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South Africa
**Making the right energy
choices: The SDGs in
the context of South
Africa's exclusive
economy**

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Making the right energy choices: The SDGs in the context of South Africa's exclusive economy

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Introduction

On 25 September 2015, the member states of the United Nations agreed on the 17 Sustainable Development Goals (SDGs) that will be the cornerstone of the Post-2015 Development Agenda^[1]. The SDGs are acknowledged as a great achievement that amalgamates the sustainability agenda with the development agenda.^[2] The South African government has unreservedly endorsed the SDGs, noting that the triple challenge of poverty, unemployment and inequality that they address is also the primary focus of the country. As such, the SDGs are conceptually aligned to South Africa's National Development Plan.^{[3][4]}

Heartening as the South African endorsement might be, there is often a large disconnect between high level endorsements made on international platforms and the extent to which they are embedded in national actions and supported and aligned by national strategies relating to growth and investment decisions as well as industrial strategies. In this regard, Stewart^[5] cautions that ‹national ownership might be a problem› as global goals and targets will have little impact if they have little relevance to the specific problems, challenges and values of the country. This will require the ‹domestication›^[6] of the SDGs, failing which countries (or leaders) might end up ignoring them.

Macro-economic stability is another important determinant in the possibility of achieving the SDGs.^[7] Implementation of the SDGs will be hampered by the present low economic growth in developing countries due to repressed commodity prices, which impacts negatively on the available resources that governments can allocate. In addition, it is expected that external fiscal transfers from OECD countries to South Africa (and developing countries as a whole) will follow a downward trend due to a more inward orientated focus by

- 1 United Nations. 2015. Sustainable development Goals: 17 goals to transform our world. Available at: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> [Accessed on 10/2/2017]
- 2 Stewart, F. 2015. The Sustainable Development Goals: A Comment. *Journal of Global Ethics*, 11:3 288-293. Available at: <http://dx.doi.org/10.1080/17449626.2015.1084025>
- 3 South Africa's National Development Plan is a detailed blueprint for how the country can eliminate poverty and reduce inequality by the year 2030. Available at: www.gov.za/issues/national-development-plan-2030 [Accessed 9/2/2017]
- 4 Zuma, J. 2015. Statement at the 70th Session of the UN General Assembly, during the ‹UN Summit for the Adoption of the Post 2015 Development Agenda›, UN General Assembly Hall, New York, 26 September 2015. Available at: <https://sustainabledevelopment.un.org/content/documents/20838south-africa.pdf> [Accessed 31/1/2017]
- 5 Stewart, F. 2015. The Sustainable Development Goals: A Comment. *Journal of Global Ethics*, 11:3 288-293. Available at: <http://dx.doi.org/10.1080/17449626.2015.1084025>
- 6 Radebe, J. 2016. Speech on the occasion of the UNDP Regional Workshop on integrating SDGS and Agenda 2063 into National Development Plans, Sandton, South Africa, 15 June. Available at: <http://www.gov.za/speeches/undp-regional-workshop-15-jun-2016-0000> [Accessed on 26/1/2017]
- 7 Stewart, F. 2015. The Sustainable Development Goals: A Comment. *Journal of Global Ethics*, 11:3 288-293. Available at: <http://dx.doi.org/10.1080/17449626.2015.1084025>

these countries to stimulate their own economic growth.^[8] This means that middle-income countries will have to rely increasingly on domestic funds to implement the SDGs rather than rely on the prospects of complimentary overseas development assistance.

The G20 note that there is a compelling need to use available public money to leverage private sector investment and institutional investors in particular to address the infrastructure deficit particularly in Africa. In this regard, they see a critical role for multilateral financial institutions to support the «building of pipelines of bankable projects», and improved mechanisms to replicate projects.^[9] In this regard the Renewable Energy Independent Power Producer Procurement Programme of South Africa (REI4P) offers a positive example for how effective a transparent procurement process can be to attract private investment for the rapid scaling up of renewable energy infrastructure.

Limited resources will require trade-offs between conflicting objectives and demands. South Africa is a middle-income country with high carbon emissions per capita^[10], high unemployment,^[11] endemic poverty and one of the largest gini-coefficients in the world^[12]. Its National Development Plan, published in November 2012 prioritises both the need to eliminate poverty and eradicating inequality on the one hand, and address climate change on the other. This presents a challenge. Addressing climate change will require dramatically loosening the country's strong dependence on (historically cheap) fossil fuel generated by coal. This will not be an easy task, as coal mining continues to be at the heart of the South African economy with its inter-linkages in finance, manufacturing, service industries

8 Ibid

9 Alexander, N. 2016. Infrastructure Investment and Public Private Partnerships, 15 December. Available at: https://www.boell.de/en/2016/12/15/infrastructure-investment-and-public-private-partnerships?utm_campaign=ds_g20_en [Accessed on 23/2/2017]

10 Primary energy supply in South Africa is dominated by coal (~71%), followed by crude oil (~15%). Nuclear, natural gas and renewable energy (including hydro and biomass) have historically played a less significant role in the total energy mix, collectively contributing to the remaining ~11% (DoE, 2014). A closer examination of the electricity generation industry (DOE, 2010) reveals that 90% of electricity was generated from coal, followed by nuclear and hydro at 5% and 4.5% respectively. (Draft Integrated Energy Plan. 2016. Available at http://www.gpwonline.co.za/Gazettes/Gazettes/40445_25-11_NationalGovernment.pdf. [Accessed on 15/02/2017])

11 Unemployment measured 27.1 percent in the third quarter of 2016. (Trade and Economics. 2016. Available at: <http://www.tradingeconomics.com/south-africa/unemployment-rate> [Accessed on 10/1/2017])

12 With an income Gini that ranges between 0.66 to 0.70, the top decile of the population accounts for 58% of the country's income, while the bottom decile accounts for 0.5% and the bottom half less than 8%. This makes South Africa one of the most consistently unequal countries in the world (World Bank. 2016. Country overview: South Africa. Available at: <http://www.worldbank.org/en/country/southafrica/overview> [Accessed on 17/2/0177])

and other sectors.^[13] Reducing the role of coal also raises the spectre of large scale job losses leading to increased unemployment and poverty. In addition, the persistence of coal is a feature of a particular political economy with some arguing that the <coal industry is being propped up by the vested interests of big business>.^[14] While the coal industry in the past was structured around white capital and commercial interests, it is today intrinsic to the reorganisation of the political economy favouring increased black ownership.

Ideally, any decisions about the future energy mix of the country should be guided by two principles over and above considerations of cost. In the first instance to target the cleanest energy mix in order to effectively address the country's high carbon emission profile, and secondly to choose energy pathways that can drive industrialisation and in so doing create employment.^[15] The burning question then becomes, is this what South Africa is prioritising in its forward energy planning, firstly, and secondly how are South Africa's national policies and strategies in this regard shaping up with its international commitments?

This paper provides a short country analysis of the existing alignment (or not) of South African national policies and strategies with its G20 commitments relating to climate change and renewable energy, as well as its global climate commitments under the United Nations Framework Convention on Climate Change (UNFCCC). The two SDGs of primary importance for both climate change and renewable energy are of course SDG 7 (*ensure access to affordable, reliable, sustainable and modern energy for all*) and SDG 13 (*take urgent action to combat climate change and its impacts*).

Given the structure of the economy, namely the high dependency of South Africa on fossil fuel generated electricity as well as the importance of coal exports in driving its economy, there is a high level of overlap between these two goals. The sustained pursuit of these goals could arguably also make a meaningful contribution to the objectives of the National Development Plan to eliminate poverty and reduce inequality through inclusive growth^[16], the provision of cheaper electricity, the creation of new industries and desperately needed jobs – outcomes that speak directly to SDG 8 (promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all).

13 Statistics SA. 2017. The coal mining industry was the third largest employer, employing 91 605 individuals in 2012, rising from rose by 75% between 2002 and 2012, whilst In 2013, coal contributed R51 billion to South Africa's economy in 2013, far outstripping gold mining. Available at: <http://www.statssa.gov.za/?p=4820> [Accessed on 16/2/2017]

14 Ferral. A. 2016. Break free from a corrupt mining sector. Mail&Guardian, 22 April. Available at: <http://mg.co.za/article/2016-04-21-break-free-from-a-corrupt-mining-sector> [Accessed on 17/2/2017]

15 Levington, M. 2016. Industrialisation is just as important as cost when considering IRP options, Daily Maverick (online), 20/12/2016. Available at: <https://www.dailymaverick.co.za/article/2016-12-20-op-ed-industrialisation-is-just-as-important-as-cost-when-considering-irp-options/#.WJwUcmdunIU> [Accessed on 10/1/2017]

16 South Africa. 2013. National Development Plan 2030. Available at: www.gov.za/issues/national-development-plan-2030

2 Global climate and energy commitments - G20 and UNFCCC

2.1 G20

As a member of the G20, South Africa acknowledged that climate change is one of the greatest challenges facing the world today and has committed itself to take the respective domestic steps that all participating countries will have to undergo to eventually bring the Paris Agreement into force.^[17]

South Africa is also a party to the G20 Action Plan on the 2030 Agenda for Sustainable Development, a document that guides G20 countries through the prioritisation of both high level principles as well as more detailed collective actions relating to the different goals.

The G20 Voluntary Action Plan on Renewable Energy contains as a key point to <increase substantially the share of renewable energy by 2030>, by encouraging G20 members to voluntarily implement policies and programmes in order to accelerate the deployment of renewable energy based on national conditions.^[18]

More specifically, and relevant to this discussion, South Africa's G20 commitments include the increased use of Public Private Partnerships and in particular the REI4P^[19] to achieve a target of 10000 GWh of renewable energy generated. In this regard South Africa has procured 6.35MW to date which is close to the Department of Energy interim target of 7MW by 2020 and 17.8 GW by 2030^[20]. However, this ostensible positive outcome is under threat by the reluctance of local state-owned enterprise Eskom, which is South Africa's only electricity utility that controls both the generation and distribution of electricity,

- 17** G20 China. 2016. Presidency Statement on Climate Change at the G20 Sherpa Meeting. Available at: http://www.g20chn.org/English/China2016/SherpaMeeting/201604/t20160408_2232.html [Accessed on 1/02/2017]
- 18** G20. 2016. Voluntary Action Plan on Renewable Energy. Available at: <https://ec.europa.eu/energy/sites/ener/files/documents/G20%20voluntary%20Actio%20Plan%20on%20Renewable%20Energy.pdf> [Accessed on 10/2/2017]
- 19** South Africa's Renewable Energy Independent Power Producers Procurement Programme (the REI4P) is an extensive initiative to install 17.8 GW of electricity generation capacity from renewables – wind, solar, biomass, biogas and hydropower – over the period 2012 to 2030 (Walwyn, R. D. and Brent, A. C., 2015. Renewable energy gathers steam in South Africa. Available at: URI: <http://hdl.handle.net/2263/49731> [Accessed on 17/2/2017]
- 20** Maupin, A. 2016. South Africa: Carbon-Intensive Economy and a Regional Renewable Energy Frontrunner. IASS Study. Available at: http://publications.iass-potsdam.de/pubman/item/escidoc:1910913:2/component/escidoc:1910914/IASS_Study_1906900_14.pdf [Accessed on 20/1/2017]

to sign off agreements with independent renewable energy producers over and above the agreements signed to date.

2.2 UNFCCC commitments

South Africa was one of the first developing countries to voluntarily pledge emission reductions when, in 2010, it set emissions reduction targets of 34% by 2020 and 42% by 2025 below an unspecified <business as usual> trajectory. However, this was subject to financial and other support from developed countries, support that might be less forthcoming, as pointed out above.^[21]

On 25 September 2015, South Africa submitted its Intended National Determined Contributions (INDCs) including the target of reducing its greenhouse gas emissions. The INDCs have transitioned South Africa's international mitigation commitment from a relative deviation of <business as usual> to an <absolute peak, plateau and decline> greenhouse gas emissions trajectory range. In other words, emissions will rise to 34% below business-as-usual by 2020, peak at 42% in 2025, plateau until 2030 and then decline to 2050. The INDCs make the persuasive point that «in the short-term (up to 2025), South Africa faces significant rigidity in its economy and any policy-driven transition to a low-carbon and climate resilient society must take into account and emphasise its overriding priority to address poverty and inequality.»^[22]

However this flexibility also holds open the possibility of South Africa backsliding. Already, South Africans are set to overshoot their desired domestic emission limits for 2010 to 2020, and have seen what initially was considered the upper limit of the peak, plateau and decline trajectory range becoming an accepted target.^[23]

Climate Action Tracker, an independent science based assessment platform, rates South Africa's commitments as <inadequate>. It points out that the countries' commitment to reducing its greenhouse gas (GHG) emissions to between 398 and 614 MtCO_{2e}, including land use, land use change and forestry (LULUCF), over the period 2025–2030, is <not in line with interpretations of a «fair» approach to reach a 2°C pathway.» It is also inconsistent with ensuring that warming remains below 2°C. If most other countries were to follow

21 Fakir. S. 2015. COP 21 and South Africa's position. Available at: <http://www.polity.org.za/article/cop-21-and-south-africas-position-2015-10-09>

22 South Arica. 2015. South Africa's Intended Nationally Determined Contribution (INDC). Available at: <http://www4.unfccc.int/ndcregistry/PublishedDocuments/South%20Africa%20First/South%20Africa.pdf>

23 WWF. 2015. WWF-SA Statement on South Africa's INDCs (unpublished).

South Africa's approach, global warming would exceed 3–4°C. They also argue that South Africa will need to implement additional policies to reach its targets.^[24]

Citing a range of existing policies and plans that will bend the curve of South Africa's greenhouse gas emissions towards a peak, plateau and decline trajectory range, the INDCs explicitly acknowledge that in order to ramp up implementation of these policies and plans over time, South Africa is investing heavily in transforming its energy sector. This investment entails inter alia the substantial investment in renewable energy and two new high-efficiency coal-fired power stations to replace existing aging coal fire plants.^[25]

3 National Plans and Strategies

The National Development Plan outlines the 2030 vision for South Africa's energy sector. It envisages a sector that will promote inter alia «economic growth and development through adequate investment in energy infrastructure and the provision of quality energy services that are competitively priced, reliable and efficient» as well as promote «environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change».

In this regard, the rollout of South Africa's REI4P in 2010 to stimulate the uptake and development of renewable energy technologies can be seen as a major success. It has been hailed, in the government's own words, as a programme that has given the country global recognition and attracted ZAR53.4 Billion (USD 4 billion) in private investment. Renewable energy is currently the cheapest form of electricity to generate. It has reduced CO₂ emissions from power generation by 4.4 million tonnes, created 23000 job opportunities, has generated a total net benefit for the economy of up to ZAR4 billion (USD 300 million) in 2015 alone, and accounted for 85.8% of total foreign direct investment in South Africa in 2014.^[26]

The programme has demonstrated that it is scalable and rapidly deployable. This means it can be built quickly to match the country's need for energy plants and be completed on time in comparison with coal fired mega-plants such as Medupi and Kusile, or the nuclear built

24 Climate Action Tracker. 2015. South Africa. 15 Oct. Available at: <http://climateactiontracker.org/countries/southafrica.html> [Accessed on 24/2/2017]

25 Ibid

26 Tallying the benefits of South Africa's Renewable Energy Power Producer's Procurement Programme. *Engineering News*, 9 May. Available at: http://www.engineeringnews.co.za/article/tallying-the-benefits-of-south-africas-renewable-energy-power-producers-procurement-programme-2016-05-09/rep_id:4136 [Accessed on 10/2/2017]

proposed in the draft Integrated Resource Plan (IRP)^[27] 2016 Report that was put out for comment on 23 November 2016.

Much criticism aimed at the IRP 2016, which ranges from erroneous inconsistent technology costs used for renewable energy in the base-case draft presented, but also the arbitrary and artificial constraints on the delivery of renewable energy, namely 1,000 MW per year for solar PV, and 1,600 MW per year for wind power. Critics have pointed out that there is no justification for these constraints, other than the fact that these same constraints were contained in the previous IRP in 2010. Although at the time there was no South African renewable energy industry, utility scale solar PV or wind power plants in South Africa, and the international solar PV and wind prices were significantly higher to what they are now. In spite of not having commissioned any large renewable integration study to support their contention, Eskom cites limitations to the ability of the grid to accommodate more than a fixed amount of renewable energy capacity per year for these constraints. Further limiting the potential of increased renewable energy to address climate change concerns is the inclusion of a carbon emission constraint for the years ahead to 2050, this being the <moderate peak plateau decline> carbon emission trajectory.^[28]

This goes directly against the formal recommendations of the Ministerial Advisory Council on Energy (MACE).^[29] They urged the Minister of Energy and her department to «start with an unconstrained, least-cost, base-case scenario, using correct and up-to-date technology costs, to establish the associated least-cost, unconstrained, base-case technology mix to 2050, and the associated cost of this base-case scenario».^[30]

Following the suggested approach above, research conducted by the Centre for Scientific and Industrial Research (CSIR) demonstrated that solar PV, wind and flexible power generators (such as concentrated solar power, hydro or biogas) is the cheapest mix for the South African power system. The most cost-optimal expansion is a >70% renewable energy share by 2050 which will also be cheaper by ZAR 80 billion (USD 6 billion)

27 The Integrated Resource Plan (IRP) in the South African context is a National Electricity Plan (and a subset of the Integrated Energy Plan) which directs the expansion of the electricity supply over the given period. In theory its purpose is to identify the requisite investments in the electricity sector that maximize the national interest. In practice, it seeks to identify the investments in the electricity sector that allows the country to meet the forecasted demand with the minimum cost to the country. (See Overview of the Integrated Resource Plan. Available at: <http://www.energy.gov.za/IRP/overview.html> [Accessed on 12/1/2017])

28

29 A broad-based group of academics, scientists, industrialists, representatives of various business and industry associations, energy intensive users, energy experts and other stakeholders, announced by the Minister of Energy shortly after taking office.

30 Yelland, C. 2016. The Draft 2016 Integrated Resource Plan – lightweight, superficial and downright dangerous, Daily Maverick. 30 November. Available at: <https://www.dailymaverick.co.za/article/2016-11-30-analysis-the-draft-2016-integrated-resource-plan-lightweight-superficial-and-downright-dangerous/#.WJwXuWdunIU> [Accessed 5/1/2017]

per year in comparison to the current base-case scenario. It also reduces CO₂ emissions by 65% (-130 Mt/yr) compared to the base-case scenario. This means South Africa can de-carbonise its electricity sector without carbon-avoidance costs. They recommend, similar to the advisory council, that the base-case scenario should be low-cost, and free of any artificial constraints. New-built limits for renewables should be lifted, relative costs of wind and PV updated, and the unconstrained re-run should form the base-case scenario of the IRP 2016.^[31] ^[32]

Using this approach it becomes clear that it would be much cheaper to simply unlock the bottlenecks on grid access, and to upgrade the grid-infrastructure rather than to use higher-cost and less-flexible generation technologies. Instead, Eskom's preferred scenario constrains renewable energy, and makes the case for a 9.6 GW new nuclear-built programme with projected costs of USD 50-billion (ZAR 776-billion).^[33] Irrespective on how finances are structured, this raises the potential of <crippling principal and interest payments> that can lead to a re-allocation of public budgets away from critical spending needed to make the aspirations of the National Development Plan a reality.^[34]

Many argue that what is being witnessed is Eskom's (read the state's) attempt at entrenching its dominance in the energy sector. Should the Department of Energy proceed with the least-cost unconstrained scenario, the bulk of new facilities for renewable energy and gas will be built by Independent Power Producers. Although Eskom will initially still be actively involved in generating electricity, its dominance in the sector will decline and, over time, eventually it will act primarily as a distribution business – a distributor of other people's products.^[35] By including large-scale nuclear power in all its scenarios, it ensures that it remains relevant.

The REI4P has delivered millions of South African Rands in socioeconomic development. Producers have committed a percentage of their revenue for investment in the communities where their projects were located. Millions of Rands have also been invested in small

- 31** CSIR Energy Centre. 2016. Comments on the Integrated Resource Plan 2016 Draft. Presented to South African Integrated Resource Plan 2016 public hearing, Johannesburg, 7 December 2016 Available at: <http://www.energy.gov.za/IRP/irp-presentations/Comments-on-theIRP-2016-Draft-CSIR.pdf>
- 32** CSIR. 2017. Electricity Scenarios for South Africa Presentation to the Portfolio Committee on Energy, Cape Town, 21 February.
- 33** Yelland, C. 2016. Analysis: How much will new nuclear electricity cost South Africa? Daily Maverick. 2 August. Available at: <https://www.dailymaverick.co.za/article/2016-08-02-analysis-how-much-will-new-nuclear-electricity-cost-south-africa/#.WKbn6GdunIU> [Accessed on 17/2/2017]
- 34** Aizawa, M. 2016. Macroeconomics and Sovereign Debt. Heinrich Böll Stiftung, 30 Nov. Available at: <https://www.boell.de/en/2016/11/30/macroeconomics-and-sovereign-debt> [Accessed on 12/2/2017].
- 35** Levington, M. 2016. Industrialisation is just as important as cost when considering IRP options, Daily Maverick (online), 20/12/2016. Available at: <https://www.dailymaverick.co.za/article/2016-12-20-op-ed-industrialisation-is-just-as-important-as-cost-when-considering-irp-options/#.WJwUcmdunIU> [Accessed on 10/1/2017]

business developments; equity shares for blacks, and communities had reached 40% and above in the fourth bidding call.^[36] Behaving in this manner, Eskom is clearly in breach of its developmental mandate, which is «to provide sustainable power for a better future», «assist the economy to grow» and «improve the quality of life of people in South Africa and the region».^[37]

As long as South Africa has an electricity monopoly, it will be held hostage to the agenda and interests of Eskom which do not necessarily align with those of South Africa.^[38] All generated electricity, has to be fed into the South African grid and that grid is owned and operated by Eskom. Addressing the issues in this way often has the benefit of answering the technology questions as well. Big mega-projects like Medupi and Kusile, but even more so in the case of nuclear, exclude private investments. Furthermore, because those projects invariably overshoot budget and time, only governments have the means and measures to pass the risks of these mega projects on to current and future taxpayers.^[39]

4 Quo Vadis

In summary, SDGs offer an important opportunity for harnessing the many advantages of a global agenda and partnerships to drive appropriate development in South Africa through the equitable and sustainable use of the country's resources. SDGs are useful tools to compare South Africa's own development agenda with international goals. South Africa's gini-coefficient belies its promise: it is a rich country with high-levels of inequality. This speaks to the fact that while openness and democratic rights prevail, the economy remains exclusive and captured by elites.

From the foregoing discussion, it is clear that it is within South Africa's means – if one considers both the private and public sector economy – to generally implement the SDGs, particularly SDGs 7 and 13. This however, will require more than commitments on an international basis. It requires the development of relevant indicators or diligent tracking data for reporting purposes. Vested interests are still holding the country to ransom, leading to suboptimal decision making, as demonstrated by the analysis of the IRP put forward.

36 Ibid

37 Levington, M. Industrialisation is just as important as cost when considering IRP options, Daily Maverick (online), 20/12/2016. Available at: <https://www.dailymaverick.co.za/article/2016-12-20-op-ed-industrialisation-is-just-as-important-as-cost-when-considering-irp-options/#.WJwUcmdunIU> [Accessed on 10/1/2017]

38 Vos, D. 2016. Analysis: A citizen's guide to electricity generation technology. Daily Maverick. 28 July. Available at: <https://www.dailymaverick.co.za/article/2016-07-28-analysis-a-citizens-guide-to-electricity-generation-technology/#.WJwVwWdunIU>

39 Ibid

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