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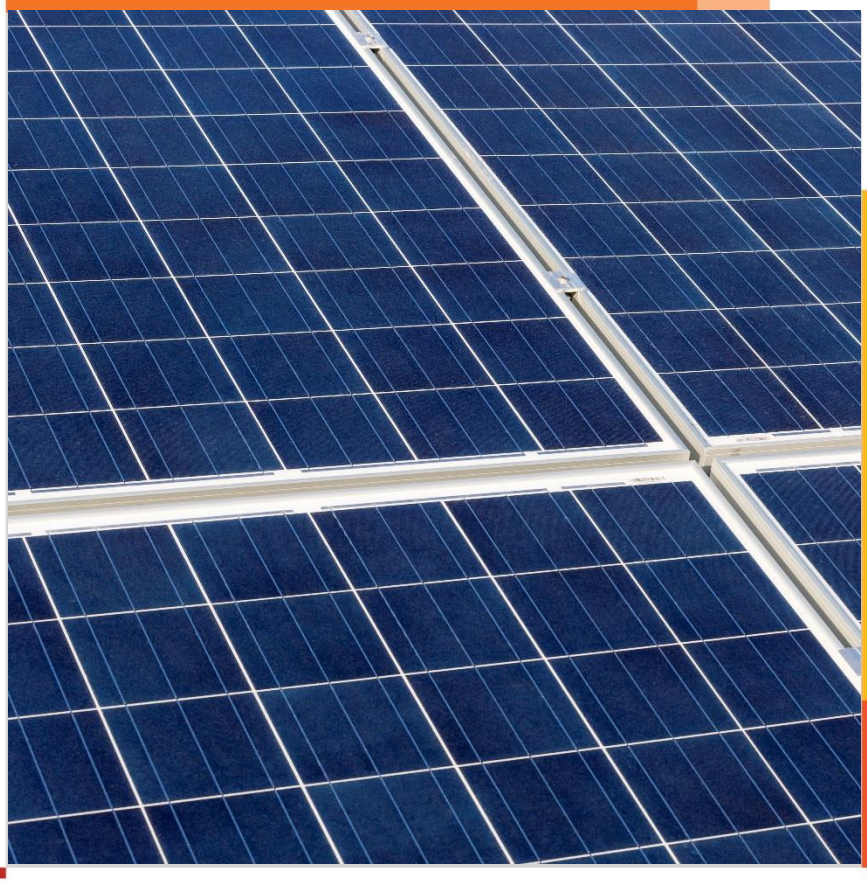
Bracing for disruption through resilience

A South African view of the LCEI 2017 results



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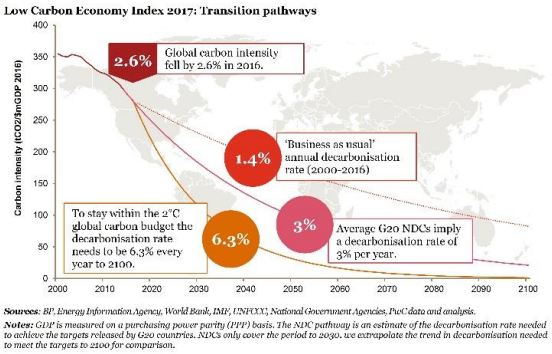
Low Carbon Economy Index 2017

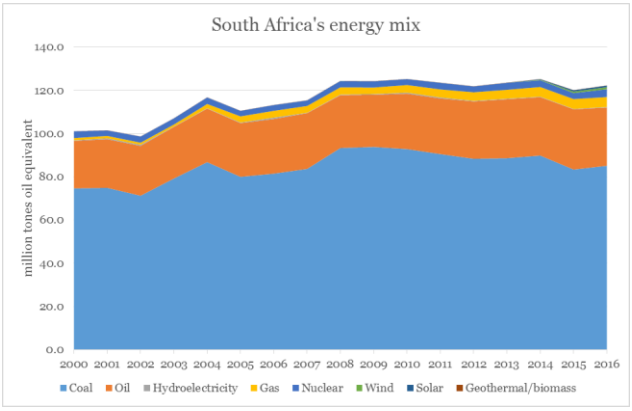
According to PwC's 2017 Low Carbon Economy Index (LCEI), the global average decarbonisation rate is less than half of what is needed to limit global warming to below two degrees centigrade (Figure 1[1]).

South Africa's results in the PwC LCEI over the last eight years shows evidence of progress in transitioning to a less carbon intensive economy as a result of a decrease in intensity since 2009. However, this progress stalled after an increase in carbon intensity coupled with limited economic growth from 2015 to 2016. As a result, South Africa placed last for performance in changing its carbon intensity for 2016. South Africa also has the highest carbon intensity per GDP. It is likely that the country will experience a combination of physical (e.g. extreme weather events), policy (e.g. for a low carbon transition), market and technology (e.g. emerging technologies and new business models) risks.



South Africa's carbon economy

South Africa's heavy reliance on cheap coal within a resource-based economy (where energy intensive sectors such as mining and processing drive the economy) mean that it starts from a difficult position in improving its carbon intensity. These sectors tend to be less flexible and slow to adapt due to investments from a longer term infrastructure and technology plan. Coal and oil makes up 91% of South Africa's energy mix, and less than 3% of South Africa's energy originates from renewable sources (Figure 2[2]). A change to a less carbon intensive energy mix requires significant buy-in from all role-players and a large amount of capital investment – something that is extremely challenging in South Africa's current economic climate.



In the last few years, advances in the renewable energy space has seen an increase in the amount of energy derived from solar and wind power, indicating that renewable energy policies and strategies are starting to take form. The amount of energy derived from coal has also been decreasing since it reached a peak in 2009. South Africa has however in the last year experienced a decrease in the number of approvals received for renewable energy projects that feed energy into the grid. A CSIR study[3] (2017) found that in 2016 wind, solar and concentrated solar power (CSP) supplied 2.9% of the total South African system load. In 2016 a total of 385 MW of wind and 509 MW of solar power were added to the South African energy mix.

South Africa's Department of Environmental Affairs (DEA) has drafted a National Adaptation Strategy[4]. The strategy identifies drought, flash floods and veld fires as the climate scenarios which will worst affect South Africa due to increased global warming. As per the remarks of the Minister of Environmental Affairs at the informal International Climate Change Meeting in Montreal, it appears that South Africa has a few new policies and strategies it will be implementing: these include a national mitigation system, improving the country's

[1] PwC. 2017. Is Paris Possible? Low Carbon Economy Index 2017. https://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html
[2] BP. 2017. Annual statistical review of world energy.
[3] The Council for Scientific and Industrial Research (CSIR) Energy Center. 2017. Statistics of utility-scale solar PV, wind and CSP in South Africa in 2016.
[4] Speech available at: https://www.environment.gov.za/mediarelease/molewasatclimatechangemeetingmontreal

greenhouse gas accounting and inventory system, development of a national Green Fund, drafting a Climate Change Act and a large scale renewable energy programme.

The question now is whether South Africa can keep the good momentum rolling despite facing challenges. It is evident that South Africa is thinking in the correct direction, however, there is a now a need to move from policy making, to implementation and action taking.

Resilience is our common goal

Resilience is a concept that is now used in many disciplines. However, given its origins in ecology - which is a science studying the systematic interactions of organisms and their environment - resilience fundamentally refers to the ability of a system to continue to maintain its function and structure in the event of a shock. Resilience is thereby a characteristic of a system. Business and society form part of the interconnected systems of humans and the environment, referred to as social-ecological systems.

From our growing understanding of the interconnectedness of social and ecological variables and the complexity of these interactions, the concept of resilience has evolved to include the ability of a social-ecological system to withstand, recover and reorganise in response to a shock. In other words, it needs to have an adaptive capacity that will keep it from crossing critical thresholds. This adaptive capacity is dependent on the system having sufficient social and ecological resources, and a limited number of vulnerable relationships or feedback loops between them.

Since human-induced climate change is already well underway and mitigation levels are still too slow to achieve the global goals of less than two degree average global warming, South Africa needs to shift more attention to implementation of adaptation measures that aid in building resilience.

To be resilient, some fundamentals that South Africa needs to have in place are an energy mix with a substantial quantity of energy derived from different renewable sources, a plan to ensure sustainable water supply during times of drought, the necessary firebreaks in place, and adequate emergency services and disaster funds in place to react when natural disasters strike. A resilient country will also need to have the necessary measures in place to support sectors that are sensitive to climate change (e.g. agriculture) to adapt effectively.

According to the Climate and Development Knowledge Network (CDKN) (2017)[5], there are five levers of effective climate action in cities which pertinent for developing resilience, and thus are important to support more effective climate action in cities and beyond:

Resilience requires more from the different role-players within South Africa. From a business perspective, this sector plays a vital role in moving towards a low carbon economy. Business will be looked to, to lead change by shifting to circular economy models and adapting their production processes and perhaps even products / services to cater for a resilient society. In the process, partnerships with government can be made to successfully address various interlinked Sustainable Development Goals – the Goals being focussed on fundamental elements of building a resilient world.

Many opportunities exist in South Africa to adapt to climate change. These arise through embracing technology and fostering innovation

required to solve pervasive problems[6] . Areas that require immediate attention include diversified energy sources, alternative water treatment technologies, alternative transport, waste reduction and reuse, all of which will need to feed into smart, efficient urban/rural areas. Associated with all areas is the need to develop green jobs and to re-skill society to prepare communities for a different world. Considerable work is already ongoing globally in such fields, and South Africa could make significant advancements in a short time period if these can be leveraged locally.

Embracing resilience

South Africa's progress in transitioning to a less carbon intensive economy has slowed during the last year. Collectively, we need to focus efforts on long term resilience planning to ensure that as a country we will be ready to adapt to future climate change impacts.

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[5] Climate and Development Knowledge Network (CDKN). 2017. The local business case for climate action: A practical framework for climate action in cities.

[6] PwC. 2017. Innovation for the Earth: Harnessing technological breakthroughs for people and the planet