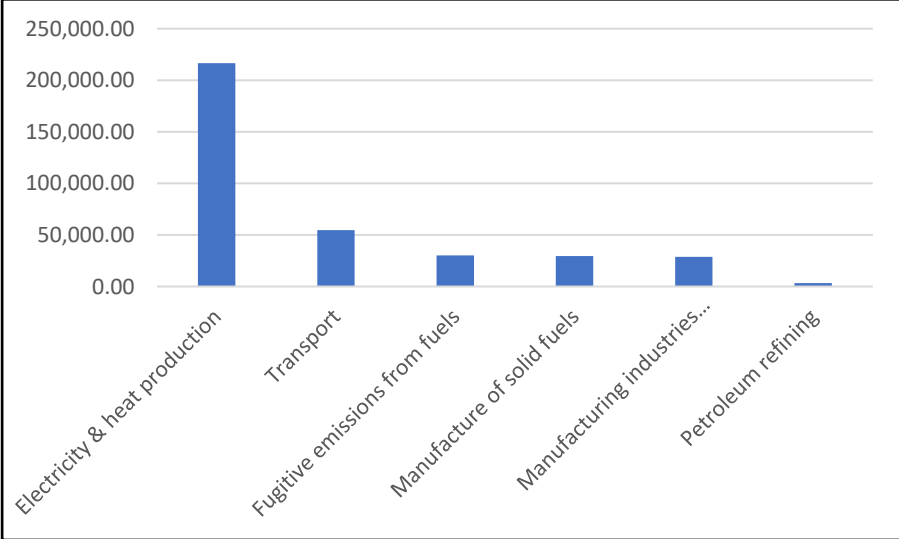
In 2017 the country’s energy sector made up 80.1 per cent of total national emissions, followed by agriculture, forestry and other land use (AFOLU) at 9.5 per cent, industrial processes and product use (IPPU) at 6.3 per cent, and waste at 4.1 per cent (Figure 1). Of the energy sector emissions, approximately 80 per cent came from electricity and heat in 2017 (Figure 2). The metal industry, discussed below makes up approximately 60 per cent of IPPU emissions (see Figure 3).

Figure 1 South Africa’s GHG emissions by sector, 2017, Gg CO₂e



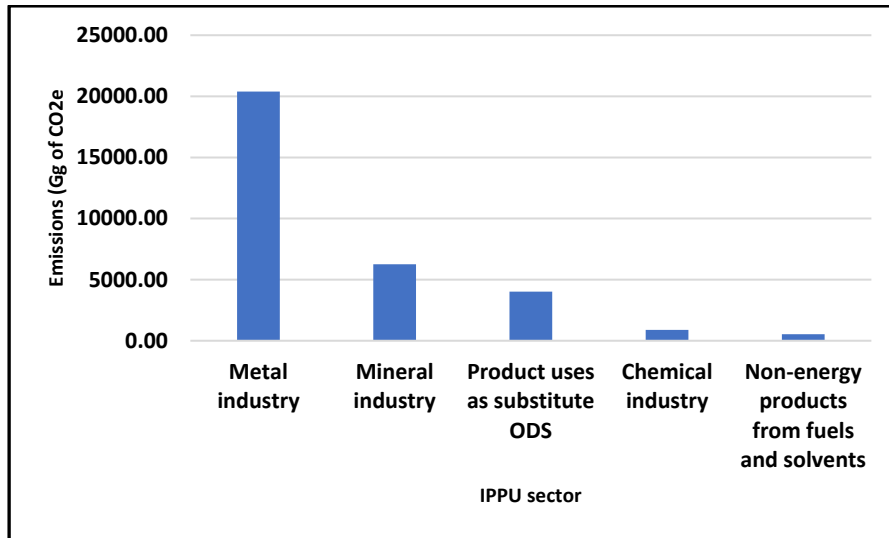
Source: DFFE (2021c: 10)

Figure 2 South Africa’s energy sector emissions by sub-sector, 2017, Gg CO₂e



Source DFFE (2021c:126)

Figure 3 Industrial processes and product use (IPPU) sector emissions, 2017, Gg CO₂e



Source: DFFE (2021c: 191)

South Africa’s carbon- and energy-intensive political economy has been characterised by its minerals-energy complex (MEC), which offers both a description and an analytical framework for understanding the country’s unique and evolving system of accumulation (Fine and Rustomjee 1996). This system was founded on cheap and abundant sources of coal for the generation of cheap electricity. This, combined with cheap labour along racially-oriented divisions, provided a key input into the country’s export-oriented mining and mineral processing sectors (Fine and Rustomjee 1996). The MEC has also been shaped by evolving relationships between various institutions of the state and state-owned enterprises,⁵ highly concentrated ownership structures of corporate capital, and an increasingly powerful financial system (Ashman and Fine 2013, Freund 2010). These relationships have been described as a system of ‘overlapping policy networks ... coordinated by what can be termed an ‘industrial policy elite’ ... with close connections to the political elite’ (Marquard 2006: 71). This system of accumulation and its institutional linkages have been characterised by a particular historical dynamic of ‘conflict and coordination’ that continues today, and to which the implementation of the carbon tax is no exception (Baker et al. 2015: 7).

The most powerful institutions at the centre of the MEC are the country’s greatest GHG emitters. The state-owned electricity utility, Eskom, accounts for approximately 44 per cent of national emissions (Eskom 2021c:41). The former coal-to-liquids (CTL) parastatal Sasol, one of the country’s largest coal producers and a petrochemicals multinational, accounts for approximately 11 per cent of national emissions. After Sasol and Eskom, the country’s third largest emitter is the steelmaker Arcelor Mittal South Africa (AMSA), which contributes just under 3 per cent of total national emissions according to 2019 figures (Centre for Environmental Rights 2019).

The energy-intensive users’ group (EIUG) encompasses another powerful set of MEC actors, with 25 members from the mining, mineral processing and material manufacturing sectors, including iron and steel, non-ferrous metals, ferroalloys and chemicals. A number of EIUG members are also among the country’s largest coal mining companies – Sasol, Exxaro, Anglo American, Glencore and South 32 (which spun out of BHP Billiton in 2015). The EIUG claims to make a collective contribution of 20 per cent to national GDP, and accounts for over 40 per cent of the country’s electricity consumption (EIUG 2021), of which approximately 30 per cent comes from mining and smelting (Minerals Council 2019a). Other

⁵ Corporations that are wholly or majority owned by the government, including the electricity utility Eskom.

influential industrial representative bodies that have some members who are also in the EIUG include the Minerals Council (formerly the Chamber of Mines), which acts as a self-described ‘principal advocate for mining in South Africa’ (Minerals Council 2022); and Business Unity South Africa (BUSA), which has a membership of approximately 35 companies, and represents the country’s ‘cross-cutting organised business interests’ (BUSA 2018).

Until very recently, the MEC’s energy- and carbon-intensive incumbents were highly resistant to any policy relating to climate change mitigation that they saw as a threat to their core economic interests – to which the carbon tax is no exception (see Section 3.3). Historically, there has also been a strong political alliance between these companies, Eskom, and the government department responsible for mining and minerals policy – currently the Department for Mineral Resources and Energy (DMRE), formed in 2019.⁶

Despite the enduring legacy of the historical core of the MEC, some of its key structures, institutions and relationships have been subject to significant economic, political and technological change due to a combination of national and global developments. In addition, most of South Africa’s formerly powerful state-owned companies are now severely economically constrained and regarded as a fiscal risk, having received billions in government bail-outs in recent years (Bridle et al. 2022). As discussed below, Eskom is no exception to this. It is now experiencing a demise, caused by a number of long-standing factors that more recently have culminated in poor management, lack of investment and a decade of state capture and corruption (Baker et al. 2020). The negotiation and implementation of the country’s carbon tax and any potential future design must be understood within this context.

One major shift within the MEC is a decline in the economic contribution made by the mining and manufacturing sectors, and, in parallel, the growing significance of finance to the economy (Minerals Council 2019c; Karwowski et al. 2018). This shift includes the financialisation and internationalisation of the MEC’s conglomerates, including some of the energy-intensive users listed above, leading to what has been described as a ‘financialised MEC’ (Ashman and Fine 2013: 146). The Johannesburg Stock Exchange (JSE), one of the oldest stock exchanges among emerging economies, is a key institution in this. The finance, insurance, real estate and business services is now the single largest economic sector in terms of contribution to GDP, accounting for approximately 25 per cent (SARB 2022). By comparison, the collective contribution of the mining and quarrying and manufacturing sectors currently stands at approximately 21 per cent of GDP (SARB 2022).⁷

Another pressure on the MEC’s historical structures is the growing national visibility and recognition of commitments to net zero emissions by 2050 (DFFE 2021a),⁸ and the country’s policy for mitigating climate change, of which the carbon tax is one of various instruments. In November 2021 the country submitted a much more ambitious Nationally Determined Contribution (NDC) under the UN Framework Convention on Climate Change, which, as discussed in Section 4, depends heavily on reducing emissions in the power sector, particularly over the next ten years (Marquard et al. 2021; PCC 2021). Considerably faster and higher levels of renewable energy capacity are therefore needed to meet the lower end of the NDC range (compatible with 1.5°C), in addition to the eventual phase-out of Eskom’s coal fleet.

⁶ The Department of Energy and the Department of Mineral Resources were combined into the DMRE by President Cyril Ramaphosa following his inauguration in 2018, thereby reinstating the institutional arrangement of a decade earlier.

⁷ Based on figures for the fourth quarter of 2021.

⁸ Net zero emissions means that any emissions are balanced by offset projects, which absorb an equivalent amount of CO₂ from the atmosphere. In order to meet the Paris Agreement’s 1.5°C global warming target, global carbon emissions should reach net zero around mid-century (Eskom 2021c: 96).

As climate change has increased in national priorities, particularly over the last two years, GHG emissions have become an increasingly important consideration for national and international investors and asset managers (Creamer 2022a), in a reflection of more general global trends (TCFD 2021). For instance, now that investors are beginning to price in environmental, social and governance (ESG) risk criteria when allocating capital, it has become much harder for thermal coal operations to secure a commercial or development bank loan (Erasmus 2022; Eskom 2021c: 15). As Industry representative 2 surmised, 'the pressure from the financial system is working ... you can see this in all the mining companies coming out with statements about halving carbon intensity by 2030, etc.' (interview, 21 February 2022). With this context in mind, many conventional coal-dependent and carbon-intensive institutions and their representative bodies have started to acknowledge the significance of emissions reduction, and to take practical and/or discursive steps to this end. For instance, despite their vocal opposition to the carbon tax, a number of large emitters have also recently signed up to net zero commitments by 2050, including Eskom, Sasol, Anglo-American and Exxaro (Creamer 2021a).

A further pressure on the core structures of the MEC is the anticipated introduction of a carbon border adjustment mechanism (CBAM) by the EU, for which a proposal was released in July 2021 (European Commission 2021). The CBAM, which would effectively mean an import levy on South Africa's carbon-intensive products by the EU, would be initiated in 2023 with a three-year transition period, and be fully effective from 2026. This proposal forms part of an EU-wide strategy to reduce the bloc's emissions by 55 per cent by 2030, and to incentivise both EU and international companies to reduce their emissions (Theunissen 2021). The proposed CBAM, which is likely to link to and partially replace the EU ETS, would pose a particular risk to South Africa's iron and steel and aluminium sectors given that close to 40 per cent of South Africa's aluminium and about 15 to 20 per cent of its steel exports are to the EU (Govindsamy 2021; Business Day TV 2021). As one energy economist cautioned in relation to the CBAM, 'If we don't start shifting, the world will shift us, at our expense' (in webinar, 31 January 2022).

2.1 Shifts in the coal value chain

As a core MEC resource, coal currently contributes to over 80 per cent of South Africa's electricity generation through Eskom's power plants (Eskom 2021c), and 20 per cent of national liquid fuel production through Sasol. Coal contributes close to 80 per cent of the country's total GHG emissions (see Figure 1), and is also a major contributor to industrial processes, a major employer and a source of export revenue.⁹ In 2019 South Africa produced about 260 Mt of coal (Minerals Council n.d.), of which Eskom, as the single largest buyer of the country's thermal coal, purchased approximately 46 per cent (Eskom 2021c: 97). In 2019 coal sales were the second largest contributor to export sales (at R57 billion and 17.6 per cent), after platinum group metals (Stats SA 2019). While coal exports fell from 7 per cent of South Africa's total foreign earnings in 2011 to 4.6 per cent in 2020, it still ranks ninth in the country's top ten export commodities (Makgetla and Patel 2021).

South Africa's coal dependence was actively built and strongly supported by the state as a core feature of its MEC. The country's coal value chain has benefited from various forms of direct and indirect public subsidy over the past 50 years – the major beneficiaries have included large energy-intensive users, coal mining companies, and their shareholders (Burton et al. 2018a, 2018b). These subsidies continue today, with pricing and regulation that actively promotes coal use – one example is market price support for Sasol's activities (Pant

⁹ According to the Minerals Council (Minerals Council n.d.), the coal industry employed 92,230 people based on 2019 figures.

et al. 2020). Another example, as discussed in further detail below, has seen the provision of significant state bail-outs to Eskom, most recently R56 billion paid from the government budget in FY 2020/21. The significant exemptions and allowances in the first phase of the carbon tax (discussed in Section 3.1) can also be seen as a subsidy, in that they constitute forgone revenue (Bridle et al. 2022). Meanwhile, the social and environmental costs of coal mining and coal-fired electricity generation in South Africa have often been overlooked and undervalued (Bridle et al. 2022).

However, a number of important shifts have taken place within South Africa's coal value chain in recent decades, including a diversification in the ownership structure, an increase in export demand, and a gradual move away from coal as the main source of electricity generation. The increased cost of coal is one reason among many as to why the country's electricity prices are no longer cheap by national historical standards.¹⁰ Electricity tariffs have increased more than six-fold over a decade, and are now the second largest cost component after salaries for deep-level and electricity-intensive mines (Ganie 2021) – a factor that has in turn affected the competitiveness of the country's energy-intensive exports (Makgetla and Patel 2021). The era of abundant and cheap coal as a key input to the MEC for both electricity and industrial processes has ended.

One key shift in the coal value chain relates to the emergence of a new black economic and political elite, following the introduction of black economic empowerment policies and legislation in the post-apartheid era. Until a decade ago the thermal coal sector was dominated by a small number of large multinational conglomerates, as discussed above. These conglomerates have since started to sell their operations to South Africa's emerging black elite, which has resulted in a significant diversification of the sector's ownership and a rapid decline in the share of foreign ownership through the 2010s (Coal Mining Matters n.d.). By 2020 six companies, only half of them foreign-owned, accounted for three-quarters of coal production. Meanwhile, the smaller and newer black-owned companies in the coal sector have not had strong enough balance sheets to support investment, and their operations have suffered as a result (Erasmus 2022; Makgetla and Patel 2021). These market shifts have contributed to a declining share of coal supplied by 'tied-mines': mines that hold long-term contracts with Eskom, are situated next to Eskom's power stations, and to which coal is transported by conveyor or rail. As a result, Eskom now purchases almost 40 per cent of its coal from smaller, often black-owned, mines that are located further away from the power stations, and to which the coal must be transported by truck at a much higher cost (Burton et al. 2022; Eskom 2021c: 96).

Second, the export pattern of South Africa's coal has changed. While demand from Europe has decreased in recent years, the last decade has seen an overall increase in coal exports – to India in particular, which buys about half of South Africa's coal exports – as well as to Pakistan, Vietnam and increasingly China. This increase in exports has resulted in growing competition within South Africa for its lower quality coal reserves, which historically had been used only by Eskom (Erasmus 2022). In more recent developments, Russia's invasion of Ukraine has increased European export demand for South Africa's coal, following the reactivation of various European coal plants in the wake of an increase in natural gas prices and an EU ban on imports of Russian coal (Banya and Reid 2022).

Third, as discussed in Section 5, the 2019 update of the country's master plan for electricity, the Integrated Resource Plan (IRP), projects a diversification away from coal and towards renewable energy, gas and potentially to new nuclear power, with no new coal plants being

¹⁰ Some would argue that, while South Africa's electricity prices can still be considered competitive by international standards, they are increasingly unreliable due to load-shedding, which can have a far more detrimental impact on production, as discussed by energy advisor and renewables consultant Brian Day, Business Edge, NewsCentral TV, January 2022 – available at: <https://www.youtube.com/watch?v=EPZAdIPxHH0>.

built after 2030. Several older coal-fired power stations that are nearing their end of life are due to be decommissioned between now and 2030, and a number of units across the fleet have already been retired. A small but significant utility-scale renewable energy industry from independent power producers was initiated in 2011, and now generates cheaper electricity than that generated by Eskom's recently constructed coal-fired power plant (CSIR 2020, 2021; Creamer 2021c). More recently, many energy-intensive users have started to implement their own self-generation projects from renewable energy.

2.2 Eskom: a utility in crisis

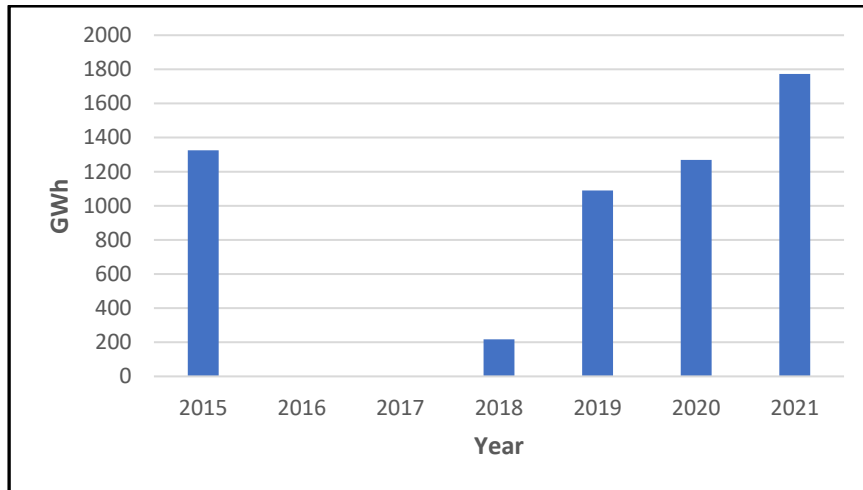
As a core MEC actor, state-owned Eskom is the primary generator and sole transmitter of electricity via the country's high-voltage transmission grid. Eskom is also responsible for 60 per cent of distribution, to one third of South Africa's customers. The country's municipalities are responsible for the remaining 40 per cent, supplying the majority of the country's residential customer base, as well as some businesses and local government (Baker and Phillips 2018). The majority of Eskom's sales are to mining and industrial customers, and, to a lesser extent, residential, international and commercial customers. Over 80 per cent of Eskom's total nominal generation capacity of 46.5 GW comes from coal-fired power stations (Eskom 2021c: 6). The utility has held significant influence over decision-making and planning in the electricity sector, although in recent years it has been at the centre of national scandals on state capture and corruption.

Having long been propped up by government bail-outs and other forms of public finance (Baker et al. 2015; Bridle et al. 2022), Eskom is no longer stable.¹¹ The utility is now facing long-standing crises of generation capacity, supply and management, as well as an increasingly unsustainable level of debt, which, at R400 billion, has become a threat to national economic stability (Bhorat et al. 2017; Phakathi 2022; Creamer 2021b). This debt has been further compounded by rising arrears from municipal distributors, which collectively owe the utility close to R36 billion, an increase of nearly 26 per cent from financial year ending March 2021 (Phakathi 2022; Eskom 2021c: 61). Much of the utility's coal generation fleet is suffering from increasingly poor performance due to inadequate maintenance and investment over decades, which has led to the energy availability factor falling to about 65 per cent in year ending 31 March 2021 (Baker et al. 2020; Eskom 2021c: 42).

Since 2008 regular load-shedding has taken place, with 2021 considered the worst on record so far (National Treasury 2022a: 9, see Figure 4). It is estimated that load shedding cost the South African economy nearly R35 billion between 2007 and 2019 (Walsh et al. 2020). In an attempt to stabilise generation capacity, the utility has relied on costly diesel for use in its open-cycle gas turbines (Eskom 2021c).

¹¹ National Treasury provided R49 billion in FY 2019/20, R56 billion in in FY 2020/21, with a further R33 billion demarcated for FY 2021/22 (Bridle et al. 2022:12).

Figure 4 Load-shedding since 2015



Source: National Treasury (2022a: 21)

Due to the country's economic isolation under apartheid, which ended in the early 1990s, Eskom resisted the global trends of power sector reform in the 1980s and 1990s. It only went through a very partial liberalisation, and retained its monopoly control. Eskom retained control over all planning and new-build decisions until the end of the 1990s/early 2000s, when formal and legal structures for energy policy and planning were eventually introduced. Subsequent legislative changes have allowed for the construction of utility-scale renewable electricity generation by private companies, to be procured by Eskom, under the country's renewable energy independent power producers' programme (RE IPPPP). RE IPPPP was launched in 2011 alongside the country's first master plan for electricity, the IRP (Baker et al. 2020). More recently there have been further regulatory advances towards distributed and self-generated electricity systems from solar photovoltaics (PV) (see Section 5). Moreover, after decades of failed attempts to unbundle the utility, the legal separation of Eskom's transmission unit has now begun, with as a first step an expectation that the National Transmission Company will become operational during 2022 (Creamer 2021b). How Eskom's debt will be allocated to the different companies that will be established as part of this unbundling process is currently unclear – a matter with implications for any potential carbon tax for which Eskom may be liable in future.

2.3 Sasol: low-carbon commitments?

The fifth largest South African company, Sasol, is listed on the JSE and the New York Stock Exchange, and is a multinational with interests in Europe, the Middle East, Asia, Australia, Africa and the Americas. Created in the 1950s, Sasol is an integrated energy and chemicals company and a global pioneer of CTL technology using the Fischer-Tropsch process – this involves synthesising liquid hydrocarbons from coal. During the 1970s Sasol expanded and developed its CTL operations with considerable assistance from South Africa's Industrial Development Corporation,¹² in order to increase the country's fuel security during the international oil embargo imposed during anti-apartheid sanctions (Fine and Rustomjee 1996: 169). The company was corporatised in 1979, with the government remaining as a shareholder, and its synthetic fuel operations have continued to receive large amounts of state financing (Pant et al. 2020).

As well as being the second largest emitter of GHGs in South Africa, Sasol is one of the country's largest coal suppliers, mining approximately 40 Mt of coal a year for gasification

¹² A national development finance institution established in 1940, with a stated focus on maximising development impact.

and conversion into liquid fuels. Sasol supplies almost half of South Africa's liquid fuel requirements through its CTL operations, conventional crude oil imports and refining (Coal Mining Matters n.d.). The company operates six coal mines that supply feedstock both to its CTL complex at Secunda, the single biggest point source of GHGs in the world, and to its operations at Sasolburg in South Africa. The company has a long history of lobbying the government to avoid dealing with environmental restrictions, and has used its influence as the country's largest corporate taxpayer and a large employer to this end. As discussed in Section 3, it is understood that Sasol played this kind of role during negotiation of the carbon tax.

Sasol also has a large captive national gas market, including its own petrochemical industries. It expanded its gas operations in recent decades, switching its Sasolburg feedstock from coal to Mozambican-sourced natural gas, and making a considerable reduction in its GHG emissions (Phillips 2021). As part of this diversification, its gas subsidiary, Sasol Gas Holdings Pty Ltd., developed a pipeline network covering more than 1500 km, delivering gas to over 600, largely industrial, customers (World Bank 2018). This network includes Sasol's shareholding and operation and maintenance of the 865 km Rompco pipeline, which transports gas from the onshore gas fields in the north of Mozambique in Temane and Pande to Sasol's South Africa operations.

While Sasol has since taken no further action towards reducing its GHG emissions, it has made further commitments. Notably, at its Annual General Meeting in November 2021 it committed to increasing its scope 1 and 2 emissions reduction target from a 10 per cent to a 20 per cent reduction by 2030 (from a 2017 baseline), as well as a new net zero target by 2050. The company claimed that such a commitment, for which the majority of shareholders voted in favour, was in accordance with its *Climate Change Report* released in September 2021, and its third report aligned to the Task Force on Climate-related Financial Disclosures (Sasol 2021a).

However, meeting this target not only relies heavily on the company's recently proposed green hydrogen operations becoming cost-effective as a low-carbon alternative (Sasol 2021b: 10), but also the availability of significant quantities of gas, renewable energy and water. A number of Sasol's critical institutional investors, including civil society and climate justice organisations,¹³ have raised doubts over the realism and the cost of these targets, the ability to monitor them, and that the company's decarbonisation roadmaps are not consistent with a 1.5°C pathway. They argue that the company's decarbonisation strategy lacks short-term (pre-2026) emissions reduction targets, which risks backloading crucial emission reductions to the end of the decade (Climate Action 100+ 2022). It is also unclear how Sasol will procure adequate quantities of natural gas, which it is seeking to use as a transition fuel as it moves away from coal, and what types of capital expenditure will be needed to support its transition plans (Phillips 2021).

2.4 The just transition

In 2012 the National Planning Commission published the National Development Plan (NDP) (NPC 2012) – Chapter 5 provides an enduring narrative for decarbonisation and the just transition, proposing the carbon tax as one instrument to help achieve this. Since then the just transition or the 'just energy transition' has become increasingly central to South Africa's national public discourse, at once to various different government ministries (DEA 2011; NPC 2012), labour (COSATU 2012), civil society (Overy 2018), academia (Cock 2019), and, more

¹³ Including Climate Action 100+, which represents 545 global institutional investors, as well as the civil society organisations Just Share, the Centre for Environmental Rights, Justiça Ambiental, Greenpeace Africa, groundWork, the South Durban Community Environmental Alliance and the Vaal Environment Justice Alliance.

recently, industry (Minerals Council 2020) and finance (Smith 2021), though the commitment of the latter has been met with some scepticism (Patel 2021: 23).

The term 'just transition' is now subject to diverse, competing and sometimes nebulous understandings of how, where and through which policies it should be operationalised and measured; under what timeframe; how much it will cost (PCC 2021); what it means for labour and employment, and for communities affected by coal development; how the winners and losers of any just transition should be compensated and supported; which institutions hold the greatest responsibility for implementing it, and what the role of the state, local government, the private sector and civil society should be to that end. There is no coherent national or international consensus, perhaps not unexpected given the complexities of its implementation, especially in the context of a financially unsustainable utility and a fragmented coal sector.

Since the NDP, multiple fora have been established to take forward the just transition at the national and sub-national levels, and to incorporate it into plans and policies. These include the Climate Change Bill (RSA 2022), introduced in parliament on 18 February 2022 but still pending approval, and the recently updated NDC (DFFE 2021a) (see Section 4). In 2020 Eskom launched a Just Energy Transition office, with a vision to achieve net zero carbon emissions by 2050 and increase sustainable jobs (Eskom 2021a, 2021b). In 2021 the National Business Initiative initiated a 'Just Transition Pathways' exercise. This sought to map out a technically and financially feasible set of pathways for South African business to achieve carbon neutrality by 2050, whilst ensuring global and national level competitiveness for various firms and sectors, including mining, power and synfuels-based chemicals (NBI 2021 in PCC 2021: 17).

A series of just transition dialogues were recently held by the Presidential Climate Commission (PCC), covering diverse topics such as coal, water and finance, and culminating in the release of a national just transition framework (PCC 2022). In the same year the DMRE published a discussion document on a just energy transition implementation framework, with an overarching stated objective 'to provide a structure to monitor the socio-economic impacts of the transition and to support the decarbonization of the mining and energy sectors in a socially acceptable manner while contributing to the economic development of the country' (DMRE 2021: 5). Mpumalanga, the province that is socio-economically most dependent on coal mining and coal-fired power, has developed the first phase of a just transition strategy, and is considered a test case in this area. However, so far there has not been a process to institutionalise this strategy at district and local government levels.

The Just Energy Transition Plan (JETP) was launched as a key outcome of the UNFCCC's COP 26 in Glasgow in November 2021. This plan is an US\$8.5 billion (R131 billion) financial support package for South Africa approved by the UK, France, US, Germany and the EU, to be mobilised over the next three to five years through grants, concessional finance and other climate finance instruments. The JETP aims to support the implementation of South Africa's NDC, including by bringing forward the planned retirement of Eskom's entire fleet of coal-fired power stations in the coming decades and a massive renewable energy build (Burton 2022). Yet the extent to which this financing deal will ultimately lead to the decarbonisation and transformation of Eskom is unclear. Not least, the receipt of these grants and loans is conditional on Eskom resolving its debt issue, and the amount pledged is less than half the R300 billion that the PCC estimates the country will need over the next 30 years to finance the just transition, most of which, it argues, will have to come from the international community.

3 Design and implementation of the carbon tax

National Treasury originally proposed the idea of a carbon tax for South Africa in its 2010 discussion paper (National Treasury 2010), as part of a broader process of environmental fiscal reform. However, it took almost a decade for the tax to be signed into law. Work on the carbon tax was further developed by economic analyses and modelling by Treasury, as well as academics and the World Bank (cf. National Treasury 2013; Caetano and Thurlow 2014; Legote 2012). Industry undertook its own analysis, usually at a sector- or firm-specific level, for which the modelling was not made public. Subsequent papers released by Treasury included the carbon tax policy paper (National Treasury 2013), the carbon offsets paper (National Treasury 2014), the Davis Tax Committee report (DTC 2015), and the initial draft Carbon Tax Bill, which was released in November 2015 for public consultation (National Treasury 2015). Substantive comments were received in writing, and at meetings and workshops with a wide range of stakeholders, including business, civil society, labour, state-owned enterprises and various government departments (National Treasury 2018). A second draft bill was published in late 2017, and the near-final Carbon Tax Bill emerged in March 2018 – which was followed by parliamentary hearings in March 2018 and 2019 (PMG 2018, 2019). After further delays, the Carbon Tax Act was finally signed into law in May 2019, taking effect on 1 June 2019 (RSA 2019).

The carbon tax is a market-based pricing instrument that aims to shift the social and environmental costs of GHG emissions from society to private companies and state-owned enterprises who emit GHGs above a certain level. Based on the ‘polluter pays’ principle, the tax puts a price on direct (scope 1) GHG emissions at the source of emission from fuel combustion, industrial processes and fugitive emissions within South Africa’s borders, as determined by the Department of Forestry, Fisheries and the Environment (DFFE). The more a company emits, the more tax it must pay, and/or the greater action it must take to mitigate its emissions in order to lower this tax rate. Under its current design, the tax does not apply to indirect, or scope 2 emissions, meaning that electricity is not liable.

Due to the structure of the country’s political economy, which is characterised by a small number of relatively powerful emitters, the implementation of a cap-and-trade system was considered too challenging. This compares to the EU ETS, which was negotiated with thousands of emitters; ‘the oligopolistic nature of the energy sector – the largest emitter of GHG - makes an emissions trading measure an inappropriate option in the South African context’ (Kalaba 2020: 10). As Tyler and Mgoduso (2022: 5) surmise: ‘The concentration of emissions in two entities (Eskom and Sasol) largely puts a trading mechanism out of reach, as these entities would dominate the market, distorting its effectiveness and affecting the ability of other suppliers to compete’.

The first phase of South Africa’s carbon tax began on 1 June 2019, and was originally to have run until 31 December 2022 – this was recently extended by three years until December 2025, as discussed below. The tax has set a 10 MW installed thermal input capacity threshold for combustion activities. This means that if a company has the capacity to combust 10 MW within an activity determined in Schedule 2 of the Carbon Tax Act (RSA 2019: 48), then their GHG emissions will be subject to the tax. Given that measurement of emissions is both difficult and expensive, companies have been given the option to use the ‘emission factors’ established by the Intergovernmental Panel on Climate Change (IPCC), which provide an approximation of GHGs emitted based on the volume of fuel combusted or the quantity of production (Deloitte 2019; RSA 2019:8).

During phase one, companies are taxed on direct emissions at a rate of R127 per tonne of CO₂e, rising to R134 in 2021, and increasing until 2022 by the level of consumer price inflation, plus 2 per cent annually. After 2022 only inflationary adjustments will be implemented (World Bank 2020:38), a measure that has been criticised for effectively reducing the escalation rate, and weakening any potential pathway to emissions reduction (Curran 2018). On 1 January 2022 the rate increased to R144 per tonne of CO₂e, though in practice is much lower than this due to the generous allowances and exemptions (see Section 3.1).

The DFFE is responsible for verifying all GHG emissions from the companies in line with the National GHG Emissions Report Regulations, and reporting the findings to the South African Revenue Service (SARS). In turn, SARS carries out its own audits and value checking, in order to ensure that calculations are accurate before enforcing payment (SARS 2021). The first filing of carbon tax returns for the 2019/20 reporting period was deferred from 31 July 2020 to 31 October 2020 due to Covid-19, with a first payment deadline in June 2021.

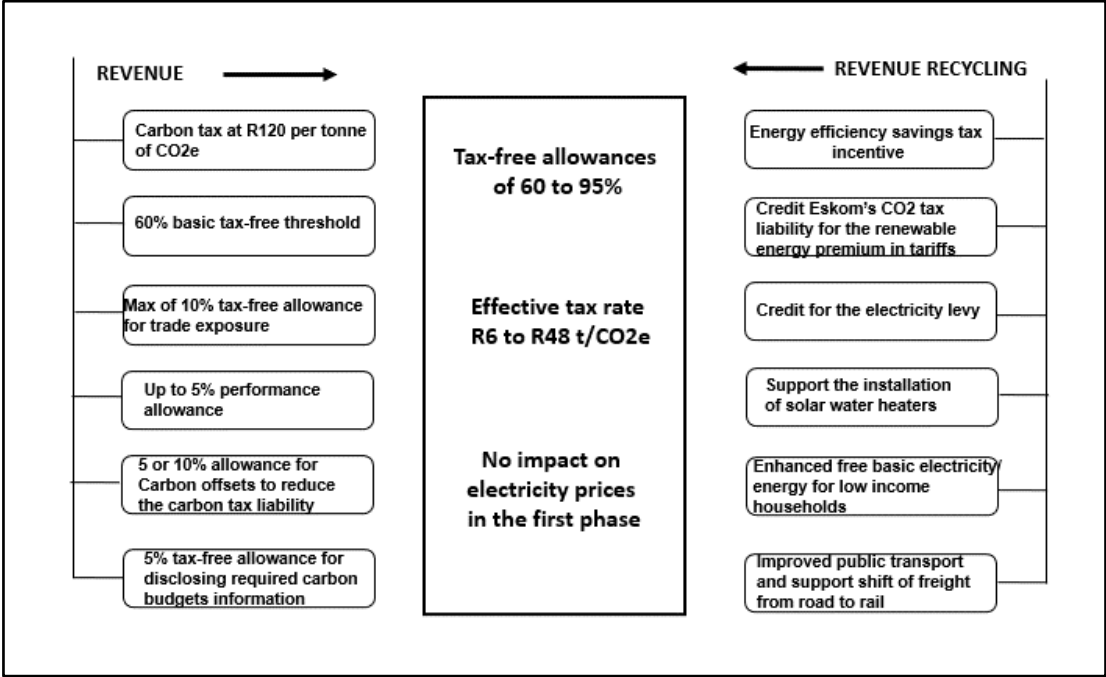
An estimated R650 million in revenue was raised in the 2020/21 tax year (National Treasury 2022b: 17), which is expected to rise to R1.36 billion in 2021/22 (Engineering News 2022). However, these figures represent a mere 0.05 per cent and 0.11 per cent of the total national tax revenue of R1,249.7 billion respectively (National Treasury 2022b: viii). Moreover, the extent to which carbon tax revenue is being earmarked for expenditure on environmental or climate related programmes, or merely centralised by National Treasury, is somewhat ambiguous (Cloete 2020) – a matter that has been subject to some criticism, as discussed in Section 3.3. While previous government documents suggested that the revenue could be used to subsidise low-carbon energy supplies for low-income households (DTC 2015; NPC 2012), a member of National Treasury argued in a recent webinar that because the aim of the tax is to reduce emissions, if effective it would in turn reduce the revenue it generates, and it would therefore be potentially disruptive to earmark it. ‘As Treasury we don’t ring-fence revenues as that introduces fiscal rigidities within the system. However, Treasury is supporting related projects that are funded through the fiscus, e.g. the energy efficiency tax incentive’ (public webinar, 31 January 2022).

3.1 Exemptions and allowances

As a result of oppositional pressure from key MEC actors, the first phase of the tax was designed with significant exemptions and allowances. Most notably, emissions from electricity generation are exempt, which means that though Eskom is responsible for 44 per cent of national emissions, it is not subject to the first phase of the tax. As recently announced, Eskom will not be subject to the second phase either.¹⁴ Emissions from the waste sector, agriculture, forestry and other land use sectors are also exempt (De Wet and Daniel 2020). Moreover, the first phase of the tax grants tax-free allowances of between 60 to 95 per cent of their emissions to all liable polluters. Through these measures, illustrated in Figure 5, the initial carbon tax rate effectively falls to between R6 and R48 per tonne of CO₂e.

¹⁴ National Treasury indicated that most of the carbon tax revenue would be used to prevent an increase in electricity tariffs via credits to electricity generators to offset the environmental levy on non-renewable electricity generation (Cloete 2020, see Figure 5). This levy was introduced by National Treasury in 2009, and consists of a tax on electricity generated by non-renewable sources, including coal, petroleum-based fuels, natural gas and nuclear. The implementation of this levy was intended to initiate a preliminary framework for the carbon tax to reduce the tax liability of electricity generation (Bridle et al. 2022). The levy effectively increased the relative cost of fossil fuel generation to Eskom, which in turn passed on this increased cost into its sales via electricity tariffs (Makgetla and Patel 2021).

Figure 5 Structure of the 2019 carbon tax



Source: adapted from National Treasury 2020

First, all companies automatically qualify for a 60 per cent basic tax-free threshold (National Treasury 2018), and, second, can receive a further tax-free allowance of 10 per cent for process and fugitive emissions. Third, if companies are trade-exposed, they qualify for an additional reduction of up to 10 per cent. Beyond that, if companies outperform their respective industry’s GHG emissions intensity benchmarks they can claim an additional 5 per cent reduction (Deloitte 2019), as well as a further 5 per cent tax-free allowance for complying with carbon budget information requirements (as discussed in Section 4.2).

Finally, emitters can use carbon offsets to increase their tax-free allowances by a further 5 to 10 per cent of their total emissions through investment in GHG-reducing projects. Eligible projects can be the companies’ own or those of third parties, but must be within South Africa and be registered under an accredited standard such as the Clean Development Mechanism (CDM), the Verified Carbon Standard (VCS) and the Gold Standard. Projects can include biomass to energy, forest restoration, renewable energy projects smaller than 15 MW in size, and projects that lead to reduced emissions from transport. Nuclear and industrial gas projects, renewable energy projects that generate more than 15 MW at a cost of more than R1.09 per kwh, or any project that has claimed tax credits under section 12L of the Income Tax Act are not eligible (Planting 2021). To this end, the South African Carbon Offset Administration System (COAS), managed by the DMRE, was launched in early 2020. Meanwhile, the Treasury is working on a framework with the World Bank’s Partnership for Market Readiness for the development of local offset standards and methodologies (World Bank 2020: 83).

Sasol claims to have procured approximately 4.3 Mt of allowable carbon credits to offset their carbon tax liability (Sasol 2021a: 4). The first example of a carbon offset under the carbon tax saw Sasol purchase more than 100,000 credits from Bethlehem Hydro, an independent

power producer with a generation capacity of seven MW and one of the first South African projects to be registered under the CDM in 2009 (ESI-Africa 2020). However, it is anticipated that there will be a shortage of tradable credits in the country for companies wishing to offset their emissions in this way.

It is paradoxical that South Africa's two largest emitters have been largely exempted from the first phase of the tax. Sasol was excused from over 90 per cent of its emissions, received an exemption of R6.5 billion in 2020, as well as R1.6 billion in direct subsidies through South Africa's regulated fuel price (Pant et al. 2020). Meanwhile, Eskom has been relieved of the first phase of the tax through a tax credit for the renewable energy premium (see Figure 5) that has been built into the electricity tariffs, and a credit for the existing electricity generation levy (Tyler and Mgoduso 2022, discussed in Section 5). Eskom's exemption, along with the generous tax-free allowances provided for in the Act, have in turn cushioned the carbon tax blow for many intensive energy users (De Wet and Daniel 2020). Following National Treasury's Budget Review in February 2022, electricity will continue to remain exempt under phase two.

While the stated rationale behind these allowances is to provide time for large emitters to transition to cleaner, more efficient lower-carbon technologies, they have been widely criticised for their lack of incentives to reduce emissions. This criticism raises questions about how meaningful this first phase can really be in reducing carbon emissions (Kalaba 2020). An independent energy consultant surmised 'The Act made space for regulation, which was so fluid that all the large contracted emitters would pay next to no tax' (interview, 21 January 2022). Bridle et al. (2022: 11) estimate that these allowances and exemptions resulted in a total R47 billion of foregone revenue for FY 2020/21, and are therefore a form of energy subsidy. However, Ismail Momoniat, Deputy Director General of Treasury, defended the first phase of the tax, arguing that its design is primarily to change behaviour rather than raise revenue, and that while it is 'pretty weak', it is 'very important symbolically', including for the development of institutional capacities and methodologies for collecting accurate data and measuring emissions (in Creamer 2019).

3.2 Phase two

Phase two of the carbon tax was originally to have run from 2023 to 2030. However, until 23 February 2022, there was no clarity on what the arrangements for this phase would be, and whether and to what extent the exemptions and allowances from phase one might remain. There was a general anticipation that National Treasury would increase the tax levels significantly, and remove or drastically reduce the allowances and exemptions. A widely-held concern was that, if the electricity sector were to be made liable for the tax, Eskom would pass the costs on to consumers and higher tariffs would result. Energy-intensive users argued that any tariff increase would impact their overall operations, weaken the country's economic prospects, and exacerbate Eskom's death spiral (cf. Tyler and Mgoduso 2022). For instance, as an academic and energy modeller stated: 'The carbon tax would lay waste to companies like Sasol, even though it would have a good mitigation outcome' (interview, 14 December 2021). Another concern was that the carbon tax would affect low-income households, who it was argued would be unable to cope with yet further increases in domestic tariffs and the increased costs in basic goods and services that would result.

To some extent, these concerns have been alleviated for the time being. As the Minister of Finance's budget speech outlined in February 2022, the introduction of phase two of the carbon tax, which was originally to have begun in 2023, has been delayed by a further three years until 1 January 2026 (National Treasury 2022a). Until this time, liable companies will continue to benefit from many of the allowances outlined above, and many sectors will

continue to remain exempt, including agriculture, forestry and other land use and waste sectors, and, most significantly, the electricity sector. However, some adjustments will be introduced from January 2023. First, it may become much harder for companies to qualify for the trade exposure allowance of up to 10 per cent. Second, pending the approval of the Climate Change Act and the introduction of the mandatory carbon budgeting system (see Section 4), the carbon budget allowance of 5 per cent will fall away, and a proposed carbon tax rate of R640 per tonne of CO₂e will apply to companies that exceed their carbon budget (National Treasury 2022a). Such a move could potentially place increased pressure on carbon-intensive activities.

Third, the carbon tax rate, which increased to R144 from 1 January 2022, will continue to increase annually by at least R16.2 until it reaches R324 per tonne by the start of the second phase in January 2026. This rate appears higher than projected in the original act. Moreover, according to the budget speech, when phase two begins in 2026 the tax rate will be subject to larger annual increases than before in order to reach at least R486 by 2030, accelerating to higher levels by 2035, and up to R1,944 beyond 2050. From this time onwards the basic tax-free allowances will be gradually reduced, though there is as yet no detail on how this will be implemented. Government further intends to increase the carbon offset allowance by 5 per cent from 1 January 2026. For the time being, however, these measures appear to be proposals 'to inform future budget announcements' (National Treasury 2022a: 49), rather than confirmed mandatory requirements. Though the tax seems bound to increase, how meaningful it may be in the years to come, and what the specific requirements will be, are still unclear (Engineering News 2022).

3.3 Criticisms of the carbon tax¹⁵

Although National Treasury first proposed the carbon tax in 2010, the process of negotiation lasted nearly a decade. A key reason for this delay was strong opposition from MEC incumbents, including: the country's largest emitters Sasol and Eskom, the Minerals Council, BUSA, the EIUG, the Industry Task Team on Climate Change, the Chemical and Allied Industries Association, the South African Petroleum Industry Association, the South African Chamber of Commerce and Industry, and the Steel and Engineering Industries Federation of Southern Africa and AMSA (cf. Trollip and Boule 2017). It is understood that Sasol played a leading role in coordinating this opposition via the Minerals Council (Rennkamp 2019; Sasol 2021a). As well as contributing to its delay, this opposition also influenced the tax's eventual design, including the various exemptions and allowances discussed in Section 3.1, and quite probably the more recent decision to delay the start of phase two.

While many MEC incumbents now acknowledge the importance of climate change and are not necessarily opposed to the principle of carbon pricing per se, most of them criticised and/or opposed the tax. Given that many of their arguments were put forward at a time when international commodity prices were low, a key point of contention was that carbon tax would increase the already high input costs of energy-intensive mining (Minerals Council 2019b; Lobby Map 2021; Anglo American 2020). Opponents argued that the tax would add billions of Rand of additional expense, and increase the operational and capital costs of heavy industry, which would in turn lead to job losses and exacerbate South Africa's already high unemployment rate. These job losses, they argued, would be felt most keenly in the gold and platinum group metals sectors, which according to the Minerals Council (2019b) account for

¹⁵ This section summarises the most recent criticisms of the tax. For a longer-term, more in-depth, analysis, particularly of industrial concerns, see Trollip and Boule (2017), and the Davis Tax Committee report (DTC 2015), which conducted a review of the carbon tax to assess design issues, the timing of the tax's introduction, its alignment with other policy, and its potential impacts. See also Section 4.2 for discussion on the lack of alignment between the carbon tax and the carbon budgets. An audio of the public hearings in 2018 and the numerous presentations is available at: <https://pmg.org.za/committee-meeting/25997/>.

62 per cent of the total mining sector in South Africa. Moreover, following the Minerals Council's estimation that employment in the mining sector has a multiplier of 2.8, the carbon tax would lead to indirect as well as direct job losses and threaten to reduce employment in the sector by up to 14 per cent, potentially leading to the loss of 6,000 jobs per year (SABC News 2019).

The Minerals Council also argued that because the mining sector is a 'price taker' it cannot pass on the costs associated with the carbon tax to the end consumer – unlike suppliers to the mining sector. Mining companies would therefore be affected by indirect tax liabilities – for instance, lime, steel or cement (from 2019), and electricity (from 2023) – which they reasoned could eventually end up costing more than the direct liabilities (Minerals Council 2019c).

The Minerals Council also argued that uncertainty regarding the future of the tax, including (prior to National Treasury's Budget Review in February 2022) the lack of clarity over phase two, would create significant complications for industrial investment planning, given that mining company investment is multi-decade. As one industry representative summarised: 'Three years is as good as tomorrow' (interview, 21 February 2022). Mining companies also expressed particular concern about the potential removal of exemptions and allowances in this second phase (Ganie 2021; BUSA 2018). A final criticism was that the lack of policy alignment between the carbon tax and carbon budget (discussed in Section 4) would add to planning uncertainty and lead to potential duplication.

The manufacturing sector also argued that it would experience a substantial economic impact as a result of the tax (BUSA 2013; CAIA 2019). For instance, AMSA put forward numerous arguments as to why it should qualify for significant relief measures and exemptions in order to remain sustainable in the event of the introduction of a carbon tax. Firstly, because there are limited options for reducing GHG emissions from the steel production process, which uses carbon as a reductant to convert iron ore to steel; and secondly, because AMSA is 'trade exposed and prone to carbon leakage' (AMSA 2018: 2). Though not unique to South Africa or indeed carbon pricing in general, carbon leakage was a widely-shared criticism, following the argument that production will relocate in order to evade punitive taxes on emissions that are hard to mitigate (Kalaba 2020; Cloete 2020).

A final criticism from energy-intensive mining and manufacturing companies was that regulatory constraints had prevented them from reducing any potential carbon tax liabilities from the electricity sector in phase two by installing their own electricity supply from renewable energy (Minerals Council 2019c). However, as discussed in Section 5.3, recent regulatory changes relating to the installation of own generation have started to make this more feasible.

While Treasury's push for the carbon tax was supported by the DFFE¹⁶ as the department responsible for mitigation policy (see Section 4), there was strong opposition from the Department of Trade and Industry (DTI) and Economic Development Department (EDD), which to a certain extent shared some of the concerns raised by the country's carbon- and energy-intensive incumbents. Both departments saw the tax, and its assumed negative impact on jobs and growth, as a threat to the country's industrialisation strategy and the development of new domestic capabilities beyond the core of the MEC sectors (cf. Baker et al. 2015). In light of such strong resistance from a variety of powerful actors, one coal analyst surmised that: 'it was testament to the doggedness of National Treasury that [the carbon tax] actually happened' (webinar, 31 January 2022). However, such a claim that has been

¹⁶ Until 2019, the Department of Environmental Affairs (DEA).

somewhat undermined by the eventual weakness of tax's design and its negligible impact on national emissions.

Though the strongest and most vocal opposition to the carbon tax came from industry, to a lesser extent environmentalists, labour and civil society also put forward critiques. For instance, while many environmental organisations and think tanks are in favour of carbon pricing, they have argued that the tax is low by international standards, particularly once the allowances and exemptions are considered. They therefore argue that the tax will fail to make a meaningful contribution to reducing emissions (Business Day TV 2021; WWF 2018) which concurs with suggestions from the original modelling that the tax would not be high enough to encourage significant shifts in emissions (Alton et al. 2014). Indeed, the current and potential contribution of the tax to total reduction in emissions appears negligible, and based on the research carried out for this study, has not been publicly quantified. As one energy consultant concurred: 'See if you can find a paper which shows how the carbon tax will impact emissions. It is unlikely that you will find one' (interview, 21 January 2022).

Other concerns have centred on equity, welfare, and the potential socio-economic impacts on the poor, including that the additional costs of the tax will eventually be passed on to domestic consumers, affecting jobs, the cost of living, essential services and basic goods, including electricity, food and transport (Kalaba 2020; PMG 2018). Criticism from labour centred primarily on design issues. The National Union of Metalworkers of South Africa (NUMSA), for example, supported the introduction of the tax subject to design changes related to revenue recycling (Baker et al. 2015). The Congress of South African Trade Unions (COSATU) was ultimately supportive, but also stated that the tax should be accompanied by a wide range of other energy, housing and transport measures to ensure a just transition to a low carbon economy (PMG 2019).

A further criticism relates to the lack of transparency over how carbon tax revenue would be spent, and National Treasury's decision not to ring-fence the revenue for low-carbon initiatives – a matter over which there is still some ambiguity, as discussed above (Cloete 2020). Finally, a number of interviewees argued that the current design of the carbon tax, to be implemented as a flat tax across all sectors, is a blunt instrument. For example, a climate change policymaker argued that: 'The problem with a simplified idea of carbon pricing as a flat tax across the economy is unhelpful. You need quite a nuanced understanding of the transition path for each sector and what the levy is per sector' (interview, 27 January 2022).

4 Disconnected: South Africa's carbon tax in the context of national mitigation policies

The negotiation and implementation of the carbon tax has taken place within a web of sometimes overlapping, but often disconnected and fragmented, processes and institutions, all of which to a greater or lesser extent are involved with taking forward South Africa's transition to a net zero economy by 2050 (cf. Trollip and Boule 2017; Tyler and Mgoduso 2022). As discussed below, the nature of this fragmentation and misalignment poses further challenges to implementation of the tax.

While the carbon tax is the domain of National Treasury, as per its constitutional mandate over tax policy, the DFFE is responsible for: coordinating climate change policy and action, establishing relevant targets and frameworks towards the achievement of the country's nationally determined contribution (NDC), representing South Africa in the UNFCCC process,

and developing draft legislation, including the National GHG Emission Reporting Regulations and Climate Change Bill. As discussed below, the DFFE has been developing the latter, which was formally introduced in parliament on 18 February 2022 as a first step towards the now delayed approval of the Climate Change Act. This, at the same time as National Treasury has been developing the carbon tax. However, these two processes have largely taken place in parallel rather than in alignment.

The lack of coordination between Treasury and the DFFE has provided an opportunity for MEC incumbents to further resist the introduction of climate change mitigation measures, including the carbon tax (Tyler and Hochstetler 2021). Moreover, despite the DFFE's laudable ambitions, the department has never been politically influential, least of all over large mining and energy-intensive companies and more influential government departments, including Treasury and the DMRE. The DFFE has therefore ended up trying to push through 'things that are not politically and economically feasible' (Baker et al. 2015: 50).

4.1 Climate policy: from voluntary mitigation to the revised NDC

As with the carbon tax, South Africa's policy framework for climate change mitigation leading to the Climate Change Bill has built on over a decade of development (Tyler and Hochstetler 2021). In December 2009, under the Copenhagen climate change accord, former President Jacob Zuma made a voluntary pledge to reduce his country's GHG emissions by 34 per cent by 2020 and 44 per cent by 2025, contingent on financial support and technological transfer (DEA 2010). This was based on the 'Peak, Plateau and Decline' trajectory of the country's Long-term Mitigation Scenarios (LTMS), a cabinet-mandated process led by the then Department of Environmental Affairs and endorsed by Cabinet in 2008. The LTMS built around a long-term 'national emissions benchmark trajectory range' for national GHG emissions from 2011 to 2050, which projects a peak in 2025, a stable plateau until 2035, and then a decline to 2050.

Prior to this pledge, in September 2009 cabinet had also established the Inter-Ministerial Committee on Climate Change (IMCCC), with a mandate to exercise oversight over the implementation of national climate policy. While the IMCCC consisted of representatives from six departments, including Water and Environmental Affairs (now DFFE), EDD and the DTI (now the Department for Trade Industry and Competition, DTIC), the Ministry of Energy (now DMRE) and National Treasury were not included, and it remained largely undeveloped (Giordano et al. 2011: 18; Tyler and Hochstetler 2021: 192).

South Africa's voluntary mitigation pledges of 2009 were formalised in 2011 under the National Climate Change Response Policy (NCCRP), which led to the publication of the National Climate Change Response White Paper (NCCRWP) (DEA 2011), just before the country's hosted the UNFCCC COP 17 in Durban (Lukey 2020). In this same year two key pieces of electricity sector regulation were finalised by the then Department of Energy – the IRP, and the Renewable Energy Independent Power Producers' Procurement Programme (RE IPPPP) (see Section 5). National Treasury was heavily involved in the latter on behalf of the DoE.

South Africa's first Nationally Determined Contribution (NDC) was ratified in November 2016. It committed to GHG emissions reductions of between 398 and 614 Mt CO₂e by 2025, and between 212 and 428 Mt CO₂e by 2050. While the first NDC was largely a reiteration of the 2011 mitigation pledge, the country's commitment to it nonetheless strengthened the case for its implementation. In September 2021 the NDC was updated and endorsed by Cabinet to incorporate a far more ambitious emissions reduction target to a range of between 398 and 510 Mt CO₂e by 2025, and between 350-420 Mt CO₂e by 2030. This revised target, which

was finalised in time for the COP 26 summit in Glasgow in November 2021, requires a reduction from existing emissions of around 470 Mt CO₂e (RSA 2021: 15, PCC 2021: 3).

While the upper end of this new revised range incorporates emissions outcomes that are consistent with existing policy, including the 2019 IRP (discussed in Section 5), meeting the lower end of the range would require more meaningful mitigation measures – such as greater energy efficiency and low-carbon transport – as well as a significantly faster and greater roll-out of wind and solar PV than the IRP currently envisages (Merven et al. 2021). The NDC also makes clear that the realisation of this target depends on international support and climate finance as stipulated in Articles 9, 10 and 11 of the Paris Agreement (RSA 2021: 4), and to which the JETP, discussed in Section 2.4 would make a key contribution.

4.2 The Climate Change Bill: of carbon budgets and sectoral emissions targets

The Climate Change Bill is a key mitigation instrument of South Africa's climate change policy, and was open to public consultation between June and August 2018. After various delays the Bill was submitted in October 2021, and was formally introduced into parliament on 18 February 2022 as a first step towards its final approval – currently anticipated for later in 2022 (RSA 2022). The Bill aims to provide a legal and mandatory basis for what until now has been a voluntary carbon budget system for significant GHG emitting **companies**, and to set Sectoral Emissions Targets (SETs) for GHG emitting **sectors** or **sub-sectors**. The idea for both carbon budgets and SETs were first introduced in the NCCRWP (discussed above), which set 2013 as the original deadline for their operationalisation – though this was subsequently delayed. The stated aim of both the company level carbon budget (see Box 1) and the sector level SETs (see Box 2) is to assist South Africa with meeting its absolute reduction targets under its Low Emissions Development Strategy. This was approved by Cabinet and submitted to the UNFCCC in September 2020 and indicates a long-term goal of net-zero carbon emissions by 2050 (RSA 2020; DFFE 2021a).

While it is anticipated that the Carbon Tax Act and the yet-to-be-approved Climate Change Act should be mutually reinforcing, and that a higher carbon tax rate will be applied to companies whose emissions go above the carbon budget from 2023 (PMG 2021; National Treasury 2018), the interface between these two mechanisms is complex and opaque – and, based on the limited public information available, still being worked out. While National Treasury's most recent Budget Review of 23 February 2022 stated that a higher carbon tax rate of R640 per tonne of CO₂e will apply to GHG emissions that exceed the carbon budget once the Climate Change Bill is enacted (National Treasury 2022a: 48), the current text in the Climate Change Bill does not mention this integration, or indeed discuss the carbon tax at all. Their relationship is further complicated by the uncertain timing as to when the Climate Change Act will be passed into law, and the delay to phase two of the carbon tax.

This scenario illustrates the fragmentation and long-standing tensions between various national mitigation-related measures being implemented by different departments. This fragmentation is further complicated by the fact that, while the carbon tax implemented by National Treasury is a market-based mechanism, and puts a price on emissions but does not cap them, the carbon budget and SETs, being implemented by the DFFE, can be considered a form of 'command and control' regulation that makes it mandatory for companies to constrain their emissions under a certain cap (Tyler and Mgoduso 2022). This relationship is economically incompatible, as the Davis Tax Committee points out: 'the imposition of penalties [under the carbon budget] as a command-and-control procedure is at odds with the economic principles of a market-based carbon tax' (DTC 2015:33).

Box 1 Carbon budget

South Africa's carbon budget refers to an assigned amount of GHG emissions allocated to a company for the direct emissions arising from the company's operations over a five-year time period (RSA 2022). The implementation of the carbon budget has been divided into three phases. The first ran from January 2016 to 2020, was voluntary and had no prescriptive methodology. During this phase, emissions reporting by participating companies was based on regulations promulgated in 2017 under the National Environmental Management Air Quality Act, which requires that companies emitting more than 0.1 Mt of CO₂e per year to declare their direct (scope 1) emissions (Tyler and Mgoduso 2022: 7). Participating companies were not sanctioned for exceeding their budgets and a 5 per cent carbon tax allowance was granted upon submission of the budget (see Section 3.1).

The second, transitional, phase was gazetted on 22 October 2020, and is scheduled to run from January 2021 until December 2022. The aim of this phase is to extend the submission of the voluntary carbon budget of the first phase, and to pilot the methodology to be used in the third phase (DFFE 2021b).

The third phase, due to run between January 2023 and December 2027 and will implement **mandatory** submissions under the Climate Change Act for all companies meeting the legislated threshold (RSA 2022: 15). This third phase of the carbon budget was to have aligned with the second phase of the carbon tax, but there is now little clarity on this issue given the latter's delay until January 2026 as discussed in Section 3. Assuming that carbon budgets become mandatory from 2023, the 5 per cent carbon tax allowance (see Figure 5) would be removed (National Treasury 2022a: 48).

Box 2 Sectoral emissions targets (SETs)

SETs are quantitative and qualitative GHG emissions targets to be allocated to an emitting sector or sub-sector in line with the national emissions target over three consecutive five-year periods. These targets are to be developed, calculated and allocated within a year of the operationalisation of the Climate Change Act by the Minister of Environment, together with the minister(s) responsible for each sector or sub-sector (RSA 2022). While SETs are considered separate to the company level carbon budget, it is anticipated that the quantitative portion of many SETs will be in a carbon budget-type form (Tyler and Mgoduso 2022). That said, the methodology for how SETs will be calculated is not yet certain, and is even less clear than that of the carbon budget.

This same point was emphasised more recently by Andrew Gilder, director of climate legal at EY Cova, who stated: 'I would like Treasury and Environmental Affairs to talk to one another and collaborate when they design these instruments ... We have a carbon budgeting system that is still being evolved at Environmental Affairs that is completely ignoring what is being implemented in terms of a carbon tax, or at least because there are no public conversations we don't know if those things have finally joined one another' (9 December 2021, interview in Business Day TV 2021).

One economist described the integration of the carbon tax with carbon budgets as an 'unresolved policy question that we have been dealing with for more than a decade ... This has never been resolved. We effectively have two instruments that barely talk to each other' (webinar, 31 January 2022). The lack of alignment between these two instruments was put

forward by many carbon- and energy-intensive users as another reason to oppose the tax, particularly on the grounds of policy uncertainty, financial risk and concerns that punitive measures may be duplicated (BUSA 2018, AMSA 2018, Sasol 2021c). While Eskom is participating in the DFFE's voluntary carbon budget process, the details are not public. It is also not clear how the carbon budget will be applied as the utility's unbundling progresses (Eskom 2021c:105).

4.3 The Presidential Climate Commission: moving things forward?

Cabinet's approval of the establishment of the Presidential Climate Commission (PCC) in September 2020, which has a mandate to coordinate South Africa's just transition to a low-carbon, resilient economy by 2050, can be seen as a significant institutional step towards the country's climate change ambition. Chaired by the president, the PCC has a diverse membership of 22 commissioners, including ministers from the following government departments: DFFE, DMRE, National Treasury, DTIC, Transport, Public Enterprises, Agriculture, Land Reform and Rural Development, Water and Sanitation, and Higher Education, Science and Technology; as well as representatives from civil society, trade unions and business. As energy analyst (1) explained, the PCC has changed the nature of South African climate politics quite significantly, by constructing a new framework for climate policy. Another enthused that the PCC 'has put fresh air into climate politics' (interview, 21 January 2022).

Although the mandate of the PCC is advisory, it sits in the Climate Change Bill, is partly funded by government, and has played a key role in enhancing the ambition of the updated NDC, including through convening all the major independent, modelling-intensive energy studies (interview with Business representative, 27 January 2022). In this sense, the PCC has acted as a significant counterpoint to the previous dominance of the DMRE's influence over national policy, by strengthening the position of the DFFE – which has never been politically influential (Tyler and Hochstetler 2021). There is therefore reasonable hope that the PCC may help to unlock some of the disconnect and fragmentation described above.

5 Aligning the carbon tax with the electricity sector

Given that coal-fired electricity generation accounts for the majority of the country's emissions, its decarbonisation is key to meeting both the NDC and the Integrated Resource Plan for electricity (IRP) discussed below. As modelling by the Energy Systems Research Group at the University of Cape Town indicates, 'over the next decade, between 70 and 90 per cent of emission reductions will come from the electricity sector, which is key to decarbonising South Africa's economy. This is because it is the cheapest sector in which to reduce emissions, with mature renewable energy technologies whose costs will continue to get cheaper every year. The transport sector will make up the rest of the emission reductions, due to underlying technology and modal shifts from road to rail' (in PCC 2021: 18). However, as discussed above, so far the electricity sector has been exempted from the first phase of the carbon tax, and will remain so under phase two.

As discussed in Section 2.2, the state-owned utility Eskom is in crisis, while the electricity sector more broadly is undergoing significant change and restructuring – partly due to technological innovations and regulatory shifts. The complexities of South Africa's electricity governance illustrate long-standing ideological differences in the country's political economy,

including over who should construct, own and procure new sources of generation, and which technologies should be selected (Baker et al. 2020). These ideological differences and regulatory shifts have various important implications for the carbon tax, including the introduction of recent regulation that has made it easier for energy-intensive users to install their own generation from renewable energy technologies, thereby reducing their reliance on Eskom.

Prior to the 2022 Budget Review, which announced delays to phase two, concerns had been raised that the carbon tax could have a significant impact on electricity prices, which would then be passed on to the customer rather than incentivising Eskom to reduce its emissions. Not least, Eskom's 2021 Integrated Report anticipates that from 2023 it would be liable for the carbon tax at a cost of R11 billion per year, which would be 'passed through' to consumers, adding an estimated 4 to 5 per cent to the required year-on-year increase in electricity tariffs (Eskom 2021c: 104). However, recent announcements have postponed the potential of this happening for a few years to come. Various cautionary arguments were also put forward against subjecting Eskom to the tax (Tyler and Mgoduso 2022). As a climate change analyst asked, 'What is the point in taxing Eskom if it is already in crisis?' (interview, 17 January 2022). Moreover, making the electricity sector liable for the tax would also severely impact municipalities who purchase their electricity in bulk from Eskom, and then sell on to customers with a mark-up that they use to cross-subsidise other social services (DTC 2015: 27).

5.1 The Integrated Resource Plan (IRP)

Until the Climate Change Act is passed, the carbon tax and IRP 2019, the country's national planning document for electricity, are the only legally enforceable mechanisms towards emissions reduction. Of these, the IRP has the greatest potential for decarbonisation. However, though the IRP has always contained a GHG emissions constraint (DMRE 2019: 36),¹⁷ the key focus and stated objective of the plan has been electricity planning, rather than climate change mitigation. Significantly, and following the theme of policy fragmentation discussed in Section 5, the IRP has no formal alignment with the carbon tax.

The IRP is led by the DMRE, although Eskom and other technical advisors have played an important role in the modelling (Baker et al. 2015). Under section 34 of the 2006 Electricity Regulation Act, new generation capacity can only be installed and procured if it has been identified in the IRP (see Figure 6). After a lengthy and contested negotiation process, the country's first IRP was promulgated in 2011 (DoE 2011) – the same year as the approval of the NCCRWP (see Section 4) and the RE IPPPP discussed below. A 'living document', the IRP was to have been revised every two years, but it took until 2019 for this to eventually happen, updating the energy forecast to the year 2030.

The IRP 2019 has committed to a major shift – to reduce electricity generation from coal, and increase generation from renewables. The installed capacity of coal is projected to fall from over 37 GW to about 33 GW by 2030 (see Figure 6), while the installed capacity of wind and solar PV is projected to rise to at least 26 GW over the same period. Over the longer term, 35 GW of coal will be decommissioned between 2019 and 2050, of which 24 GW after 2030, according to Eskom's decommissioning schedule (DMRE 2019: 35, 55).

However, coal will still remain dominant in the energy mix until at least 2030 (see Figure 6).

¹⁷ IRP 2019 signals a total emissions reduction budget for the entire electricity sector up to 2050 of 5,470 Mt CO₂ cumulatively (DMRE 2019: 37). However recent analysis finds that this figure is outdated, owing to rapid changes in the electricity sector (Tyler and Mgoduso 2022: 12).

Figure 6 IRP: Projected electricity capacity (in MW) 2019 to 2030 (source: adapted from DMRE 2019:42)

	Coal	Coal decommissioning)	Nuclear	Hydro	Storage	Solar PV	Wind	CSP	Gas & diesel	Other: distrib'd generation, cogen, biomass, landfill	
Current base	37,149		1,860	2,100	2,912	1,474	1,980	300	3,830	499	
2019	2,155	-2,373					244			Allocation to the extent of the short-term capacity & energy gap (estimated at 2000 MW)	
2020	1,433	-557				114	300				
2021	1,433	-1,403				300	818				
2022	711	-844			513	400	1,000				
2023	750	-555				1,000	1,600		500		
2024			1,860				1,000		1,000		500
2025						1,000	1,600				500
2026		-1,219					1,600				500
2027	750	-847					1,600		2,000		500
2028		-475				1,000	1,600				500
2029		-1,694			1,575	1,000	1,600			500	
2030		-1,050		2,500		1,000	1,600			500	
Total installed capacity (MW) by 2030	33,364		1,860	4,600	5,000	8,288	17,742	600	6,380	4,000	
Total installed capacity (%age of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1		
	installed capacity										
	committed/ already contracted capacity										
	capacity decommissioned										
	New additional capacity										
	Extension of Koeberg plant design life										
	Distributed generation for own use refers to facilities operated solely to supply electricity to an end use customer within the same property as the facility										

Despite the potentially progressive gains of the 2019 update, the emissions reductions it projects are not low enough to realise the NDC's target (Tyler and Mgoduso 2022: 11, see Section 5.2). While the upper-bound figure of the revised NDC is broadly in line with IRP 2019, the plan would need adjusting in order to meet the lower-bound figure – for instance, to allow for additional renewable energy capacity, some earlier retirements of existing coal capacity and no further coal developments. The delays in the procurement of utility-scale renewable energy under the RE IPPPP discussed below pose a further challenge to this.

5.2 Procuring utility-scale renewable energy

In parallel to the IRP, a large-scale programme for procurement of utility-scale renewable energy from independent power producers (RE IPPPP) was launched in 2011. Both the IRP and RE IPPPP emerged after various failed attempts to liberalise the country's electricity sector in the post-apartheid era, and a protracted and contested negotiation process (Baker et al. 2020). Even though RE IPPPP was not designed as a mitigation programme per se, it still plays an important role to that end and sets a significant precedent. Similarly to the IRP, the RE IPPPP is not connected to the carbon tax.

The introduction of RE IPPPP, a competitive bidding programme or reverse auction, facilitated the generation of electricity from renewable energy technologies and the private sector for the first time. Under RE IPPPP project developers bid to generate renewable electricity below a certain tariff cap set under each bidding round. In addition to submitting a competitive tariff, projects must also meet various socio-economic development criteria of national significance, including job creation, community ownership and local content. Successful projects then sell electricity to Eskom's grid under a 20-year, local currency-denominated, government-backed power purchase agreement (PPA). As discussed above, new generation capacity can only be installed and procured if it has been identified in the IRP, including the renewable energy to be procured under the RE IPPPP (see Figure 6). As of December 2021, 6.3 GW of electricity from 92 utility-scale renewable energy projects had been procured under the first four bidding rounds, of which just over 5.6 GW is connected to the national electricity grid. The programme had attracted R209.6 billion in investment (IPP Office 2021).

The highly competitive nature of the programme, coupled with decreasing costs of wind and solar technology around the world, has contributed to a decline of more than 50 per cent over five years in the tariff at which IPPs sell electricity to Eskom. By 2019, the levelised cost of electricity from projects generated under RE IPPPP had fallen to below Eskom's average cost of supply from its new coal-fired power plants (CSIR 2020). The RE IPPPP model has since been adapted for the procurement of generation capacity from other sources, including coal and gas, though the bulk of current and projected privately procured electricity is from renewables (see Figure 6).

RE IPPPP's initial successes were celebrated internationally, but the programme subsequently faced various political, economic and technical challenges, in large part due to strong political and ideological resistance by Eskom. Eskom refused to sign outstanding PPAs from the fourth bidding round, arguing that it would make a loss from having to purchase energy from IPPs, and claiming that (in 2016) the country had returned to an electricity surplus and additional capacity from renewable energy was therefore unnecessary (Baker et al. 2020). Some of this political opposition was eventually unlocked following the inauguration of President Cyril Ramaphosa in April 2018, after which the PPAs were signed. But, due to further delays, bid window five, which was to have been released in November 2018, was not launched until March 2021. The latest results of the preferred bidders for bid

window five were announced on 28 October 2021. Invitations for prospective bidders for the sixth bidding round opened in April 2022, and the bid closes in September 2022.

5.3 Renewable electricity generation for self-consumption

The construction of renewable electricity projects for self-consumption, often referred to as distributed generation (see Figure 6) or captive power, offers a further opportunity for energy-intensive users to lower their overall production emissions and thereby any potential future carbon tax liability. But, more significantly, it also allows them to improve security of supply, reduce their reliance on Eskom, and reduce their electricity costs – which, according to the Minerals Council, now constitute the second largest cost component after salaries for deep-level and electricity-intensive mines (Ganie 2021).

However, there were significant regulatory obstacles until 2021, when, under an amendment to the Electricity Regulation Act, government raised the licence exemption cap on distributed and self-generation plants from 1 MW to 100 MW (Creamer 2022b). As a result of this legislation, it is now possible for electricity projects of up to 100 MW to be built without a licence, and to ‘wheel’ or transport electricity through the transmission grid, either for self-consumption or sale to third-party consumers. Industry Representative 2 described it as: ‘one of the most notable regulatory developments [in the electricity sector]’ (interview, 21 February 2022). Recent years have therefore seen a marked increase in activity by members of the Minerals Council and other commercial and industrial companies to that end, many of whom intend to contract directly with renewable energy IPPs. Minerals Council members collectively hold an estimated potential renewable energy project pipeline of 4.5 GW and 48 projects (Creamer 2022a).

Despite this, challenges remain, in that it can take up to 18 months to comply with environmental impact assessment requirements. This is due to a lack of regulatory clarity relating to transmission wheeling charges for the sale of surplus generation back to the national grid, and the limited capacity of Eskom’s transmission lines to cope with the additional renewable energy generation – particularly in the Northern Cape Province with the greatest potential for solar, and the Western and Eastern Cape which have the greatest potential for wind energy (Ganie 2021, interview with Minerals Council 22 February 2022). Moreover, the construction of self-generation is no panacea for either carbon tax liabilities or energy security, given that mining companies will still need to rely on Eskom’s supply to a considerable extent. Eskom will therefore remain an important baseload supplier to energy-intensive industry.

6 Conclusions and key findings

As this study has illustrated, it is impossible to understand the design, implementation and future development of South Africa’s carbon tax without a deeper understanding of how this instrument of climate change mitigation is integrated into the country’s political economy, institutions and policy processes, particularly in the climate, energy and industrial sectors.

On the one hand, despite extensive delays to the carbon tax and ongoing debates around its design and ultimate effectiveness in both the first and second phases, the tax can still be perceived as significant in policy terms. Until the Climate Change Act is passed, the 2019 Carbon Tax Act is the only legally binding mechanism with mitigation potential apart from the IRP. Final approval of the Climate Change Bill, which provides the legal basis for the allocation of carbon budgets to large emitting companies and the development of Sectoral

Emissions Targets, is still pending. In light of the intense resistance and opposition that the tax faced, the fact that it was implemented at all can be celebrated as a step forward.

On the other hand, the carbon tax is far from a silver bullet that will serve to meet net zero, and enable the realisation of a just transition. A decade in the making, so far the tax has had a very limited impact on either reducing emissions or generating revenue. This finding plays out most obviously in the fact that the country's two largest emitters, Eskom and Sasol, which together account for approximately 55 per cent of national emissions, have remained largely exempt. And, as discussed in Section 3, there are tax exemptions for up to 95 per cent of emissions for all liable polluters during the first phase, which will now last until end 2025. The tax has therefore been criticised from various perspectives, including from environmentalists for being too low and ineffective, from mining and industry for threatening economic growth and employment, and from tax analysts for being poorly designed as a blunt instrument without appropriate due consideration of adaptation to individual sectors. A further challenge is that it tends to be the wealthier elites who have the greatest access to platforms to communicate their views and interests to the government and the public, including via the media and through lobbies. These views can become over-represented in policy, which then becomes law (Kamanzi 2021).

The long delay in the implementation of the first phase of the tax, and the recent announcement that has provided some temporary relief from more meaningful measures until 2026, are arguably a result of institutional limitations, as well as effective resistance by the country's large emitters. In light of this, there are questions regarding the continued relevance of the tax, as industry representative 2 asked in relation to the exclusion of electricity from phase two: 'is the carbon tax then still even relevant? Because the country's largest emitter is excluded. It's not about environmental shifting [or changing] environmental behaviour if you're going to exclude the biggest emitter in the economy ... all it does is add costs' (interview, 22 February 2021).

These fundamental criticisms of and opposition to the tax relate to tensions over how socio-economic development in South Africa can and should take place, how the country's high-carbon natural resources should now be used, and how the risks, benefits and opportunities of climate mitigation should be distributed, all of which are central to on-going national discussions on the just transition. They also relate to the recommendations of The Carbon Pricing Leadership Coalition, that a carbon tax is ineffectual unless implemented within a suite of other measures. With this in mind I now offer the following four conclusions.

First, this study echoes previous findings regarding the disconnect and lack of ministerial alignment over the implementation of climate and energy policy (Tyler and Hochstetler 2021; Baker et al. 2015). This lack of alignment speaks to the historical dynamic of conflict and coordination discussed in Section 2, which has long characterised South Africa's political economy. The disconnect between key departments, institutions and processes that relate to the country's efforts for climate mitigation reflects long-standing ideological differences and national tensions between the interests of public and private capital, and a broad and diverse political spectrum across different government departments as one of the legacies of the country's MEC.

A key example of that disconnect, explored in Section 4, is that of the incompatible regulatory relationship between the carbon tax as a market mechanism, and the carbon budgets and SETs being developed under the Climate Change Bill, which can be considered a form of state-led 'command and control' regulation. As Trollip and Boule (2017: 17) surmise: 'the struggle between big emitters and government attempting to implement the carbon budgets and carbon taxes remains largely influenced by political economy'. The extent to which the

PCC, as a new, dynamic and potentially powerful player in the climate change space and a national champion of the just transition, will be able to forge alignment between these disparate parallel processes, ideologies and institutions is a key area for further research. While the PCC has brought together the spectrum of government stakeholders, to what extent can it balance their different strategic objectives and relative power?

Another area of disconnect is reflected in the fact that the sector with the greatest potential for decarbonisation, the electricity sector, is not liable for the carbon tax, and there is no operational relationship between the tax and the country's electricity master plan, the IRP. As discussed in Section 5, changes in the country's coal-dominated electricity sector are happening due to other factors beyond the concerns of climate change mitigation, including technological innovation, regulatory changes to allow for the introduction of private players in renewable energy, and rising electricity tariffs and regular load shedding that have incentivised energy-intensive users to diversify their electricity supply through the deployment of distributed generation. While these developments may have an important potential impact on emissions reduction, in policy terms they are unrelated to the carbon tax.

A second finding is that companies in South Africa are decarbonising in spite of, rather than because of, the carbon tax. As this study has explored, other national and external forces are at play, which are likely to have a greater influence over decarbonisation by the country's largest emitters. The extent to which the carbon tax can be seen as a strong driver of mitigation policy is therefore questionable, given that economic and environmental shifts have started to happen regardless. These shifts include a complexity of factors that include rising coal costs, rising electricity tariffs, and an increasingly expensive and unreliable state-owned electricity utility; regulatory shifts and technological advances in renewable energy that are enabling energy-intensive users' to procure their own electricity generation; the pricing of ESG concerns into investment risk, which has seen the financial sector moving away from high-emitting investments; and external trade pressures, including the CBAM, which pose an imminent threat on the country's carbon-intensive industries. A more ambitious commitment to climate change mitigation under the latest NDC signed in November 2021 is also a factor, as is the Climate Change Bill, due to be finalised later in 2022. But as one interviewee considered: 'Given that a more ambitious NDC has been released since the first phase of the carbon tax, does this mean that there is less or more need for the tax?' (interview, climate change analyst, 17 January 2022).

Third, the design, implementation and future development of the carbon tax illustrates the shifting nature of the MEC as a defining feature of South Africa's political economy. While the conventional structures of the MEC and its energy- and carbon-intensive institutions still hold significant influence over policy and governance, as illustrated in their opposition to the tax and the exemptions and allowances that were eventually introduced, there are nonetheless growing challenges to their influence. Two important and interrelated challenges include the increasing influence of the financial sector, which now accounts for 25 per cent of GDP, and growing national pressure to net zero and the just transition. The latter has now become significant for the financial sector, with ESG criteria being priced into the allocation of capital. It is perhaps for this reason that many companies who were so vocal in their opposition to the tax have more recently made public commitments to decarbonisation. While some of these commitments appear to be discursive rather than based on realistic long-term action, such as those of Sasol, their acknowledgement can still be seen as significant.

Fourth, the case of South Africa's carbon tax may have some implications for the introduction of a carbon tax elsewhere on the continent. While a straightforward comparison wouldn't apply due to the unique nature of South Africa's energy-intensive and coal-dependent growth path, one important point of context could be how a carbon tax might impact on the debt-

ridden and financially unsustainable monopoly electricity utility that exists in many countries in SSA. As this study has discussed, given Eskom's existing coal dependency and high levels of debt, making it liable for carbon tax could result in disastrous socio-economic impacts for industrial and low-income users alike, because the utility would merely pass on the costs. An important consideration for the implementation of a carbon tax in other low- and middle-income countries on the continent is therefore how its ultimate impact may be distributed and potentially passed on to low-income households as the end consumers of affected goods and services. Another factor for comparative consideration is that, despite strong national resistance to the introduction of South Africa's carbon tax, the country's high carbon emissions and its international climate change commitments undoubtedly played an important role in National Treasury seeing the process through to the end, and ensuring its continuation. However, many other countries in SSA do not share these characteristics, which raises the question of whether the national impetus would be sufficient elsewhere. Finally, given that the majority of countries on the continent have a very small carbon footprint, the gains to be made in implementing a carbon tax could be minimal, particularly without a careful design that is targeted at specific sectors.

Appendix

Semi-structured interviews

Academic and energy modeller: 14 December 2021

Minerals industry representative: 9 February 2022

Climate change policy-maker: 22 January 2022

Climate change analyst: 17 January 2022

Industry representative 2: 21 February 2022

Energy analyst: 21 January 2021

Minerals Council: 2 February 2022

List of webinars attended

25 November 2021: 'The Just Transition: insights into the Financial Roadmap', TIPS dialogue

9 December 2021: 'Extractive Industries: Taxation and Revenues takes place', IISD and UNU-Wider

2 February 2022: Advancing South Africa's Energy Transition, Mainstream Renewable Power and EY Parthenon.

31 January 2022: South Africa's Energy Fiscal Policies, IISD, Global Subsidies Initiative, TIPS

24 February 2022: A Just Transition to a Low Carbon Future in South Africa , Mapungubwe Institute for Strategic Reflection'

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