

The two shall become one: overcoming the stalemate between industrial and climate change policies

SUMMARY

Industrial development and climate change mitigation have historically been opposed to each other. This is reflected in the industrial and climate change policy frameworks in South Africa. As a result of these two opposing frameworks and the disruptive and complex nature of the necessary transition to a low-carbon economy, the emergence of a climate change regime is seen as a threat and a risk to industrial development. Without immediate and ambitious action, the dichotomy between industrial development and climate change mitigation is moreover due to amplify. This raises the need to overcome the limited prism of analysis focused on incompatibility. This policy brief aims to contribute to filling the gap by investigating the interplay between industrial and climate change policies, the compatibility of the two frameworks and the options to manage the transition. This policy brief first argues that South Africa's institutional arrangement and policy vision for industrial development and climate change are mainly mutually beneficial and provide an opportunity for a holistic approach. Second, the necessity for South Africa to position the country on short-term trade-offs associated with the cost of the transition is put forward. Third, the need for a strategic discovery and policy impact assessment process is ascertained.

INTRODUCTION

Industrial development and climate change mitigation have historically been opposed to each other. The association of greenhouse gas (GHG) emissions with economic growth is an illustration of this conflictual relationship. This standoff results mainly from three dynamics: the lack of understanding of anthropogenic activities on the climate until 1990 and the first Intergovernmental Panel on Climate Change report; the inadequacy of the current regime of accumulation to internalise the cost of such a global externality; and the urgency of a paradigm shift relying on the transition to a low-carbon development path decoupling economic growth from GHG emissions as a result of the looming threat of climate change and its associated consequences on economic, social, environmental and governance structures.

South Africa's development path illustrates this long-standing opposition. The South African economy has grown without factoring into account the environmental

consequences associated with the nature of its resource use. South Africa is one of the most energy- and carbon-intensive economies and the 19th biggest emitter in the world (although the country accounts for only 1.1% of global GHG emissions). South Africa's GHG emissions are heavily determined by the energy and industry sectors, incorporated in the country's Minerals-Energy Complex (MEC) (Fine and Rustomjee, 1996), due to the reliance on coal for historically cheap electricity generation as well as the role of mineral resources and linked energy-intensive industries in the country. In 2010, energy accounted for 88% of South Africa's direct GHG emissions (DEA, 2013). Industries however, accounted for 67% (13% for energy) of South Africa's total GHG emissions if electricity emissions are allocated to end-use sectors (DEA, 2014).

Due to the opposing industrial and climate change policy frameworks, and the disruptive and complex nature of the necessary transition, the emergence of

Trade & Industrial
Policy Strategies
(TIPS) is a research
organisation that
facilitates policy
development and
dialogue across three
focus areas: trade
and industrial policy,
inequality and
economic inclusion,
and sustainable
growth

Policy Brief
by Gaylor
Montmasson-Clair,
TIPS Assistant
Programme
Manager:
Sustainable Growth

info@tips.org.za
+27 12 433 9340
www.tips.org.za

a climate change regime is thus seen as a threat and a risk to industrial development. The challenge of internalising the negative externalities (i.e. moving towards prices reflecting both the value of goods/services as well as socio-environmental externalities) and establishing the policy frameworks to manage such a transition are particularly difficult. This is true for South Africa owing to the country's industrial and energy structures and persistent socio-economic issues.

Without immediate and ambitious action, the dichotomy between industrial development and climate change mitigation is due to amplify. In South Africa, considering only existing mitigation policies and measures, GHG emissions are anticipated to quadruple from 2000 to 2050 (DEA, 2014). In addition, delaying action will further aggravate the situation, increasing the cost of the transition and the probability of unmanageable risks (Stern, 2007).

The necessity to overcome this stalemate and engage on a transition towards low-carbon development are thus increasingly pressing. This raises the need to overcome the limited prism of analysis focused on incompatibility. This policy brief aims to contribute to filling the gap by investigating the interplay between industrial and climate change policies, the compatibility of the two frameworks, and the options to manage the transition. It first argues that South Africa's institutional arrangement and policy vision for industrial development and climate change are largely mutually beneficial and provide an opportunity for a holistic approach. Second, the necessity for South Africa to position the country on short-term trade-offs associated with the cost of the transition is put forward. Third, the need for a strategic discovery and policy impact assessment process is ascertained.

INSTITUTIONAL ARRANGEMENTS AND POLICY VISIONS ARE AN OPPORTUNITY

The first analytical step is to investigate the interplay between industrial development and climate change: the institutional frameworks and the long-term objectives. The institutional arrangements and policy visions of industrial and climate change policies in South Africa show a high degree of complementarity and present an opportunity, rather than a constraint, for mutual benefits. Although the coherent coordination of public policy represents a complex exercise that must not be underestimated, institutions responsible for implementation and long-term policy objectives of both industrial development and climate change mitigation frameworks largely overlap.

From an institutional perspective, the same set of state entities are responsible for implementing and ultimately merging industrial and climate change policies. At national government level, departments in the economic cluster are tasked, under the spearheading of the Department of Trade and Industry (the dti) for industrial policy and the Department of Environmental Affairs (DEA) for climate change policy, with designing the overarching macroeconomic and microeconomic frameworks on which both industrial development and climate change mitigation rely.

Policy interventions are then scattered between similar entities. South Africa's main two development finance institutions, the Industrial Development Corporation (IDC) and the Development Bank of Southern Africa (DBSA), provide a large share of the financial requirements for industrial development and the transition to a greener economy. Direct support for industries falls under the dti, while fiscal incentives (taxes and subsidies) are under the mandate of the National Treasury. Then, the Department of Science and Technology is responsible for technology policy and fostering research and development. At the sectoral level, most departments have to include (at least in theory) the drive for industrial development and climate change mitigation within their mandate and operations. The Economic Development Department and the National Planning Commission provide the overarching framework while the Department of Performance Monitoring and Evaluation (DPME) ensures performance tracking. State-owned enterprises (such as national electricity utility Eskom and rail, port and pipeline company Transnet) are also enabling agencies for the industrial development and low-carbon economy visions.

At the implementation level, provincial entities (such as the Gauteng Department of Economic Development) and municipalities (such as eThekweni Municipality's Economic Development Unit), in collaboration with the private sector and civil society, are responsible for ground action.

At the policy level, an analysis of the long-term objectives of both the industrial policy and climate change policy frameworks illustrates their compatibility. Looking comparatively at South Africa's industrial policy – the National Industrial Policy Framework (NIPF) and the rolling Industrial Policy Action Plan (IPAP) – and low-carbon growth strategy – the National Climate Change Response Policy White Paper (NCCRPW) and the National Strategy for

Sustainable Development and Action Plan – a key set of overlapping goals arises.

Both the industrial policy and climate change policy envision a structural shift suggesting a diversification of the domestic economy. The NIPF aims to “facilitate the diversification of the South African economy beyond the current reliance on traditional commodities and non-tradable services” (the dti, 2007), while the NCCRWP targets “the transition to a climate-resilient, equitable and internationally competitive lower-carbon economy” (DEA, 2011: 11).

Complementing the goal of diversifying the economy, South Africa’s industrial and climate change mitigation policies both target the transition to a knowledge-based industrialisation. This provides a strong platform for new low-carbon industries to prosper (Naudé, 2011) and substantial technological spillover, notably in efficiency (Demailly, 2008). In addition, the response to climate change bears tremendous economic opportunities for the country, largely associated with the transformation towards a knowledge-based economy, as identified by the Ten-Year Innovation Plan which features both climate change and energy security among the country’s five innovation “grand challenges” (DST, 2008).

The objectives of diversifying and moving towards a knowledge-based economy speak particularly to the imperative of maintaining South Africa’s international competitiveness. In addition to introducing domestic climate change legislation, the change in trade and financing patterns to less carbon-intensive goods and services and the risk of South Africa’s trading partners implementing environmentally-related trade barriers (i.e. green protectionism) must indeed be taken into account to ensure continued access to markets and financing, and sustain industrial development (Cloete and Robb, 2010; Montmasson-Clair, 2013).

The South African economy would be particularly vulnerable to climate change response measures due to its distance from key trading partners (Monkelbaan, 2011), the combination of a high trade-to-output ratio and a high carbon intensity of its exports (Peters and Hertwich, 2008), the high energy- and carbon-intensity of the economy (Montmasson-Clair, 2015), its classification as an emerging economy and an upper-middle-income country (Tamiotti et al., 2009) and the absence of domestic economy-wide carbon legislation (although this could change from 2017) (TIPS et al., 2013). This could translate into a high impact of response measures on the South African economy, particularly coal, non-ferrous metals and iron and steel (Cosbey and Wooders, 2011; Du Plooy and Jooste, 2011).

Both the industrial policy framework and the climate change mitigation policy target job creation and broad-based economic development. The NIPF aims to promote labour-intensive industrial development as well as “a broader-based industrialisation path characterised by greater levels of participation of historically disadvantaged people and marginalised regions” (the dti, 2007, p. 2). The transition towards a green economy, supported by relevant policies and instruments, goes into in the same direction, with the creation of green jobs positioned at its core (Montmasson-Clair, 2015).

Accordingly, the New Growth Path targets the creation of 300 000 additional direct jobs by 2020 (and 400 000 by 2030) in the green economy sectors (EDD, 2010) and the IPAP identifies “green industries” as a priority sector for job creation (the dti, 2011, 2010).

As confirmed by a 2011 IDC-DBSA-TIPS study (Maia et al., 2011), many opportunities exist in South Africa to generate economic growth and shift production emphasis with changes in global demand (Camco and TIPS, 2010; WEF and Accenture, 2014). Due to South Africa’s natural endowment and/or competitive knowledge, renewable energy technologies, which are built from minerals of which the country is a major producer and which have significant local potential, but also fuel cells are strong examples (DST, 2008; ICMM, 2012; Montmasson-Clair, 2015; WEF and Accenture, 2014). The drive for resource efficiency throughout the economy, particularly in industries, buildings and transport, is also likely to generate new business opportunities in South Africa and drive the demand for local minerals (ICMM, 2012; Wiechman, 2010).

Last but not least, the NIPF aims to “contribute to industrial development on the African continent with a strong emphasis on building its productive capabilities” (the dti, 2007, p. 3). The NCCRWP strengthens this goal by targeting multi-disciplinary collaboration at the regional level in terms of financial resources, technical cooperation, technology and knowledge transfers (p. 41-42) and early warning systems, as well as achieving climate resilience in the region, notably in the water sector.

The first stage of the analysis, based on an institutional and policy framework, thus shows that the long-term alignment of the industrial and climate change policy frameworks does not constitute a problem. Instead, it emerges as an opportunity for cooperation and mutual benefits.

STRUCTURAL TRADE-OFFS

The second stage of the analysis revolves around understanding the transition and costs thereof required to achieve the long-term complementary framework depicted. Despite the long-term alignment of industrial development and climate change mitigation, the transition to a situation of mutual benefits remains indeed paved with difficulties and trade-offs to be addressed in the short term, particularly to minimise the cost of transition. This is mainly the result of diverging interests and prisms of analysis, the lack of mutual understanding of economic and environmental interactions by all stakeholders, and the development of industrial and climate change policies in separate fora.

Three main trade-offs, based on the choice between a business-as-usual approach focused on past and present practices and a forward-looking perspective preparing for the future, are triggered by the need to overcome the stalemate between industrial development and climate change mitigation.

First, the transition to a low-carbon development path raises the need to determine the economic structure and diversification envisioned for South Africa. Based on the characteristics of the South African economy and the progressive internationalisation of the cost of carbon (domestically and globally), the industrial structure of the country is bound to go through an adjustment process. The degree of transformation remains, however, a point of contention.

This is particularly relevant owing to the current carbon- and energy-intensive industrial structure of the country. Some industries, such as aluminium smelting, may not be viable anymore as a result of climate change legislation (and particularly carbon pricing). Carbon intensity will have to be managed by the South African Government as an emerging factor of competitiveness (i.e. an additional factor of production). Policy choices made to position South Africa in terms of carbon competitiveness (i.e. as a carbon-efficient or carbon-intensive economy) will determine the country's performance in this respect.

The internalisation of the cost of externalities may, in the short-term, reduce the competitiveness of local industries compared to firms located in countries with less stringent (or no) carbon policies (although this "carbon leakage" risk remains largely misunderstood and often politicised) (Cloete and Robb, 2010).

This may, however, in the long-term, constitute a key advantage for the economy as global implementation

of climate change mitigation measures will trigger a substantial alteration of the structure and operations of the economy. Most notably, the implications of the Department of Mineral Resources' beneficiation strategy, supporting the development of energy- and carbon-intensive industries, are to be considered in detail (Davis Tax Committee, 2015). The energy sector will have to make the most drastic transformation, with the substitution of coal-based electricity by cleaner sources of energy. Industrial sectors, including non-coal mining, will retain their core role in the economy but will need to significantly improve their carbon footprint, essentially through investments in energy efficiency, cogeneration and renewable energy (Montmasson-Clair and Ryan, 2014).

In the end, given the inevitability of this transition, it would appear preferable that South Africa starts to address sustainability imperatives sooner rather than later, in a proactive – as opposed to reactive – way. Doing so will give South Africa greater room to set the domestic agenda, rather than having to jump to someone else's tune on account of leaving climate change mitigation initiatives to the last minute. While this transition will require substantial investment, it is expected to increase the strength of the various subsectors in the long run. This pro-active stance is reinforced by the time needed to address the structural limitation to transformation in the short to medium term, due *inter alia* to asset lock-in, the shortage of skills and the need develop new industries and retrain the workforce.

Second, the transition generates key choices in terms of social development, most notably in terms of employment. The challenge lies on the ability to protect current job opportunities, create new employment in the short term and prepare for future opportunities while engaging on the transition.

As the localisation of green technologies raises the costs of goods and services, local content requirements can hinder the shift to sustainable development if not in line with the country's capacity and capability (EScience Associates et al., 2013). The transition to a low-carbon economy relies profoundly on "the affordability and availability of alternative technologies and production inputs. Any policy that raises the cost of these technologies or decreases their availability in the domestic market will increase adjustment costs and retard the transition" (Salie and Makrellov, 2013). In other words, the transformation of the economy may, in the short term, not generate substantial employment and rely on foreign skills

and technologies (Davis Tax Committee, 2015). This is illustrated by the South African experience with renewable energy. Despite the acclaimed success of the government-run programme, job creation and socio-economic benefits have been constrained due to local circumstances. The nature of renewable projects has mostly led to temporary and/or low-skilled jobs in local communities with limited skilled opportunities being located in the country's economic centres (Montmasson-Clair et al., 2014; Montmasson-Clair and Das Nair, 2015). Only a sustained and large-scale transformation project will enable the necessary creation of domestic industries to enable a growth path mutually beneficial to economic development and climate change mitigation.

The relationship between employment and the transition to a low-carbon development path remains a highly contentious one. A lot more work is required to unpack the relationship between industrial development, job creation and a low-carbon growth pathway. While the development of new sectors of the economy potentially offers opportunities for additional employment creation and entrepreneurship (such as in the energy, transport, agricultural and waste value chains), notably in marginalised areas, only an economy-wide transformation of the economy towards climate compatible practices will meaningfully contribute to labour-intensive, decentralised and knowledge-based employment.

Last, the third key trade-off deals with the cost of the transition and the associated costs and benefits between and within the state, the private sector and households. This question revolves essentially on the degree of support which should be granted to affected stakeholders to manage the transition.

Such a deep transformation of the domestic industrial structure requires access to a vast amount of financing, developing new skillsets among the country's workforce, establishing a new industrial and commercial base and abandoning other industries. Understanding the costs and benefits associated with the transition is critical to minimise negative implications in the long term. Most notably, postponing the transition to limit the short-term cost to the economy appears as a short-sighted approach with potential severe consequences in the long run.

This has particularly implications at the industrial level. While most of the economic impact will be focused on a few carbon-intensive sectors providing tradable goods and services, these sectors contribute significantly to the South African economy. The limited width of the impact provides an opportunity to design tailor-made support mechanisms to address competitiveness concerns (Cloete and Robb, 2010), although the scale of support required may be

particularly important. Industrial policy (through, for example, tax breaks and preferential financing) is a mandatory tool to lower the cost of transitioning to new, low-carbon techniques and technologies (Naudé, 2011). Targeted assistance to hard-hit sectors must then be crafted to help their transition to a low(er)-carbon path. Owing to the remaining socio-economic challenges facing South Africa (i.e. poverty, unemployment and inequality), the imperative of climate change mitigation must be balanced with the need to foster economic growth, employment creation and empowerment (Davis Tax Committee, 2015).

In the end, dealing with these structuring trade-offs appears inevitable in South Africa. The exercise is also urgent as failing to make an informed decision on the optimal transformation process for the country would most likely result in increased costs and consequences. The responses which will be crafted can, however, vary extensively. Two key dimensions structure the country's positioning in terms of these trade-offs: the scale and the pace of the transformation. The shift sanctioned by the climate change framework appears much more drastic than the one envisaged by the country's industrial policy, particularly with the MEC. The objective is therefore to position the economy on a path (in scale and pace) which would minimise the cost of the transition in the long term.

PRO-ACTIVE APPROACH NEEDED

In light of the structuring trade-offs associated with the transition to a complementary climate change and industrial policy framework, it is evident that further research on the underpinnings required for a successful transition should be conducted to inform the transformation process. This is notably raised by the Davis Tax Committee (2015) in the case of the carbon tax proposed by National Treasury. A self-discovery process, which is positioned at the core of South Africa's industrial policy, associated with a socio-economic impacts assessment of possible policy choices, could in this respect be a useful tool to align the expectations of both policy frameworks.

Achieving the ambitious industrial policy objectives set out in the existing policy framework revolves primarily around a self-discovery process. Self-discovery can be defined as the process through which firms identify the markets which they are (or may be) able to serve, or in other words, the process of learning what new products and services can be produced profitably and how to do so. Self-discovery

is dependent on the accurate identification of both the constraints (notably in terms of green protectionism) and opportunities faced within a particular sector or industry (the dti, 2007; Hausmann and Rodrik, 2003).

A strategic discovery process, based on the progressive introduction of climate change mitigation policies, forcing all stakeholders to consider the costs and benefits of the transition, could contribute to answering these trade-offs.

On the one hand, such a process would provide a platform for domestic companies to consider the implications of their activities, evaluate their equipment and processes, and ultimately improve their operations from both a climate change and financial standpoint. This self-discovery may result in substantial improvements in resource efficiency (in terms of energy, water and carbon), the development of new, innovative products, and even the redefinition of business models and strategies.

On the other hand, a discovery process would make it possible to unpack the costs and benefits to be borne by the South African government, the private sector and various social groups, and understand how to best mitigate the costs while maximising the benefits.

To complement the self-discovery process, the policy and regulatory interventions required to facilitate the transition should be carefully weighed. The Socio-Economic Impact Assessment System (SEIAS) approved by Cabinet in February 2015 replaced the Regulatory Impact Assessment (RIA) system from 1 June 2015. It provides the framework to assess new policies and regulations in South Africa with the objective of improving the formulation of prescripts, minimising unintended consequences and ease implementation (DPME, 2015a). It requires that the impacts of the proposed legislation and its alternatives on different stakeholders (government, business, society) are considered, through five broad criteria, namely social cohesion, security, economic inclusion (employment creation and equity), economic growth and investment, and environmental sustainability. The SEIAS methodology aims to ensure that the proposal tackles the roots of a problem and constitute the most appropriate action, taking into account the repartition of risks and benefits and the interactions with other policy and regulations (DPME, 2015b).

A strategic national discovery exercise, as conducted by South Korea from the 1970s (Amsden, 1989),

coupled with a socio-economic impact assessment of both domestic and international climate change regulation, could therefore provide the appropriate platform for a successful low-carbon growth and industrial development of the South African economy, and the planning required for the its realisation.

CONCLUSION

The adoption of a new prism of analysis on the interplay between industrial and climate change policies has revisited the relationship, overcoming the traditional standoff between industrial development and climate change mitigation. This policy brief highlights their long-term compatibility and investigates short-term trade-offs associated with the cost of the transition.

On the one hand, the institutional arrangements and the policy objectives of climate change mitigation and industrial development largely overlap and constitute an opportunity, rather than a constraint, for mutual benefits. In the long run, industrial policy is at the cornerstone of any successful climate change mitigation policy while any successful industrial policy is intertwined with the transition to a low-carbon growth path, making a holistic view integrating both frameworks essential.

On the other hand, the transition from the current conflictual situation to a more harmonious relationship carries short-term costs and calls for a number of trade-offs in economic diversification, employment and social development, and costs and benefits allocation. Structuring faultlines are situated on the scale and the pace of the transformation, with deep implications for the transition path and its appropriateness for the South African economy. The positioning of the country on these two dimensions will inform the decisions around the unavoidable trade-offs associated with the transition.

This policy brief recommends the realisation of a strategic discovery process at the industrial level associated with a socio-economic impact assessment of the policy and regulatory solutions. A strategic discovery process would make it possible to identify the long-term strengths and weaknesses of the South African economy, and the associated opportunities and threats, in line with global dynamics. A socio-economic impact assessment of the various policy options available to manage the transition would then complement the discovery process and ensure the suitability of the policy mix and inform the most optimal path for the South Africa economy.

BIBLIOGRAPHY

- Amsden, A., 1989. *Asia's Next Giant: South Korea and Late Industrialisation*. Oxford University Press, New York.
- Camco and TIPS, 2010. *Climate Change: Risks and Opportunities for the South African Economy – An Assessment of Mitigation Response Measures*. Camco, Johannesburg.
- Cloete, B., Robb, G., 2010. Carbon Pricing and Industrial Policy in South Africa, in: Winkler, H., Marguard, A., Jooste, M. (Eds.), . Presented at the Putting a price on carbon: Economic instruments to mitigate climate change in South Africa and other developing countries, Cape Town.
- Cosbey, A., Wooders, P., 2011. *Border Carbon Adjustments: What Risk for South African Exporters?* International Institute for Sustainable Development, Winnipeg.
- Davis Tax Committee, 2015. *First Interim Report on Carbon Tax for the Minister of Finance*. Davis Tax Committee, Pretoria.
- DEA, 2014. *South Africa's Greenhouse Gas Mitigation Potential Analysis*. Department of Environmental Affairs, Pretoria.
- DEA, 2013. *GHG Inventory for South Africa: 2000-2010*. Department of Environmental Affairs, Pretoria.
- DEA, 2011. *National Climate Change Response White Paper*. Department of Environmental Affairs, Pretoria.
- Demailly, D., 2008. *Climate Change Policy and Competitiveness: A Legitimate Concern*. World Wide Fund for Nature, Gland.
- DPME, 2015a. *Implementation of the Social Economic Impact Assessment System*. Department of Performance, Monitoring and Evaluation, The Presidency of the Republic of South Africa, Pretoria.
- DPME, 2015b. *Guidelines for the Socio-Economic Impact Assessment System*. The Presidency of the Republic of South Africa, Pretoria.
- DST, 2008. *Innovation Towards a Knowledge-Based Economy: Ten-Year Plan for South Africa (2008 – 2018)*. Department of Science and Technology, Pretoria.
- the dti, 2011. *Industrial Policy Action Plan 2011/12 - 2013/14*. Department of Trade and Industry, Pretoria.
- the dti, 2010. *2010/11 – 2012/13 Industrial Policy Action Plan*. Department of Trade and Industry, Pretoria.
- the dti, 2007. *A National Industrial Policy Framework*. Department of Trade and Industry, Pretoria.
- Du Plooy, P., Jooste, M., 2011. *Trade and Climate Change: Policy and Economic Implications for South Africa*. Trade and Industrial Policy Strategies, Pretoria.
- EDD, 2010. *The New Growth Path: The Framework*. Economic Development Department, Pretoria.
- EScience Associates, Urban-Econ Development Economists, Ahlfeldt, C., 2013. *Photovoltaic Electricity: The Localisation Potential of Photovoltaics and a Strategy to Support the Large Scale Roll-Out in South Africa*. South African Photovoltaic Industry Association, Department of Trade and Industry and World Wildlife Fund, Cape Town, Pretoria and Johannesburg.
- Fine, B., Rustomjee, Z., 1996. *The Political Economy of South Africa: From Minerals-Energy Complex to Industrialisation*. C. Hurst & Co. Publishers, London.
- Hausmann, R., Rodrik, D., 2003. *Economic Development as Self-Discovery*. J. Dev. Econ. 72, 603–633.
- ICMM, 2012. *The Role of Minerals and Metals in a Low Carbon Economy (InBrief)*, Mining's Contribution to Sustainable Development. International Council on Mining and Metals, London.
- Maia, J., Giordano, T., Kelder, N., Bardien, G., Bodibe, M., Du Plooy, P., Jafta, X., Jarvis, D., Kruger-Cloate, E., Kuhn, G., Lepelle, R., Makaulule, L., Mosoma, K., Neoh, S., Netshitomboni, N., Ngozo, T., Swanepoel, J., 2011. *Green Jobs: An Estimate of the Direct Employment Potential of a Greening South African Economy*. Industrial Development Corporation, Development Bank of Southern Africa and Trade and Industrial Policy Strategies, Johannesburg and Pretoria.
- Monkelbaan, J., 2011. *Transport, Trade and Climate Change: Carbon Footprints, Fuel Subsidies and Market-based Measures (Working Paper)*. International Centre for Trade and Sustainable Development, Geneva.
- Montmasson-Clair, G., 2015. *The Interplay between Mining and Green Economy in South Africa: An Energy Lens*. Pierre Mendès-France University, Grenoble.
- Montmasson-Clair, G., 2013. *Tracking Climate Finance Inflows to South Africa (Prepared for the Climate Change Expert Group (CCXG) Global Forum)*. Organisation for Economic Co-operation and Development, Paris.
- Montmasson-Clair, G., Das Nair, R., 2015. *Channelling Economic Regulation to stimulate Inclusive Growth: Lessons from South Africa's Renewable Energy Experience*. Presented at the Biennial Conference of the Economic Society of South Africa, University of Cape Town, Cape Town.
- Montmasson-Clair, G., Moilwa, K., Ryan, G., 2014. *Regulatory Entities Capacity Building Project Review of Regulators Orientation and Performance: Review of Renewable Energy Regulation*. University of Johannesburg and Trade and Industrial Policy Strategies, Johannesburg and Pretoria.
- Montmasson-Clair, G., Ryan, G., 2014. *The impact of electricity price increases on the competitiveness of selected mining sector and smelting value chains in South Africa: Has it incentivised mining-related companies to invest in renewable energy, cogeneration and energy efficiency?* Trade and Industrial Policy Strategies and Global Green Growth Institute, Pretoria and Seoul.
- Naudé, W., 2011. *Climate Change and Industrial Policy*. Sustainability 3, 1003–1021.
- Peters, G.P., Hertwich, E.G., 2008. *CO2 Embodied in International Trade with Implications for Global Climate Policy*. Environ. Sci. Technol. 42, 1401–1407.
- Salie, F., Makrelov, K., 2013. *Economic Impacts of Introducing a Carbon Tax in South Africa*.
- Stern, N., 2007. *The Economics of Climate Change: The Stern Review*. Cambridge University Press, Cambridge.
- Tamiotti, L., Teh, R., Kulaçoğlu, V., Olhoff, A., Simmons, B., Abaza, H., 2009. *Trade and Climate Change*. World Trade Organisation and United Nations Environment Programme, Geneva.
- TIPS, the dti and IDC, 2013. *Trade and Climate Change: Exploring the Impact on South African Business (Summary of Roundtable Discussion)*. Trade & Industrial Policy Strategies. Department of Trade and Industry and Industrial Development Corporation, Pretoria and Johannesburg.
- WEF, Accenture, 2014. *Scoping Paper: Mining and Metals in a Sustainable World*. World Economic Forum, Geneva.
- Wiechman, M., 2010. *What's in a Hybrid Car? (Factsheet)*. Minerals Education Coalition, Englewood, CO.