

Total Game Changer or Just Hot Air? The Discovery of Gas off South Africa's Southern Coast

On the 7th of February 2019, the French energy company Total announced a 'significant gas condensate discovery' some 175 kilometres off the southern coast of South Africa within what is known as the Outeniqua Basin. The find was described by Kevin McLachlan, Senior Vice-President of Exploration at Total, as 'a new world-class gas and oil play'.¹ On the very same day South African President, Cyril Ramaphosa, stated during his annual State of the Nation Address, that the find 'could well be a game-changer for our country and will have significant consequences for our country's energy security and the development of this industry'.² The South African Minister of Energy, Jeff Radebe, repeated the assertion that the find would be a 'game-changer' and made the extraordinarily bold claim that 'this discovery will ensure that the triple challenges of unemployment, poverty and inequality will be receded (sic) to the past'.³

This brief report will critically evaluate these claims, as well as assess the likely environmental effects of the find, in terms of the local environmental impacts and the wider implications for climate change. In addition, it will ask whether this find will really play a significant role in addressing South Africa's socio-economic challenges.



Image 1: Transocean Dhirubhai Deepwater KG1 drilling ship and Transocean 'Development Driller 1' semi-submersible drilling rig off Cape Town in 2018.⁴

1. The Find

The gas has been discovered in Block 11B/12B of the so-called Brulpadda prospects. Block 11B/12B covers an area of 19 000 square kilometres with water depths ranging from 200 to 1800 metres. The maximum drilling depth achieved during the test drilling was 3 633 metres.⁵ Total's CEO Patrick

Pouyanne told reporters in Paris that the find could produce as much as one billion barrels of gas condensate (a light liquid hydrocarbon) and condensate light oil (a form of light crude oil).⁶ Total now plans to undertake a 3D seismic survey of the area before drilling as many as four more exploration wells. Only after this is done, will an accurate picture emerge of how much gas and oil has actually been discovered.

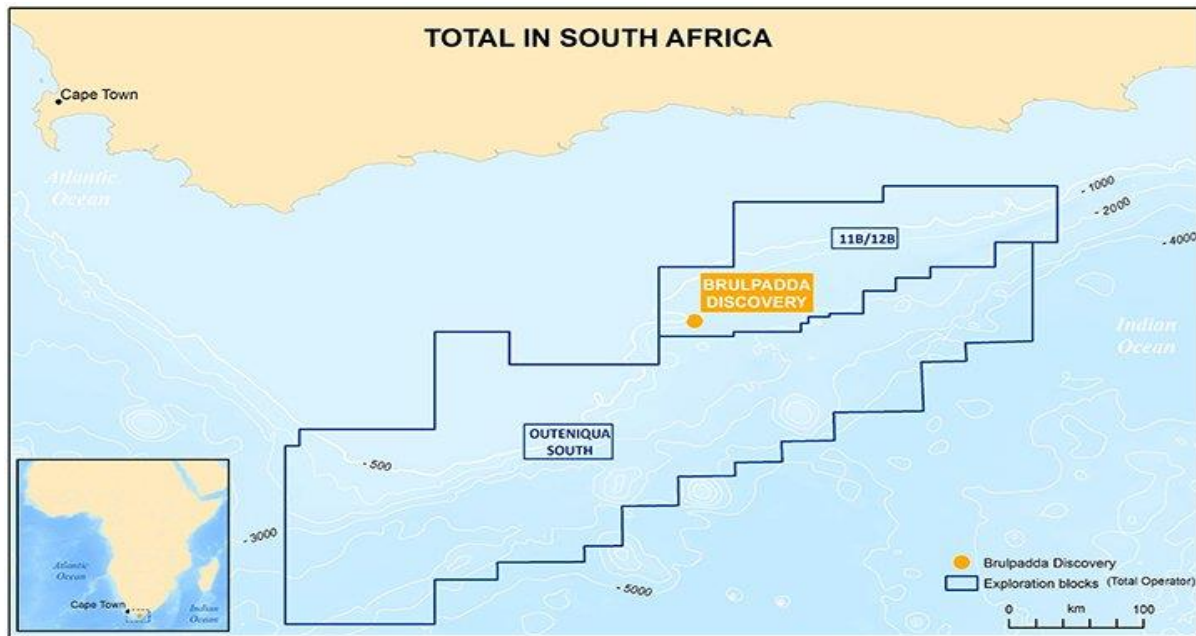


Figure 1: Location of Brulpadda find and Total's exploration blocks⁷

2. Financial Implications for South Africa

As soon as the find was announced, oil and gas executives in South Africa started to calculate excitedly how much revenue would allegedly accrue to the South African economy. Following on from the nice round figure of one billion barrels, initial estimates state that the South African economy will receive a R1 trillion boost over the next 20 years. Niall Kramer, of the South African Oil & Gas Alliance (SAOGA), a group which lobbies on behalf of the oil and gas industries, stated that the find could reduce South Africa's current budget deficit by 30%.⁸

As there is no certainty as to how much gas and oil is actually in the find, and we cannot possibly know what the per-barrel price of any finds will be in the future, or what South Africa's future macroeconomic policy will be, such claims are highly speculative and largely meaningless at this stage. This was confirmed by a far more circumspect comment from South Africa's Minister for Mineral Resources, Gwede Mantashe, who stated that the find was 'potentially a major boost for the economy'.⁹ Given the uncertainties, it is, therefore, very difficult to evaluate the impact the find will have on South Africa's 'triple challenge' of poverty, inequality and unemployment.

2. 1 Financial Flows and Taxation

Before any consideration of what may happen to income generated from the find, it is important to note that it will be at least six years, and more likely ten years, before production is likely to start, due to the technical and logistical hurdles that have to be overcome before the find can be exploited.¹⁰

In terms of actual revenue, it should be noted that only 5.1% of Block 11B/12B where the find is located is actually owned by a South African company (Arostyle), meaning that 94.9% of the find is foreign owned. As the diagram below illustrates, revenue from the find will flow overseas.

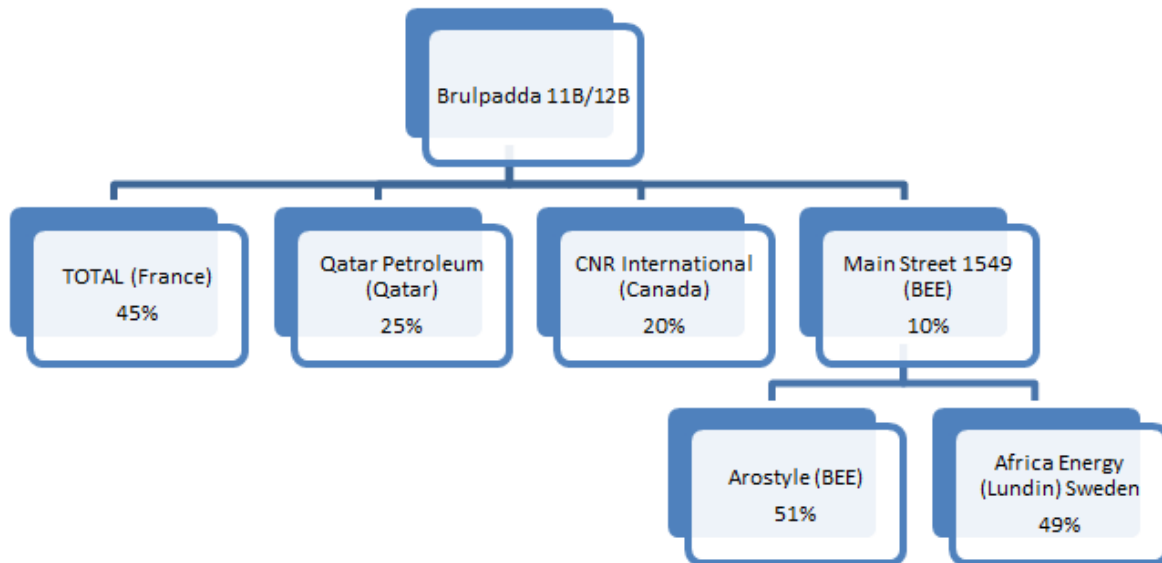


Figure 2: Ownership structure of the Brulpadda find

The only potentially significant revenue that will be retained in South Africa from the find is therefore tax revenue imposed on the foreign companies that own the find. South Africa’s current corporate tax rate is 28%, and, in terms of the Mineral and Petroleum Resources Development Act of 2002 a royalty of up to 5% will be added. Thus, at best, gas and oil profits will be taxed at a rate of 33% which approximates to the global average of around 30%. However, there are examples where fossil fuel rich countries charge much higher rates of taxation of oil and gas resources. For example, Nigeria has a ‘Petroleum Profit Tax’ which taxes profits between 65 – 85%, while Norway taxes all profits from oil and gas sales at 78% via a ‘Special Tax’.¹¹ Taken at face value, both of these tax regimes would appear to be favourable to the 33% tax on profits likely to be imposed in South Africa.

There is a significant problem, however, relating to how a state uses its taxable income. Norway has used its ‘Special Tax’ to create a sovereign wealth fund which has been invested by the state in the interests of the Norwegian people since oil and gas revenues began to flow in 1971.¹² Last year the fund was valued at \$1.1 trillion, and grows by up to \$100 billion a year.¹³ In stark contrast, the vast majority of the revenue that has come from oil and gas since its exploitation began in Nigeria in 1958 has been squandered. In 2017, Oxfam estimated that \$20 trillion has been stolen by public officials between 1960 and 2005 stating that ‘public resource management is subject to elite capture,

corruption and rent-seeking, and as such contributes to reproducing inequality and compromises opportunities for inclusive growth'.¹⁴

What Oxfam is describing here is the so-called 'Resource Curse', also known as 'the paradox of plenty', which 'refers to the failure of many resource-rich countries to benefit fully from their natural resource wealth, and for governments in these countries to respond effectively to public welfare needs... resource-rich countries tend to have higher rates of conflict and authoritarianism, and lower rates of economic stability and economic growth'.¹⁵ Nigeria is a classic example of the 'resource curse'. Despite the significant tax revenue which has flowed to the Nigerian government (oil revenue accounts for 80% of total government revenue) levels of unemployment, poverty and social exclusion in Nigeria are appalling and are getting worse.¹⁶

What this all means is that there is no neat relationship between natural resources, tax revenue and social justice outcomes. In regard to South Africa, it can be compellingly argued that the mining sector is a manifestation of the 'resource curse'. Recent research that looked at the mining sector found that 79% of people who lived in close proximity to ten major mines indicated that they had received no benefits from the mines at all.¹⁷

Despite these concerns, it is nonetheless important for those companies that extract mineral resources to pay socially just amounts of taxation on their profits. One of the key problems with the mining sector in South Africa has been the low levels of taxation that it pays to the South African government. These low levels of taxation are the result of generous tax allowances granted by the government, or tax avoidance (and sometimes illegal tax evasion) via the use of transfer pricing to shift profits to tax havens.¹⁸

It is deeply concerning that the majority owner of the Brulpadda find, Total (45% ownership), has previously been accused of transfer pricing in South Africa. In a 2015 submission to the Davis Tax Commission (established by the South African government to investigate the role of tax in meeting South Africa's developmental goals), compelling evidence was provided which demonstrated how Total's coal operations in South Africa appeared to be engaged in tax-avoidance via profit shifting. Through the application of a 'marketing fee', a 'sales commission' and coal transportation fees, Total Coal South Africa was able to allegedly significantly reduce its tax liability in South Africa.¹⁹

In early 2016 research undertaken by the Centre for Research on Multinational Corporations (SOMO) revealed that Total benefitted from a ten-year 'tax holiday' granted to it by the Nigerian government via a partnership with Shell, Eni and the Nigerian government for the exploitation of Nigerian gas. SOMO estimate that Total avoided paying \$977 million of tax between 1999 and 2009 due to this deal.²⁰

There is, therefore, no guarantee that any increase in tax revenue for South Africa that may result from the Brulpadda find will be used to address South Africa's 'triple challenge' of poverty, inequality and unemployment.

2.2 Employment Opportunities

In the coming weeks and months we are likely to hear from government officials how the Brulpadda find will create desperately needed jobs in South Africa. The sad reality, however, is that it is unlikely to create a significant number of jobs. Any jobs are likely to be restricted to either highly specialised

ones involved in the recovery of the gas or in the possible conversion of the gas to liquid form in South Africa. South Africa does have a small gas-to-liquid plant in Mossel Bay and this may benefit from the find. However, it only has the capacity to convert 40 000 barrels a day which may not be enough capacity to process the find. This could mean that the plant will be expanded, additional plants built, or the gas may be transported to be sold elsewhere.²¹

There are some early indications that the find has sparked interest in other oil and gas companies who hold stakes in areas close to the Brulpadda find. Niall Kramer from SAOGA has stated that it is likely that both America’s ExxonMobil and Italy’s Eni are now more likely to explore their respective stakes. If significant additional finds were to be made this could have consequences for the deep-water port at Coega in the Eastern Cape and for Saldanha Bay which already regularly services oil and gas exploration and drilling platforms. Both locations could see an increase in traffic.²² However, even if such development were to take place, the jobs on offer would, once again, be largely highly skilled and technical in nature.

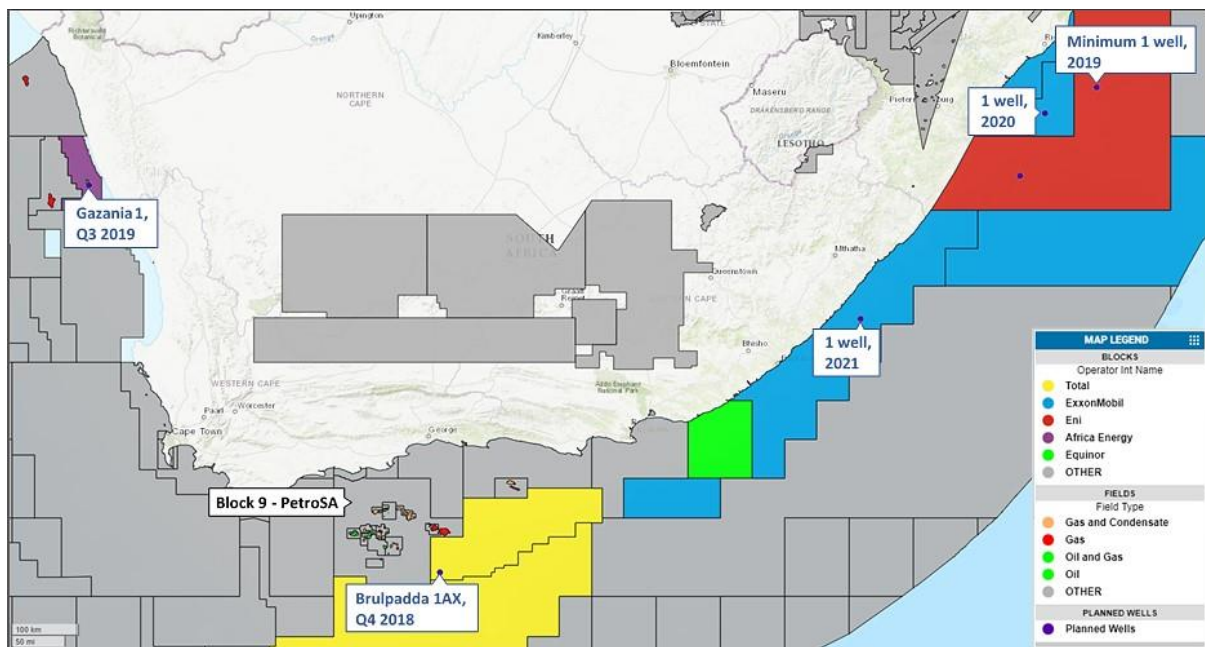


Figure 3: Planned offshore exploration as of September 2018²³

2.3 Cost of Fuel

Responding to the news of the discovery, Minister of Energy, Jeff Radebe, stated that ‘it will play a very significant role in reducing the cost of fuel in South Africa’. He described the cost of fuel as ‘a real thorn in the flesh of many South Africans’.²⁴ Radebe’s comment is clearly a reference to ongoing public opposition in South Africa over the last year to record oil prices.²⁵ Given the long lead-in time before the gas becomes available, the uncertainty as to how much gas has actually been discovered, whether it will be converted to liquid fuels or not, or even if it will stay within South Africa, this is an entirely disingenuous statement. It is also one that seems to assume that Total would be willing to sell the gas in South Africa below global market rates which seems a highly unlikely scenario. Those countries that do experience relatively low oil prices are those that have undergone massive oil exploration and extraction and have significant reserves still in place. Even then, the relative price of oil in any given country only has meaning if it is compared to income. For example, in 2016 Nigeria

had the 7th cheapest oil price in the world, but to the average Nigerian earning \$8 a day, it was in fact the 4th most expensive in the world in relative terms.²⁶

3. Environmental Impacts

The find has numerous environmental consequences, some of which will have an impact on South Africa locally, while others will undoubtedly have a global impact.

3.1 Risk of Accidents

There is a very real risk that an accident could occur at drilling sites within the Brulpadda find. This is because of the inherently risky nature of oil and gas extraction, but is particularly so in this case because of the location of the find. In announcing the find, Total was quick to draw attention to how it was located within ‘a challenging Deepwater environment’.²⁷ Total CEO Patrick Pouyanne was quick to confirm this observation when he stated on the same day that ‘the region is quite difficult to operate: huge waves, the weather isn’t very easy’.²⁸ Could it be that in drawing immediate attention to how difficult it will be to operationalise the find, Total is pre-emptively preparing South Africans for the possibility of an accident?

Deepwater drilling is technically challenging and dangerous largely because of the pressures and temperatures that exist at great depths. As the drills get deeper, so the water pressure rises meaning that remote submarines are needed. The deeper the drilling, the higher the pressure of the gas or oil in the reservoir which makes it incredibly difficult to control the upward flow, failure to do this can lead to a blowout. Because of the depths of the ocean, all drilling platforms and supporting infrastructures have to float, adding an additional challenge to all operations.²⁹

Total will face all these challenges, in addition to which the find is located in some of the world's most treacherous waters. The find is located deep within the westward Agulhas current which is one of the fastest currents in the world where winter waves can reach 30 metres in height. Under the water at depths deeper than 800 metres, things are equally treacherous as the Agulhas Undercurrent flows north at some of the fastest speeds ever recorded for an undercurrent.³⁰ It's no wonder then, that Total's first attempt to undertake exploratory drilling in the area in 2014 failed due to technical failures caused by the uncompromising conditions. It's worth noting that to complete the recent exploratory drilling Total had to hire a specialised drilling rig, and only drill in the summer months.³¹



Image 2: Total had to hire the 'Deepsea Stavanger', specially designed for harsh environments, to complete its exploratory drilling. Here seen in Cape Town.³²

What this means for extracting gas in the winter months is unknown. The explosion of the Deepwater Horizon rig in the Gulf of Mexico in 2010 which claimed 11 lives and spilt five million barrels of oil into the ocean, shows just how difficult deep water drilling is, and that was in a relatively benign ocean environment. Peter Sharp, the executive vice-president for wells at Shell Oil, stated in 2012 that 'deepwater operation is the most complex, costly activity we undertake. Every single one is the equivalent of a moonshot'.³³

Total's record in terms of gas exploration has not been a happy one in recent years. In 2012 a massive gas leak occurred at Total's Elgin drilling platform in the North Sea. Between 25 March and 16 May up to 200 000 cubic metres of gas leaked from the platform every day, of which 90% was methane (the primary component of natural gas), which is 30 times more potent as a greenhouse gas than carbon dioxide.³⁴ Total was eventually fined R20 million for the accident by the British Government's Health and Safety Executive which noted that 'this incident was foreseeable and entirely preventable. There were a number of failures on the part of Total'. Industry insiders are reported to have said that a major disaster was only averted because prevailing wind conditions blew the gas away from flares.³⁵ Incidentally, official investigations into the Deepwater Horizon disaster concluded that one of the major contributing factors was 'a corporate culture at British Petroleum that had consistently neglected worker safety and environmental standards by using cost-cutting and poor quality methods'.³⁶

That the Elgin accident took place in shallow waters (93 metres) compared to up to 1 800 metres of water for the Brulpadda find, is sobering. Greenpeace South Africa has described Total's intention to exploit the find as 'reckless' stating, 'deep sea drilling is far too risky. The possibility of an oil spill

always exists and the environmental impacts of deep sea drilling for oil and gas are too significant to be ignored'.³⁷



Image 3: The Deepwater Horizon accident³⁸

3.2 Gas is still a fossil fuel

In the coming weeks and months it is likely that both government and gas industry representatives will state that the gas from the find could be used as a 'bridge fuel' as South Africa transitions away from coal in favour of renewable energy. The argument that will be made states that as renewable power is currently intermittent and results in fluctuations in power supply, electricity grids need supplementary power sources to compensate for these fluctuations. Proponents of gas claim that it is the perfect bridge fuel to use until storage and battery technology advances to a stage where renewables can maintain a constant power supply. Gas is considered a 'bridge fuel' by some because it produces only 60% of the carbon dioxide that coal does to produce the same amount of energy.³⁹ The argument is then made that as more gas is used, so the use of renewables can expand. In South Africa, it could also be used to replace the burning of expensive diesel which Eskom often has to do to manage intermittent supply.⁴⁰

There are a host of complicated and interrelated problems with using gas as a 'bridge fuel' which are beyond the scope of this brief paper. However, the two key problems need to be identified:

- Natural gas is still a fossil fuel. While it may produce less carbon dioxide when it burns than coal, this fact alone does not prove its relative 'cleanliness'. Rather, gas needs to be evaluated in regard to its entire production chain. How much CO₂ is released in the exploitation and transportation of gas must be considered. This is especially so when considering the extraction of gas from remote and treacherous locations like the Brulpadda

find. Gas extraction and transportation leads to 'fugitive' emissions of methane. Research shows that between 1 – 9% of total gas extracted over plant life cycles, leaks into the atmosphere, of which 90% is methane, which has devastating consequences for climate change.⁴¹ In fact, if the leakage rate is 3.2% or more, the 'benefits' of gas over coal in terms of GHG emissions are cancelled out due to the tremendous 'heating' impact of methane.⁴² As David Le Page from Fossil Free South Africa remarks, 'this leakage completely off-sets the potential benefits of using gas as a so-called transition fuel'.⁴³

The International Panel on Climate Change indicated in October 2018 that to be able to avoid catastrophic climate change impacts the world needs to rapidly decarbonise. There is a growing academic consensus that transitioning to gas, even wholesale and for only a short period of time before the mass global adoption of renewable power (both of which are extremely unlikely), will not produce the necessary reductions in GHG emissions to avoid catastrophic climate change. This research indicates to avoid catastrophic climate change global gas consumption would actually need to peak in 2020.⁴⁴

- Transitioning to gas runs the very real risk of technological lock-in and path dependency. If significant amounts of money are invested in gas extraction and the associated industries necessary for its exploitation, economies, and thus countries, can be become 'locked' into hydrocarbon-intensive technologies and infrastructures despite the emergence of cheaper and less environmentally damaging alternatives. Spending on gas crowds out funding for new renewable energy sources and for research into renewables and improved storage. Secondly, it could lead to the use of gas being extended well beyond climate limits because of the need to recover costs from gas plant development. Lastly, it could lead to stranded assets, as gas plants are abandoned in favour of cheaper and more environmentally sustainable renewable energy sources.

This serious problem is eloquently explained by environmental historian, Andreas Malm, when he states:

'The more business-as-usual persists, the harder it becomes to break out of it. Every new round of pipelines and tankers and deep-water drilling rigs encumbers the next decades with an even more ponderous mass infrastructure into which carbon has been locked: the ruts of path dependency deepen'.⁴⁵

Gas cannot be part of a Just Energy Transition in South Africa and should, therefore, not be part of South Africa's future energy mix. It is incompatible with South Africa's climate change commitments and with the global necessity of keeping global warming to 1.5c above pre-industrial levels. This is especially important in South Africa, a county which its government admits, is already experiencing warming 'in the order of twice the global rate of temperature increase'.⁴⁶ Ahmed Mokgopo, Africa Regional Divestment Campaigner for 350Africa.org, stated that it was 'irresponsible' for President Ramaphosa to call the find a game-changer given the ongoing global climate crisis, especially as South Africa was already experiencing the devastating effects of climate change such as ongoing drought in parts of the country. A situation, Mokgopo argues, that will only get worse if South Africa now starts to exploit gas and oil instead of beginning the process of decarbonising energy

generation.⁴⁷ Makgopo's views are echoed by David Le Page from Fossil Free South Africa and Robyn Hugo from the Centre for Environmental Rights. Le Page notes:

Any move to exploit this gas field would make an absolute nonsense of South Africa's international commitments in terms of climate change ... it will accelerate our emissions anew when we need to be cutting them⁴⁸

While Hugo observes:

The climate crisis simply does not permit South Africa to be investing in more fossil fuels. If South Africa is to meet its climate commitments and urgently reduce greenhouse gas (GHG) emissions, as well as adapt to the extreme impacts of climate change, it is imperative that we quit our dependence on fossil fuels⁴⁹

4. Conclusion

It is quite clear, both economically and environmentally, that the Brulpadda gas find is not, despite all the hype, good news for South Africa. There is no guarantee that revenue raised from the find will reach those who need it most in South Africa. What is guaranteed, however, is that the find will seriously undermine South Africa's attempts to combat climate change and increasingly disastrous impacts of climate change.

If we assume that the drilling and extraction will go ahead, as seems highly likely, there are a number of important considerations for the social justice and environmental agendas.

- **Taxation** – questions need to be asked about the level of taxation that the South African government proposes for the profits that will flow from petroleum finds. There is nothing to stop the South African government imposing a special petroleum tax rate on oil and gas profits to ensure that it is not just foreign interests and a very small number of South African's who benefit from South Africa's natural resources. In the interests of contributing to the realisation of the social and economic rights enshrined in Section 27 of the Constitution, funds raised from this special petroleum tax should be ring-fenced for key developmental goals such as housing, education and health care. If a decision were taken to introduce a special petroleum tax, the government must ensure that it regularly publishes transparent, publically available, comprehensive reports detailing exactly how and where revenue sourced from any petroleum tax has been spent.
- **Petroleum Resources Legislation** - For the past five years the South African government has been debating an Amendment Bill to the Mineral and Petroleum Resources Development Act (MPRDA) of 2002. The latest version of this Amendment Bill (2016) stated that the government was automatically entitled to a 20% 'free' share of all new oil and gas rights. It also stated that the government had the right to 'further participation' at an 'agreed price'. However, in August 2018 the government withdrew the Amendment Bill on the basis that the mining and petroleum sectors needed their own specific governing legislation.⁵⁰

If, as seems likely, the government decides in any forthcoming petroleum Bill to legislate a minimum 20% share over the ownership of any find, civil society should, as with any special

petroleum tax, insist that revenue derived from the share of any find be ring-fenced for developmental outcomes and regularly reported against by the government. Civil society should also vigilantly monitor the nature of any agreements made between the South African government and private petroleum companies to ensure they are free from corruption and do not give private companies unnecessary benefits such as 'tax holidays'.

- **Transparency and Accountability** - In the interests of transparency and accountability in the extractive sector, South Africa should immediately become a signatory to the Extractive Industries Transparency Index (EITI) which has been joined by 19 other African countries (with 51 signatories in total).⁵¹ The EITI 'requires countries to publish timely and accurate information on key aspects of their natural resource management, including how licences are allocated, how much tax, royalties and social contributions companies are paying, and where this money ends up in the government at the national and local level'.⁵² In April 2018, Total became the first major oil company to support the EITI's call for the public disclosure of oil contracts and licenses. Therefore the absurd possibility exists that the South African government may block the disclosure of contracts with Total, while Total is willing to make them public.⁵³
- **Meaningful Regulation** - Investigations have shown that regulatory failures contributed to the Deepwater Horizon disaster in 2010.⁵⁴ Given the serious environmental challenges facing petroleum extraction in deep waters, the South African government should properly monitor and regulate the extraction of petroleum in South African waters so as to ensure that risks to workers and the environment are minimised. This presupposes that there is sufficient capacity with the Department of Mineral Resources (DMR) to be able to be able to undertake regular and thorough inspections of sites of petroleum extraction. It also presupposes that the political will exists within the DMR to ensure that meaningful inspections take place.
- **Spills Fund** – To ensure that sufficient resources are available to deal with petroleum spills and accidents, legislation should compel private companies involved in the exploitation of petroleum resources to contribute to a ring-fenced fund to be used in the event of accidents to ensure that comprehensive clean-up operations take place, and those affected by spills are properly compensated.

¹ 'Total Makes Significant Discovery and Opens a New Petroleum Province Offshore South Africa', *Total Press Release*, 7 Feb. 2019, http://ressources.total.com/websites/total_co_za/Total-makes-significant-discovery.pdf. Accessed 25 Feb. 2019.

² 'State of the Nation Address 2019', President Ramaphosa, *South African Government*, 7 Feb. 2019, <https://www.gov.za/speeches/president-cyril-ramaphosa-2019-state-nation-address-7-feb-2019-0000>. Accessed 24 Feb. 2019.

³ 'Total South Africa's gas discovery a game changer - Jeff Radebe', *Radio 702*, 7 Feb. 2019, <http://www.702.co.za/articles/337089/listen-total-south-africa-s-gas-discovery-a-game-changer-jeff-radebe>. Accessed 24 Feb. 2019.

⁴ Image taken by report author, Neil Overy.

⁵ 'Total Makes Significant Discovery and Opens a New Petroleum Province Offshore South Africa', *Total Press Release*, 7 Feb. 2019, http://ressources.total.com/websites/total_co_za/Total-makes-significant-discovery.pdf. Accessed 25 Feb. 2019.

⁶ 'Total makes "significant" gas find on South African coast', *Mail and Guardian*, 7 Feb. 2019, <https://mg.co.za/article/2019-02-07-total-makes-significant-gas-find-on-south-african-shore>. Accessed 25 Feb. 2019.

⁷ Image from <https://safety4sea.com/total-finds-gas-off-africa/>.

⁸ L. Steyn, 'Total offshore find could bring in R1 trillion to SA economy', *Business Day*, 7 Feb. 2019, <https://www.businesslive.co.za/bd/companies/energy/2019-02-07-total-makes-significant-discovery-offshore-sa/>. Accessed 26 Feb. 2019.

⁹ 'Total makes "significant" gas find on South African coast', *Mail and Guardian*, 7 Feb. 2019, <https://mg.co.za/article/2019-02-07-total-makes-significant-gas-find-on-south-african-shore>. Accessed 25 Feb. 2019.

¹⁰ H. Wasserman, 'Everything you need to know about South Africa's massive gas find', *Business Insider*, 15 Feb. 2019, <https://www.businessinsider.co.za/impact-of-brulpadda-2019-2>. Accessed 27 Feb. 2019.

¹¹ 'Nigeria', *Extractive Industries Transparency Initiative*, <https://eiti.org/es/implementing-country/32> and 'Norway', *Extractive Industries Transparency Initiative*, <https://eiti.org/norway#tax-and-legal-framework>. Accessed 26 Feb. 2019.

¹² See, <https://www.nbim.no/>. Accessed 26 Feb. 2019.

¹³ A. Tappe, 'How Norway's sovereign wealth fund made \$131bn last year', *Financial News*, Feb. 28 2018, <https://www.fn.london.com/articles/how-norways-sovereign-wealth-fund-made-131bn-last-year-20180228>. Accessed 26 Feb. 2019.

¹⁴ 'Inequality in Nigeria: Exploring the Drivers', *Oxfam*, May 2017, p. 5, https://www-cdn.oxfam.org/s3fs-public/file_attachments/cr-inequality-in-nigeria-170517-en.pdf. Accessed 26 Feb. 2019. The comparison between Norway and Nigeria is not intended to imply that Nigeria should of established a sovereign wealth fund like Norway. The pressing social and economic challenges in Nigeria clearly need to be addressed before money can be 'saved' in this fashion.

¹⁵ 'The Resource Curse: The Political and Economic Challenges of Natural Resource Wealth', *National Resource Governance Institute*, March 2015, p. 1, https://resourcegovernance.org/sites/default/files/nrgi_Resource-Curse.pdf. Accessed 26 Feb. 2019.

¹⁶ 'Inequality in Nigeria: Exploring the Drivers', *Oxfam*, May 2017, https://www-cdn.oxfam.org/s3fs-public/file_attachments/cr-inequality-in-nigeria-170517-en.pdf & E. Akinwotu & S. Olukoya, "'Shameful" Nigeria: a country that doesn't care about inequality', *The Guardian*, 18 July 2017, <https://www.theguardian.com/inequality/2017/jul/18/shameful-nigeria-doesnt-care-about-inequality-corruption>. Accessed 26 Feb. 2019.

¹⁷ 'Mining in South Africa 2018: Whose Benefit and Whose Burden?', *Actionaid*, 2018, p. 13, http://www.actionaid.org/sites/files/actionaid/sar-5.3_online.pdf. Accessed 26 Feb. 2019. It should be acknowledged that the intensity of the 'resource curse' differs from country to country. In South Africa, and in stark contrast to Nigeria, over 17 million people receive, albeit limited, social assistance in the form of monthly social grants. 'Fact Sheet: Issue No. 21 - December 2018', *South African Social Security Agency*, <http://www.sassa.gov.za/index.php/statistical-reports>. Accessed 26 Feb. 2019.

¹⁸ Transfer pricing (also known as 'trade mispricing') refers to the practice whereby prices are set for the transfer of goods and services between different subsidiaries of the same company. To avoid taxation, artificially high prices for goods and services rendered (sometimes entirely fictitious services) are charged by a company subsidiary located within a tax haven to a company subsidiary located in a higher-tax jurisdiction. This has the effect of shifting profits to avoid taxation. This is known as Base Erosion and Profit Shifting (BEPS) because it erodes the tax base of the higher taxing jurisdiction. Such mechanisms contribute to what is known as Illicit Financial Flows (IFFs). 'Improving South Africa's Mining Revenues and Transparency: The Need for Government Action', *Economic Justice Network & Oxfam*, 2015, https://www.oxfamamerica.org/static/media/files/Improving_South_Africas_mining_revenues_and_transparency.pdf. Accessed 26 Feb. 2019.

¹⁹ 'Transfer Pricing and the Erosion of Tax, Wage and Local Investment Base in South Africa: Submission to the Davis Tax Committee by the Alternative Information and Development Centre', *Alternative Information and Development Centre*, 2016, pp. 31 – 33, <http://aidc.org.za/download/Illicit-capital-flows/aidcDTCsubmis11.pdf>. Accessed 26 Feb. 2019.

²⁰ 'How Shell, Total and Eni benefit from tax breaks in Nigeria's gas industry: The case of Nigeria Liquefied Natural Gas Company (NLNG)', *Centre for Research on Multinational Corporations (SOMO)*, January 2016, p. 58, <https://www.somo.nl/how-shell-total-and-eni-benefit-from-tax-breaks-in-nigerias-gas-industry/>. Accessed 26 Feb. 2019.

²¹ R. Scholes & R. Crompton, 'What a major offshore gas find means for South Africa's energy future', *The Conversation*, 13 Feb. 2019, <https://theconversation.com/what-a-major-offshore-gas-find-means-for-south-africas-energy-future-111503>. Accessed 27 Feb. 2019.

²² H. Wasserman, 'Everything you need to know about South Africa's massive gas find', *Business Insider*, 15 Feb. 2019, <https://www.businessinsider.co.za/impact-of-brulpadda-2019-2>. Accessed 27 Feb. 2019.

²³ Map sourced from <https://info.drillinginfo.com/southern-africa-a-new-exploration-hotspot/>. Accessed 27 Feb. 2019.

²⁴ 'Total South Africa's gas discovery a game changer - Jeff Radebe', *Radio 702*, 7 Feb. 2019, <http://www.702.co.za/articles/337089/listen-total-south-africa-s-gas-discovery-a-game-changer-jeff-radebe>. Accessed 24 Feb. 2019.

²⁵ See, for example, 'South Africans urged to join protest against rising fuel prices', *Eyewitness News*, 25 July 2018, <https://ewn.co.za/2018/07/25/south-africans-urged-to-join-protest-against-rising-fuel-prices>. Accessed 26 Feb. 2019.

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