

# Fracking and the Democratic Deficit in South Africa



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*Despite having one of the world's most liberal constitutions, South Africans still have no transparent and participatory mechanisms for deciding democratically on the uptake of new technologies or development projects, even those which impact on millions of lives and livelihoods. There are limited opportunities for intervention in very circumscribed public participation processes, which are often derisory in the sharing of any sovereignty with citizens in the name of producing better public policy. When citizens are left out of debates confined to government and the business community, the only means of influencing policy is to petition, protest, or litigate, usually after the horse has bolted.*

Examples of this abound, especially in relation to controversial technologies. Government took little trouble to consult the public on questions of building the now-defunct pebble bed modular reactor; of allowing aluminium smelters to consume massive amounts of our once-cheap electricity; or of the introduction of genetic modification of our food crops. The mining industry has almost free reign in operating in fragile buffer areas of World Heritage Sites or in the face of opposition from local communities. Adjudication of these kinds of conflicts is usually via government fiat, not through any fair, transparent democratic consultation process.

In terms of environmental and health impacts, there has been a steady watering down of public participation, seen as a brake on development. The protocols associated with environmental impact assessments have been streamlined, often resulting in too little time for sufficient public consultation. Often government resorts – as did its predecessor regime – to the publication of opportunities for public comment in the *Government Gazette*, allowing only a 30-day response time. No efforts have been made nor have any resources been set aside to facilitate or promote effective public participation. The National Environmental Advisory Forum, which was a consultative body of civil society representatives established under the National Environmental Management Act No. 107 of 1998, was subsequently abolished in later amendments to the Act.

Fracking, a shorthand term for hydraulic fracturing, is the latest example of a new technology that will be introduced without any public debate. This will happen immediately that one of the oil companies receives an exploration right from the oil and gas regulator, the Petroleum Agency of South Africa, which simultaneously has the role of promoting the oil and gas industry. Applicants for this exploration right have to lodge an Environmental Management Plan, and when this is published, the public, in the form of registered interested and affected parties, are given a short time in which to comment.

The threat of litigation around the imperfections of this process, and around the absolute lack of any impartial scientific investigation into the technology and its

impacts, resulted in the Minister of Mineral Resources, Susan Shabangu, declaring a moratorium on the issuing of exploration licences. Further development is frozen until the moratorium is lifted, possibly as early as February 2012. The Minister created a task team to undertake research into fracking to enable a decision on the lifting of the moratorium. Certain government officials were included, but others excluded, with no representation from agriculture, water, environment, energy, tourism and health.

Without transparency, suspicions are mounting that the task team is obliged to consult the very oil companies who seek licences to frack. Litigation is under way to put pressure on the Minister to reveal the membership, qualifications, terms of reference, minutes, research undertaken, and experts consulted by members of the task team. Water and Environmental Affairs Minister Edna Molewa has stated in Parliament that the water legislation needs to be made more robust in order to “ensure adequate control” to prevent contamination from fracking<sup>1</sup>.

Further conflicts may have to be resolved in the courts of the land, since there is no other social space in which these can be fairly adjudicated.

### Fracking – What, Who and Where?

Within the last decade, the technology has emerged for the extraction of shale gas, or methane, from deep under the earth. Although research and exploration remains to be done, estimates have been made that South Africa could be a rich source of shale gas. Its extraction requires drilling deep into the earth for between 4 and 6km, through underground freshwater supplies. When the drilling reaches the level where the gas is found, it changes direction from vertical to horizontal. Enormous quantities of water, combined with sand and a cocktail of toxic chemicals, are pumped at high pressure into the rocks. The injection of sand particles causes the rocks to fracture and release the gas. This is captured and piped back to the surface by means of the same equipment. This process is known as hydraulic fracturing, or fracking for short.

A number of companies have lined up to explore shale gas locally, and have been granted permission by the regulator, the Petroleum Agency of South Africa, to undertake preliminary technical studies in different parts of the country. Four bids cover a total area of 228 000 km<sup>2</sup>, which amounts to almost one-fifth of the territorial surface of South Africa. Three bids are for parts of the Karoo, while the fourth covers an enormous area including most of the Free State, parts of the Northern and Eastern Cape, and a strip of KwaZulu-Natal adjacent to the Drakensberg.

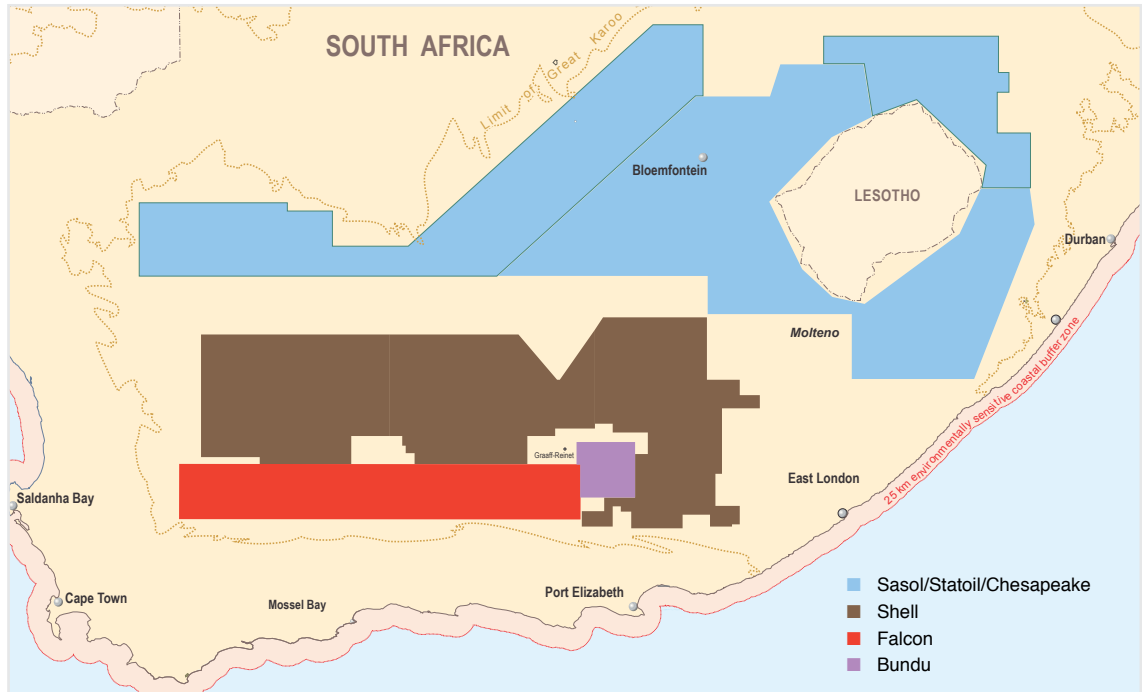
**TABLE Applicants for exclusive exploration rights for shale gas in South Africa, 2011**

Company	Nationality	Area of exploration	Surface area granted (km <sup>2</sup> )
Royal Dutch Shell	UK/Netherlands	Karoo (W & E Cape)	90 000
Bundu	Australia	Karoo (E Cape)	3 100
Falcon	US	Karoo (E Cape)	30 350
Sasol – Statoil – Chesapeake*	SA – Norway – US	Free State, E Cape and KZN	105 000

Sources: Petroleum Agency of South Africa, [www.pasa.co.za](http://www.pasa.co.za) (downloaded 11 October 2011); Falcon, [www.falconoilandgas.com](http://www.falconoilandgas.com) (downloaded 11 January 2012, equivalent to 7.5 million acres); Challenger, [www.challengerenergy.com.au/projects/south-africa-project/cranemere](http://www.challengerenergy.com.au/projects/south-africa-project/cranemere) (downloaded 11 October 2010).

\*Sasol and associates announced in late November 2011 that they would no longer pursue their right to explore, leaving their territory open to another applicant<sup>2</sup>.

Areas for which fracking exploration licences were applied 2011



Source: Petroleum Agency of South Africa

Under the Mineral and Petroleum Resources Development Act 28 of 2002, the regulator first allocates a technical co-operation permit. This gives the applicant a year in which to conduct desk-top studies on the feasibility of extracting the shale gas, and an exclusive right to apply for an exploration right. If successful, the applicant can undertake exploration for three years, renewable for another six years. During that time, if the deposits of gas are found to be economically viable, the company can apply for an exclusive production right lasting 30 years, which is also renewable.

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The regulator does not hold open hearings in granting these rights. The only way in which the public can intervene is when the company applies for an exploration right. To do so, the company must hire consultants to produce an Environmental Management Report (EMR). It needs to release the EMR to those registered as interested and affected parties, hold public meetings, and allow time for the public to make comments on the report. Since the exploration rights are often, in South African practice, converted almost automatically to production rights, this is one of the

very few occasions in which the public has any voice in the process.

Fracking is a controversial new technology, for which almost no research has been undertaken in South Africa. In order for companies to find out how large the resource is, and whether it is worth exploiting, fracking has to be undertaken during the exploration phase. Therefore giving permission to explore, in effect means that



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*Water pumps are a common sight in the often flat and dry landscape*

government would be allowing fracking to take place immediately. It is unlikely that the effects of fracking would ever be reversed once it has started taking place.

Things have moved at such a speed that many of the large questions about water contamination, waste management, climate change, employment and social impacts have not even begun to be discussed. Instead of the government creating a space for the transparent public policy discussion about whether the technology is appropriate for South Africa's development needs, it has been left to obscure administrative processes in which the public has had no say.

The oil companies have argued that the technology is safe, proven and reliable and that the shale gas is plentiful (485 trillion cubic feet, although estimates have to be confirmed). They claim that the energy from shale oil is more climate-friendly than coal, and that therefore its production would make a contribution to reducing carbon emissions. Shell, in particular, has offered assurances that the huge amount of water needed for fracking would not be drawn from the Karoo. It has also undertaken to consult communities and to reveal in confidence the list of toxic chemicals it will be using to a small committee drawn from selected interested parties. The oil companies say the finds of shale gas will be a 'game changer', allowing South Africa to become more self-sufficient in energy sources.

The government sees the mining of shale gas as a way of substituting for imported fuels, providing South Africa with increased energy security. The recent policy process, the Integrated Resource Plan 2010 (IRP2010), does not take shale gas into account, but nevertheless allows for combined-cycle natural gas turbines to play a part in the country's future energy mix, at 2.6 per cent of the total by 2030<sup>3</sup>.



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The National Planning Commission has stated in its recently published report that “shale gas has the potential to contribute a very large proportion of South Africa’s energy needs ... South Africa will seek to develop these resources provided the overall environmental costs and benefits will outweigh the costs and benefits associated with South Africa’s dependence on coal [and] nuclear.”<sup>4</sup> This enthusiasm is not the product of any intense debate on

fracking within the NPC, and pre-empts any scientific examination of the issue. Commissioners were certainly not made aware when they took the decision that fracking would commence as soon as the exploration right was granted.

## Dangers and Challenges

In examining the costs and benefits of fracking, a number of dangers and challenges have come to light.

### *Water*

In many of the fracking areas of the United States, such as the Marcellus Shale area of Pennsylvania, water is plentiful. Not so in the shale fields of the Karoo, one of South Africa’s most arid areas. Life in the Karoo depends on access to groundwater from underground aquifers or chambers containing fresh water which is replenished by the infrequent rains. The Karoo is characterised by its extensive sheep, ostrich and, increasingly, game farming, with steel wind pumps drawing up the groundwater for animal and human consumption. Surface dams or reservoirs provide the rest of the area’s water requirements, but these can be unreliable. (For example, in recent years the dams in the Beaufort West area dried up, causing a water crisis in the town. Travellers passing through it were asked to donate bottled water to help alleviate the problem.)

Most of South Africa's surface fresh water (98%) has already been allocated to existing users. This raises the question of how the fracking industry will source the millions of litres it will need to undertake its operations. It has been calculated that 20-25 million litres may be needed to frack a single well. This would require transportation of water by at least 1 667 trucks per well and possibly the building of expensive pipelines and desalination plants. Shell and other companies have failed to announce from where this large quantity of water will be drawn. Shell has, however, undertaken not to draw it from the Karoo, but some hydrologists have recommended that it be sourced from the already overstretched Gariep (formerly Orange) catchment.

Around 30 per cent of the water used in the process will be unrecoverable and will remain underground. This subtracts it from the water that might be recycled.

The use of toxic chemicals in the drilling process has also raised questions about whether any damage to the drill casing will release toxic fracking liquid into underground freshwater sources and contaminate them. These kinds of accidents are not common in the United States, but nevertheless there have been records of at least eight instances of large-scale pollution resulting from drilling and fracking. Such instances are increasingly coming to light in new studies being undertaken by the US Environmental Protection Agency (EPA). For example, a three-year research paper found that test wells proved that fracking had caused contamination of groundwater and high methane levels at Pavilion, Wyoming<sup>5</sup>.

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There is no specific law regulating the use or protection of underground water, and certainly no law specifically pertaining to the use of fracking as a technology.

### *Waste Management*

As we have seen, fracking entails the pumping of toxic chemicals at high pressure, along with water and sand, into underground shale rock formations. Although forming only 1 per cent of the mix, the toxic chemicals used vary between wells depending on their geology. Most of the fracking liquid returns to the surface after use, and has to be disposed of without causing harm to the environment. On site there need to be lined ponds or tanks to receive the toxic sludge initially. Questions arise about how this is handled and what arrangements are made for the final disposal of the waste. In the US, home to about a million wells, 25 per cent of wells transgress the rules of safe management, and the regulatory agencies find this very difficult to enforce<sup>6</sup>.

The management of hazardous waste in South Africa falls under provincial jurisdiction. The Eastern Cape is likely to be the site of most of the fracking, and remains South Africa's 'poorest, least resourced and most administratively weak province'<sup>7</sup>. Capacity to deal with the extensive management of hazardous waste arising from the fracking industry does not yet exist, and will have to be funded and planned into the system. Most municipalities in the province are not even coping with the management of ordinary household and industrial waste, both in terms of budgets and the necessary human capital.



Aside from liquid and solid wastes, there will be enormous dust pollution arising from the large-scale transportation of water, sand and chemicals on mostly gravel surfaced roads.

### *Climate*

Shale gas is a fossil fuel and its combustion contributes to global warming. Although carbon dioxide emissions are less than coal or conventional gas, we need to remember that methane is a greenhouse gas far more deadly for our climate than carbon dioxide. Recent research from Cornell University shows that shale gas has a larger greenhouse gas footprint than coal, 20 per cent more, rising to 40 per cent more over 20 years<sup>8</sup>. Other studies in the US have shown that up to 8 per cent of the mined methane is directly released into the atmosphere during the fracking process.

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The oil industry nevertheless claims that fracking is less harmful to the environment than coal mining. It advocates that while shale gas is indeed a fossil fuel, it is a sensible 'transition' fuel to use while South Africa tries to move toward more climate friendly energy options. What it does not calculate is that the requirement for the government to invest in infrastructure for the industry (improved roads, waste disposal, and regulatory functions) will take

investment away from support for the emerging renewable energy industry.

South Africa recently hosted the 17th annual UN climate conference in Durban, making commitments to a plan to lower greenhouse emissions and to develop a greener economy. Support for a shale gas industry would compromise such commitments.

### *Livelihoods*

If the industry is introduced, will this not lead to an expansion of employment and of the local economy?

During the exploration phase, which would last up to nine years, very few jobs (about 100) will be created on site. Running the wells and doing the drilling requires a small number of very skilled operatives. The oil companies admit that they do not do the fracking themselves, but outsource these functions to experienced subcontractors. This implies that the tenders will be awarded to foreign companies, which will use their own labour, and not be in a position to draw from unskilled Karoo residents. Figures from the US indicate that over 400 wells can be managed by 66 employees.

Jobs will expand in the areas of truck driving, security, road construction, service provision and so on. However it should be remembered that each well can only be fracked around 18 times, and that the drilling will move from place to place as wells are closed. This means that there is a cycle of local 'boom and bust' as the fracking moves to new areas.

With the increased risks of water contamination and severe air pollution, the fate of local agriculture is at stake. In the Eastern Cape, agriculture provides over 70 000 jobs in the commercial sector, and livelihoods for many thousands of emerging

farmers. Julienne du Toit, a Karoo-based journalist, feels that farming and fracking will not be compatible. In her view, farmers will not be able to continue under conditions of air and water contamination. The Karoo would lose its reputation for clean air, soil and farm produce. Those trying to sell up would experience difficulty in finding willing buyers, and property prices would plummet. Many farm workers would be displaced, adding to the epidemic of unemployment<sup>9</sup>.

With the anticipated air and water pollution, niche industries like astronomy, palaeontology and ecotourism will also be adversely affected in the Karoo. South Africa's bid to host the Square Kilometre Array of new-generation telescopes might be compromised.

## Opposition Builds

Propelled by the applications for exploration rights, a new opposition movement quickly arose during 2011. It includes a number of campaigns, principal of which is the Treasure the Karoo Action Group (TKAG), which has placed resources in public outreach, research, and legal interventions. It has gained an extensive following through the use of traditional and social media, and its membership consists of residents of both the Karoo and the large cities. It has made links with other sympathetic campaigns and NGOs, but remains the main civil society organisation speaking out against fracking. Public meetings have attracted a great deal of interest, and have seen interventions opposing fracking from personalities such as entrepreneur Johann Rupert and swimmer Lewis Pugh. Marches in Cape Town have been well attended, and the movement has generated a plethora of posters, t-shirts, leaflets and considerable media attention<sup>10</sup>.

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TKAG has a back-up team of legal and communications professionals. The legal team was able to put together a comprehensive response document to the Environmental Management Report issued by Shell. The team also challenged claims in advertisements placed in the country's major newspapers by Shell in April 2011 by appealing to the Advertising Standards Authority (ASA). The Authority ruled in July that the claims were 'unsubstantiated and misleading' and ordered Shell to withdraw the advertisements<sup>11</sup>.

The legal team also initiated litigation under the Promotion of Access to Information Act to challenge Minister Shabangu, who had failed to reveal information about the government task team which she had established to research fracking. TKAG lawyer Dr Luke Havemann stated that 'unfortunately any report that the task team may eventually produce will be tainted by their failure to play open cards'<sup>12</sup>. The North Gauteng High Court ordered the Minister to respond to TKAG's request for information by 31 January<sup>13</sup>.

Opposition has also developed within commercial agriculture. Dougie Stern has his farm in the Murraysburg district, in the area that Shell plans to frack. Along with fellow-farmer Lukie Strydom, Dougie was sponsored by BKB (a former farmers' co-operative which markets wool and livestock) to investigate fracking in the United States. The two of them returned as convinced opponents, and have been mobilising other members of the farming community. Stern is an office bearer of Agri-Eastern Cape and has been organising anti-fracking resolutions



to be passed at local and Agri-SA conferences. He rejects the claim that shale gas could be a bridging fuel and feels that government should speed up its support for renewables rather than letting oil and gas companies further exploit fossil fuels<sup>14</sup>.

The Southern Cape Land Committee has been working to sensitise farm workers to the likely impacts of fracking. Organisers Amos Dyasi and Nettly Maarman report that farm workers have opposed fracking because most of the jobs will not go to local people, and because fracking could destroy existing jobs on farms<sup>15</sup>. Other NGOs have taken an interest in providing greater support for public participation. For example, the Wildlife and Environment Society of South Africa, in conjunction with the Centre for Environmental Rights, has conducted public workshops on fracking in 17 Karoo communities.<sup>16</sup>

### Poverty and Social Inequity

The Karoo, and the Eastern Cape in general, demonstrates all the contradictions of South Africa with its legacies of segregation, social inequality, and racial privilege/dispossession. On the one hand, fracking may give rise to alliance formation across the social divides, where common resistance to the violation of the Karoo's sense of place and traditional livelihoods might occur. This would require that those in the Karoo who oppose fracking learn to form political partnerships that defy traditional loyalties. Is it possible for campaigners to learn new ways, to learn how to coalesce in a united campaign despite past divisions?

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On the other hand, fracking may serve to deepen social and racial divisions. It might be argued that most of the opposition to fracking is being articulated by the privileged 'white' community, which has traditionally not shown a great interest in the advancement of others. The demand that this opposition places on solidarity from the black community may not be one which has been earned through past trust. This situation could potentially divide the communities further, with oil companies

taking advantage of the situation to claim that opposition to fracking means depriving people of livelihoods, opportunities and resources.

Already there are attempts to form a pro-fracking forum across the Karoo, bankrolled in part by beneficiaries of black economic empowerment legislation such as former dominee, UDF activist and Western Cape politician Chris Nissen, who has connections with Graaff-Reinet. Forum co-ordinator Vuyisa Jantjies has been active in lobbying PASA to grant 5% of the revenues from fracking to communities, and a further 5% to Petrosa, the state-owned petroleum corporation<sup>17</sup>.

### Final Questions

How do we as South Africans decide on the most appropriate energy future for our needs? We have not created democratic spaces for decision making on the adoption of new, controversial technologies. We do not have robust regulatory or administrative institutions which could guarantee both the public interest and our rights to clean energy, a safe and healthy environment, and decent livelihoods.

The fracking controversy has shown up this deficit in our democracy. Will we be able to resolve these issues through administrative procedures and litigation? Instead we need a more institutionalised space to house a broad, lively, transparent national debate that should occur independently of vested corporate interests.

Meanwhile, the question of trust looms large. Will citizens rely on government to defend the public interest? This seems unlikely, when government is making decisions to favour the technology in the absence of real scientific enquiry. Can we trust the multinational oil companies? Shell's record in Nigeria has illustrated its complicity in the violation of human rights and it has already been caught transgressing our advertising standards. If we are serious about the creation of 'green' jobs in a low-carbon economy, why is there such a strong continued state interest in inviting large new investment in fossil fuels?

Will the Minister lift the moratorium in February 2012, thus enabling fracking to go ahead? Or will she take a leaf out of the books of France, Quebec, British Columbia, New York State, New Jersey and New South Wales, which have refused to allow fracking for the present? While the scientific jury remains out, will we take serious risks with the Karoo?

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#### NOTES

- 1 Donwald Pressley, 'Fracking may test water law', Business Report, 21 December 2011
- 2 Siseko Njobeni, 'Sasol decides against Karoo exploration', Business Day, 1 December 2011
- 3 South Africa, Department of Energy, Integrated resource plan for electricity 2010-2030: final report. Pretoria: Department of Energy, 25 March 2011, table 4, p. 14
- 4 South Africa, National Planning Commission, National Development Plan: Vision for 2030, Pretoria: The Presidency, 11 November 2011, p. 143
- 5 Kirk Johnson, 'EPA links tainted water in Wyoming to hydraulic fracturing for natural gas', New York Times, 8 December 2011
- 6 Prof Daniel Vermeulen, Presentation to the Geological Society, Origins Centre, Johannesburg, 23 November 2011
- 7 Greg Ruiters ed. 2011, The fate of the Eastern Cape, Scottsville: UKZN Press, p.8
- 8 Howarth R W et al. 2011 'Methane and greenhouse gas footprint of natural gas from shale formations', Climatic Change 106: 679-690
- 9 Interview, Cradock, 17 October 2011
- 10 Interview with TKAG co-ordinator Jonathan Deal and researcher Jeannie le Roux, Cape Town, 7 November 2011
- 11 The Media Online, 'Shell fracking ad unsubstantiated and misleading', 7 July 2011, [www.themedialine.co.za](http://www.themedialine.co.za), downloaded 2 December 2011
- 12 Cape Times, 5 August 2011
- 13 Leila Samodien, 'Minister ordered to provide fracking affidavits', The Star, 10 January 2012
- 14 Interview, Rietpoort farm, Murraysburg, 18 October 2011
- 15 Interview, 20 October 2011
- 16 See report at <http://wessa.org.za/news/10/74/Environmental-Rights-Workshops-Held-Across-The-Karoo-To-Promote-Participation-In-The-Karoo-Basin-Shale-Gas-Exploration-Applications.htm>, downloaded 7 February 2012.
- 17 Interview, Graaff-Reinet, 19 October 2011