

COSATU Draft Policy Discussion Document on Fracking

July 2014



Introduction

The discussions on shale gas extraction in South Africa (SA) have incited lively debates amongst activists, government officials and communities. These are all informed by divergent ideological paradigms and competing interests. The president and minister of finance have provided the South African citizenry with a clear picture of government's stance on this contentious matter. This perspective was captured in both the state of the nation address and the budget speech of 2014. For example, in the budget speech delivered to parliament in February, Gordhan (2014:21) stated that ***“we will pursue the exploration of shale gas to provide an additional energy source for our economy”***. His sentiments were echoed by the president when he told South Africans that: ***“Nuclear has the possibility of generating well over 9000 megawatts, while shale gas is recognised as a game changer for our economy. We will pursue the shale gas option within the framework of our good environmental laws*** (Zuma 2014).

The above-mentioned quotes indicate that the South African government supports shale gas extraction. This position has produced two contending reactions from the population. The first supports government's position on the basis that it will improve energy security and decrease dependence on imports (Warren 2013; Zhenbo et al 2014). Proponents also argue that shale gas exploration will create employment, and replace other harmful sources of energy (Considine et al 2010; Turner 2012).

The second perspective argues that shale gas extraction will produce a number of negative environmental and socio-economic effects. Advocates highlight the externalities that are associated with this form of energy source. The emphasis is placed on the carbon footprint; water contamination and usage; negative health effects on both humans and livestock.

This discussion paper will contribute the debate on the shale gas exploration in SA. It will use the existing research and data to determine

whether this form of energy generation will produce positive socio-economic outcomes. This analysis will be guided by the COSATU resolutions which will be summarized in the following sections.

1. Brief Background on COSATU Resolutions and Policies

All COSATU policy must be read within the broader context of the federation's paradigm on the political economy. There is a dialectical relationship between socio-economic, political and environmental phenomena. Thus, the debate on shale gas exploration cannot be confined to the natural sciences. Conservative analysts discuss shale gas exploration within the limited scope of ecological and environmental degradation. We oppose this perspective on the basis that it ignores the intersecting relationship between environmental destruction and socio-economic underdevelopment. In our view, it is unscientific to separate socio-economic issues from environmental trends. These are all interlinked and should be viewed as connected parts of a wider discourse on sustainable development. This logic is captured in COSATU's ***Growth Path towards Full Employment*** which states that:

“Economic growth and development must support sustainable environments. Industrial and social processes must minimize the disruption of natural processes; limit environmental degradation, adverse changes in bio-diversity, soil erosion and desertification, the emission of greenhouse gases, especially carbon dioxide, and pollution of water streams and ground water. Patterns of consumption must also be aligned towards products that optimize environmental regeneration” (COSATU Growth Path 2010).

The above-mentioned statement captures the tools of analysis that will be used in this paper. These will be complimented by the following resolutions on climate change and energy.

1.1 COSATU's Perspective on Energy

The first pillar of COSATU's perspective is ensuring that energy production and distribution compliments the goal of developing a low-carbon economy. There is a strong correlation between energy use and the volumes of Green House Gas (GHG's) emissions. Thus, it is integral to transform the patterns of energy usage in the country. Another key principle of COSATU's view on the energy mix is the notion of developing a socially owned renewable energy sector. This is integral for decommodifying energy and decreasing energy poverty in the country. This concept refers to the ***“the lack of choice in accessing adequate, reliable, good quality, safe and environmentally friendly energy services to sustain economic and human development”*** (Reddy 2008). Developing a publicly-owned energy sector will address the above-mentioned challenge (COSATU 2012 14-15).

COSATU also advocates for the review of state-owned entities in the energy sector. These public enterprises have narrowly focused on the goals of security of supply and profit; whilst paying minimal attention to access. Therefore, there is a need for an operational paradigm shift in these state institutions. Lastly, the federation believes that increasing public investment in the renewable energy sectors is also important. State finances must support the goal of producing more cleaner and sustainable energy (COSATU 2012 14-15).

1.2 COSATU and Climate Change

COSATU has always argued that economic restructuring is essential for developing a low-carbon economy. There is a direct correlation between the massive emissions and the structure of SA's political economy. The country's economy is largely based on what Fine& Rustomjee (1996) described as the Minerals Energy Complex. It describes the heavy dependence on the traditional minerals and energy sectors (Fine &Rustomjee 1996:24). This point is captured in the Sustain Labour (2013:18) report on Green Jobs in SA which argues that:

“Energy supply is an important challenge for South Africa. The economy is structured around large-scale, energy-intensive mining and primary minerals beneficiation industries, pushing its "energy intensity" to above average, with only 10 other countries having higher commercial primary energy intensities”

The second cardinal point in COSATU’s view on climate change is the notion of a just transition. This internationally recognized principle places emphasis on the protection of workers’ rights during the transition to a low-carbon economy. This is succinctly expressed in COSATU’s (2011:8) policy framework on climate change which states that ***“we also have to ensure that the development of new green industries does not become an excuse for lowering wages and benefits”***.

The third pillar is the development and expansion of the renewable energy sector. This is crucial for industrialization and decentralizing energy distribution in the country. This sector also has the potential to create decent employment. The federation is also opposed to market-based solutions; it rather advocates for the development of clear carbon budgets. Market mechanisms do not address the fundamental or root causes of climate change. They fail to question the logic of the political economy in the energy sector which reproduces the phenomenon of climate change. This paradigm does not challenge the dominance of large traditional energy corporations which continuously advocate for the increased usage of fossil fuels. Moreover, these interventions commodify the environment which is a global common that belongs to all of humanity.

The last key dimension of COSATU’s view on climate change is the creation of climate change campaigns and sector plans. These programmes are crucial for addressing the challenges associated with climate change. More importantly, they will provide a pragmatic framework for changing behavioural patterns. This is crucial because climate change is one of the major challenges facing the country. South Africa is 12th largest emitter of

GHGs in the world and the biggest polluter in Africa (DEA 2011; AIDC 2013). The country's share of global emissions is 1.5%, and it produces half of the emissions on the African continent (AIDC 2013; COSATU 2012).

This evidence indicates that SA has to develop clear policies and programmes to address this challenge. The formation of sector plans is important because the transport and energy used in industrial activity constitutes 20% of total emissions; whilst agriculture and land use contributes 5 % (DEA 2011). Industrial activity accounts for 15% of South Africa's green house gas emissions. Therefore, it is crucial to produce sector specific action plans that are aimed at reducing the intensity of emissions.

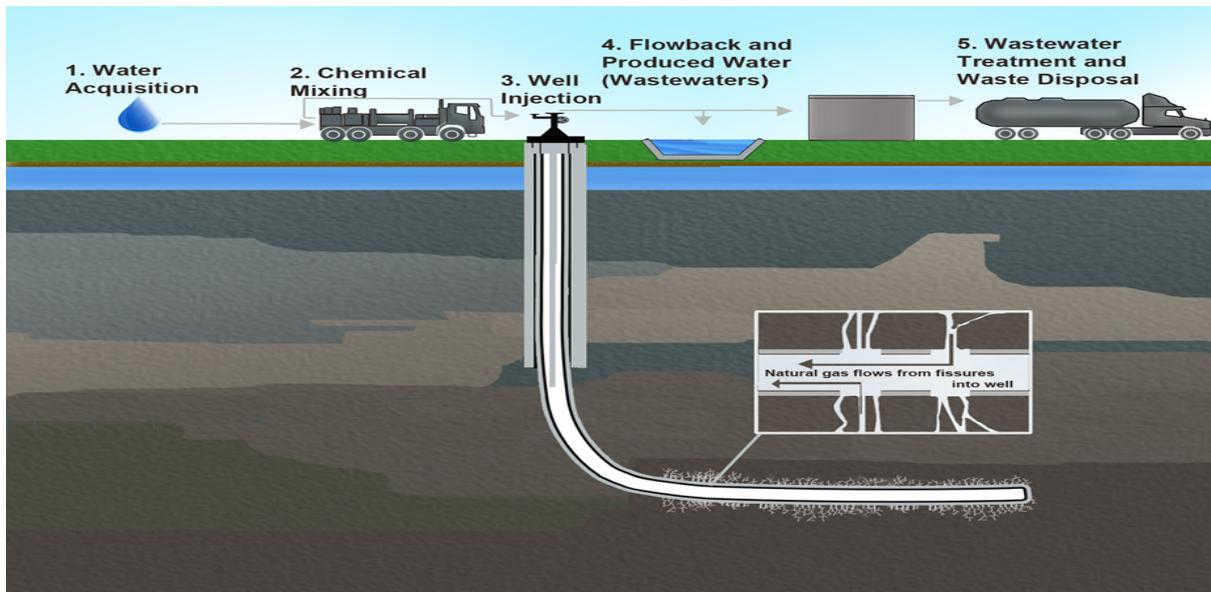
These resolutions on energy and climate change should guide the federation's response to the question of shale gas extraction in SA. The following sections will discuss some key themes that will guide COSATU'S position. The point of departure in this analysis will be a brief explanation of essential concepts. Thereafter, the paper will discuss the arguments put forward by both the advocates and detractors.

2. What is Shale Gas and Fracking?

According to UNEP (2012:2) all forms of gases are natural. They are only distinguished by the following two key factors: the method used to pull out the gas and its location in the earth. Most gas is located in rocks or formations where it can flow in and out easily. Other gas—such as shale—is found in rocks or formations which are not permeable. In other words, it is not easy for liquids and gases to travel through these rocks. This is distinction informs the definition of shale gas exploration or what is popularly referred to as “fracking”.

This term describes the process of extracting gas that is embedded in impermeable rocks/formations by inserting fluids – which are made up of 99% water and 1% chemicals— at very high pressures into wells that extend deep into the earth's surface (IEA 2012: Greef 2012:10). The main objective of this exercise is to create small holes in the rocks which allow the gas to

flow through easily (Greef 2012 10-11). The diagram below illustrates this entire process.



3. Ecological and Environmental Impacts

As stated earlier, the topic of shale gas extraction is very contentious. This section will contribute to the discourse by examining the impacts of shale gas extraction. The focus will be on the environmental and ecological effects. These will be linked to various areas of socio-economic development. The point is to assess the nature of the externalities produced by shale gas extraction, with a specific focus on the effects on the poor and working class. COSATU resolutions on energy and climate change will guide the following analysis.

3.1 Water

Research indicates that this process requires high volumes of water usage. According to the Department of Mineral Resources (2012:41), one well will require 24 000 cubic meters of water. This amount will vary according to the size, depth and the geological features of the well. It is estimated that 720 000 cubic meters of water will be used in shale gas extraction in the Karoo alone (Fakir 2013). Moreover, shale gas exploration water

requirements surpass those required for conventional gas extraction. This form of gas extraction needs “**between 2000 to 10 000 times**” more water than ordinary gas (UNEP 2012; IEA 2012). This is worrisome for SA in particular, because the nation is classified as being “water scarce” (COSATU 2012; DEA 2011). This concern is expressed in the National Climate Change Response White Paper (2011:16) which states that: “**based on current projections South Africa will exceed its limits of economically viable land based water resources by 2050**”.

Another major concern is water contamination caused by the following factors. First, the movement of fracking fluids—which contain toxic chemicals—into drinking water sources (Bamberger & Oswald 2012; Greef 2012; Turner 2012). Secondly, the poor construction of wells which causes harmful substances to contaminate water (WWF 2013: 4). Holzman (2011) attributes the increases in methane volumes in water near fracking sites in various US states to low quality well construction. Poor well design has also caused explosions in some states in the United States. Cusolito (2010) explains this danger by stating that: “**improper well casing was also at fault in a 2007 explosion in Bainbridge, Ohio, that blew a house off its foundation and left yet another neighbourhood without drinking water**”.

The third cause of contamination is leaks or spills. These occur during the phases of storage, mixing and transportation. Shale gas drillers continuously ignore environmental legislation that is supposed to decrease spillages. Gilliland (2010) points out that shale gas companies in the US committed 1435 violations between 2008 and 2010. Most of these transgressions have had negative impacts on the environment, especially on the quality of water.

3.2 Green House Gas Emissions

The impact of shale gas on the volumes of emissions is contested. Proponents argue that the usage of gas to produce energy is less harmful. They point out that gas produces 50-70 % less carbon dioxide than coal

when used to generate electricity (Turner 2012; De Wit 2011). For example, the USA has managed to decrease its CO₂ emissions by 12 % between 2007 and 2012. This reduction in emissions is mainly attributed to the increased usage of gas to produce electricity (ISS 2013: 3).

Advocates also highlight the fact that shale gas can be used a bridging fuel. This proposal is based on the existing realities in the energy sectors. Most countries still rely on the usage of fossil fuels such as oil and coal. Energy production is primarily dependent on the above-mentioned resources. Cleaner energy sources constitute a small portion of the globe's energy mix. This point is captured in Trade Unions Energy Democracy Report (2012) which argues that:

“The growth in renewable energy merely supplements the use of fossil fuels, which continues to increase at an alarming rate. Fossil fuels are still set to meet more than three-fourths of total energy needs in 2035 assuming current policies are unchanged”.

The statement illustrates that the world is not developing cleaner sources at the required rate. There is global consensus on the need to expand the usage of renewable energy. But the sector has developed slowly and there are still doubts about its economic potential. Supporters of shale gas argue that this energy source can be used a short term solution until the renewable energy sources are developed (ISS 2013; De Wit 2011). In other words, shale gas will be used in the transition towards the low-carbon economy.

All these arguments present a strong case for supporting fracking. However, they can be debunked on the following grounds. First, shale gas extraction produces methane—a gas which is on the Intergovernmental Panel on Climate Change list of GHGs (IPCC 1990; 2014). According to the IPCC (2007), the global warming potential of methane is 72 times higher than that of carbon dioxide if measured over a twenty year period.

Secondly, the transportation used in shale gas extraction will increase the levels of emissions. According to De Wit (2011), each well will require 350 water tanker trucks. This figure is alarming considering the fact that Shell estimates that they want to drill 24 wells in the Karoo (Shell 2014). In other words, the company will need 8 400 water tanker trucks to extract shale gas in the Karoo. This illustrates that the volumes of emissions associated with fracking will be much higher if one takes into account the transport logistics.

Thirdly, the comparison with coal is very misguided. It reduces the energy mix to two sources: gas and coal. This narrow approach ignores alternative sources of energy such as wind and solar. In other words, it is disingenuous to only compare gas with one conventional source of energy. Its value or contribution to emission reduction should be tested against all sources of energy. Interestingly, studies indicate that the emissions released from shale gas extraction exceed those produced by wind-powered generation. According to McCubbin and Sovacool (2011: 91), the **“cumulative CO2 emissions across all lifecycle stages of wind power ranges between 10 and 30g-CO2-e per kWh”; whilst “lifecycle emissions from natural-gas-powered electricity can exceed 500 g-CO2-e per kW”** (Weisser 2007; Hondo 2005).

Fourthly, it is illogical to argue that countries should use shale gas a bridging fuel. The increased investment in shale gas will divert resources away from renewables and other sources of energy (WWF 2013:4). This is an important point, especially when one takes into consideration the logic of the capitalist political economy. Investors always seek maxim profit or returns from any form of infrastructure development. Thus, they will not automatically give up shale gas extraction on the grounds of environmental justice. The returns made from shale gas will motivate them to reinvest in this form of energy.

3.3. Public Health

Shale gas exploration will also produce the following health hazards. First, increased air pollution caused by the release of toxic substances into the air. For example, fracking involves the usage of large diesel pumps used to insert the water into wells (Howarth 2011: 272). Another major concern is the release of benzene, which is a natural component of shale and is commonly used as a “fracking additive” (Howarth 2011: 273). This chemical causes cancer, birth defects, anaemia and number of other health risks.

Moreover, the fracking fluids contain other chemicals which are associated with number health dangers. Bamberger and Oswald’s (2012: 62-63) study reveals that the health of people living in areas where shale gas exploration took place deteriorated. This was mainly caused by water contamination and exposure to toxic chemicals. For example, some children experienced abnormal levels of fatigue, severe abdominal pain and throat infections. Some substances such as arsenic—a natural component of shale—cause negative gastrointestinal effects; breathing problems and dysfunctional nervous systems (Bamberger and Oswald 2012: 62-63).

Furthermore, shale gas production increases noise pollution because of drilling, fracking and the usage of trucks. More worryingly, some studies on the composition of fracking fluid reveal that:

“more than 75% of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems. Approximately 40–50% could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% could affect the endocrine system; and 25% could cause cancer and mutations.” (Colborn et al 2011).

3.4 Land and Agriculture

The land use requirements for shale gas exploration exceed those of conventional gas. This emanates from the small area that can be explored in

each well (about 1km). Research indicates that land requirements for each well range between one and two hectares. Moreover, it is impossible to drill without clearing the land (UNEP 2012: 8). This can destroy biodiversity and produce other negative environmental outcomes such as soil erosion. The destruction of biodiversity is a serious concern for the Karoo in particular. The region is highly dependent on eco-tourism (Roberts 2013; Dhliwayo 2012). Furthermore, the intense drilling can also cause earthquakes (IEA 2012).

According to the Econometrix study (2012:17-18), the total amount of land required for exploration in the Karoo is equivalent to the size of Eastern Cape. The proposed projects for extraction stretch across the following five provinces: Northern Cape; Eastern Cape; Western Cape; Free State and Kwazulu Natal (Econometrix 2012: 17-18). This amount of land use raises serious concerns, especially when one considers the ecological and environmental impacts of shale gas exploration.

More worryingly, the negative environmental externalities indicate that shale gas exploration is incompatible with agricultural production. For example, some studies illustrate that a significant portion of livestock deaths and diseases in the USA were caused by exposure to toxic chemicals and water contamination associated with fracking activity (Bamberger and Oswald 2012: 59; 60-62).

Another concern is the water requirements which have the potential to cause shortages. These concerns apply specifically to the Karoo: a semi-desert area which is also heavily dependent on farming (Roberts 2013: 86). According to the ISS (2013:4), the annual average rain fall in the Karoo is less than 100 mm. This figure is well below the national average which is 495 mm a year (ISS 2013). Furthermore, 35 out of 50 communities in the Karoo are reliant on groundwater (Greef 2012:8).

The above-mentioned evidence indicates that shale gas exploration will produce a number of negative environmental and socio-economic outcomes. As argued earlier, it is impossible to separate socio-economic issues from

environmental trends. These are all interlinked and should be viewed as connected parts of a wider discourse on sustainable development. The next section will highlight this linkage by examining the arguments related to the political economy and sustainable development.

4. Political Economy

4.1 Security of Supply and Socio-Economic Costs.

Proponents point out that shale gas exploration can decrease South Africa's reliance on oil and gas imports. This is crucial for ensuring security of supply and decreasing the costs of gas (Davis 2012; Hou et al 2014; Warren 2013 67-68). These advocates use comparative analysis to justify this argument. For example, the price of natural gas used for electricity generation in the USA fell by 52% between 2007 and 2012 (Hou et al 2014:3).

These positions seem valid; however, the argument of gas ensuring security of supply is discussed out of context. It presents the notion of security of supply outside the nature of the political economy. The security of supply referred to in studies conducted by authors such as Warren (2013) and Hou et al (2014) ignores the skewed distribution of energy in societies. Most energy in various countries is consumed by industry and big companies. In other words, current trends of energy distribution only benefit the wealthy citizens and capitalists (TUED 2012). These authors are only concerned about supply for industry. There is no argument that raises the notion of increasing access for the poor and working class.

Moreover, the argument of stopping the country's reliance on imports is based on the assumption that most gas will be reserved for domestic use. This line of thinking overlooks the current trends in the post-apartheid political economy. Most companies, especially those that are majority foreign owned, export the country's natural resources into global value chains (COSATU 2012: 56). This phenomenon has sustained what Fine and Rustomjee(1996) described as the Minerals and Energy Complex. In other words, this argument of security of supply presupposes that the shale gas

will be used for domestic use. This assumption is flawed, as research indicates that South African has an export-orientated extractive economy.

COSATUs (2010) ***Growth Path Towards Full Employment*** explains the above-mentioned trend well by stating that:

The economy is still very much reliant on mineral exports for foreign exchange earnings. Although some have found that manufacturing exports have increased, surpassing minerals, such exports remain driven predominantly by the core minerals-energy-complex. Petrochemicals, mining and Basic Iron and Steel make up 69% of total exports, and are highly capital and energy intensive. Many studies have found that the manufacturing sector has rapidly increased exports, attributing this to trade liberalization, which is said to have increased productivity and competitiveness. This is misleading, because the so-called manufacturing that has increased exports, especially basic iron and steel and petro-chemicals, constitute the key pillars of the minerals-energy-complex.

Advocates also argue that shale gas extraction will decrease the general costs or prices of gas (Considine et al 2010; Davis 2012; Hou et al 2014). They view this as positive development, because it will lower socio-economic costs for citizens. This position is only valid if one only analyzes the costs of gas without considering the socio-economic externalities.

As argued earlier, shale gas exploration will produce environmental externalities which will create a number of socio-economic challenges. These include water shortages, climate change, air pollution and adverse effects on health. The resources spent on trying to ameliorate these externalities prove that shale gas extraction will actually raise the cost of living. Studies conducted by researchers such as McCubbin and Sovacool (2011) prove that electricity generated from shale gas is more expensive (using a holistic approach) than wind-powered generation. As the authors explain:

Society still pays for the debilitating externalities from natural gas even though they are not reflected in our electricity or energy bills. A significantly greater number of human deaths, hospital admissions, insurance damages, degraded cities, and blighted ecosystems come from greater reliance on natural-gas-fired generation. The difference between price and cost is a reminder that, sooner or later, someone will pay (although this “someone” is often in the future and not the person imposing the costs (McCubbin and Sovacool 2011: 93).

4.2 Economic Transformation

4.2.1 Ownership

The three major companies who have been have applied to extract shale gas in the Karoo are all foreign owned (Econometrix 2012:17). The government—through Petroleum Agency South Africa— has granted these entities licences to “explore for gas”. This totally contradicts the national policy objective of transforming our economy from colonial dominance. The ANC resolutions from the 53rd national conference identify ***“transforming the structures of production and ownership”*** as one of the key pillars of economic policy (ANC 2013:20). This resolution is informed by the fact that:

Crucial sectors in the economy continue to be dominated by a few large conglomerates with cross directorships. These conglomerates are vertically integrated and therefore limit entry into the economy by smaller firms. In addition, there has been a rapid increase in foreign ownership of these conglomerates. This has served to consolidate their domestic power through their global networks (COSATU 2010).

The current trends in the political economy of shale gas exploration are not in line with the radical agenda for socio-economic transformation. In fact, these trends will reproduce the concentrated patterns of ownership that have characterized the growth path of the post-apartheid political economy. More worryingly, shale gas exploration will increase the levels of foreign ownership in our economy. Most commentators – including government –

have argued that the discovery and extraction of shale gas is a **“game changer in the economy”** (Shell 2014; Zuma 2014). This view is not based on class analysis. It does not interrogate which sections of society will benefit from fracking. The evidence cited throughout the paper indicates that these foreign companies will earn exorbitant profits; whilst the poor and working class bears the costs of the externalities.

4.2.2 The Political Economy of the Karoo.

As argued earlier, shale gas exploration produces negative externalities for both agriculture and eco-tourism. This is quite worrisome if one takes into account the political economy of the Karoo. As Dhliwayo explains (2012): **“the Karoo is a semi-desert area with very limited economic activities, such as sheep rearing and eco-tourism”**. He further states that the area has high levels of poverty of inequality because of unemployment (Dhliwayo 2012).

These statements indicate that economic development in the Karoo is largely dependent on the above-mentioned sectors. Shale gas exploration will actually exacerbate the unemployment crisis because of its incompatibility with agricultural production. The job losses will cause other socio-economic problems such poverty and homelessness. Earlier sections of this paper also indicated that shale gas exploration has caused a number of livestock deaths in the USA. This is a serious concern because sheep farming is the main economic activity in the region. The Econometrix (2012: 13-14) study explains this well by stating that: **“sheep farming remains the dominant economic pursuit”**.

The negative environmental externalities will destroy the biodiversity in the Karoo. This is also a major concern because this region’s economic activities are heavily dependent on tourism. Ferreira’s (2008) study of **the Socio-economic impact of Tourism in the Karoo National Park** indicates that there are a number of positive externalities associated with tourism in the area. Her findings indicate that a number of enterprises derive their primary revenue from tourist expenditure (Ferreira 2008:99). More importantly, the

economy relies on tourism for generating income and employment (Ferreira 2008:101).

4.2.3 Local economic development.

One of the key arguments advanced by supporters of shale extraction is the potential for enhanced local development. This is captured in Shell's (2014) discussion on the Karoo which states that:

“Shale gas exploration projects typically create jobs and a very large indirect service industry. Shell and the drilling operators will require a host of services which need to be procured locally. In order to appoint local companies, Shell needs to invest in skills development and upskilling existing companies to Shell’s stringent safety and operating standards”.

This statement can be perceived as a strong commitment to support local economic development. However, it ignores the danger of job losses which is discussed in the previous section. Another shortfall of this argument is that it overlooks the following trends in South Africa’s political economy. First, various skills development reports indicate that the private sector is failing to train the citizens (COSATU 2012: 54). Second, the private sector has undermined or subverted all efforts to increase localization in the economy. Lastly, shale gas extraction will sustain the extractive nature of local economies in SA. This trend obliterates the possibility of developing a sustainable developmental path.

4.2.4 Jobs

One of the key arguments advanced by proponents of fracking is the huge potential for job creation. This is an important argument, as South Africa has one of the highest unemployment rates in the world. According to Stats SA (2014) the unemployment rate (narrow definition) increased to 25.5 % in the second quarter of 2014. Supporters of shale gas exploration argue that the extraction of gas will alleviate this serious socio-economic challenge.

This argument is based on the following two main reasons. First, the existence of large shale gas reserves in the country. Studies point out that South Africa has the fifth largest reserves of shale in the world (Botha and Yellend 2011; Roberts 2013; Zhenbo 2014). The following diagram provides an illustration of various countries gas reserves in descending order.

China	1 275	Poland	187
United States	862	France	180
Argentina	774	Norway	83
Mexico	681	Chile	64
South Africa	485	India	63
Australia	396	Paraguay	62
Canada	388	Pakistan	51
Libya	290	Bolivia	48
Algeria	231	Ukraine	42
Brazil	226	Sweden	41

Technically recoverable shale gas resources, top 20 countries (trillion cubic feet) Economist Intelligence Unit 2011

The second justification for the argument is the employment created by the expansion of the shale gas industry in the USA. For example, Davis (2012:180) points out that 2.8 million jobs were created in the gas industry in 2008. 600 000 of these were created directly from fracking activities. Considine et al (2010:5) further argues that: ***“the labor-intensive aspects of shale gas development accelerate over time and can persist for decades, if the reserves in place are large enough”***.

However, a report by the Trade Unions for Energy Democracy questions this argument of employment creation in the USA. The report argues that the statistics of employment creation provided by industry contradicts studies conducted by the US Department of Labour (TUED 2013:17). Furthermore, it uses the information contained in the Multi-State Shale Research Collaborative (2013) to prove that:

“Supporters have exaggerated the job benefits of horizontal drilling in the Marcellus and Utica Shale. While the industry

has created jobs, particularly in Pennsylvania and West Virginia, the shale-related jobs numbers are far below industry claims.”(TUED 2014:18).

There are insufficient studies conducted on the job potential projections in South Africa. In fact, the only study which proponents use – including government – is the one published by Econometrix in 2012. It is essentially based on economic modelling. The study presents scenarios for potential job creation. The first estimates that 335 817 jobs can be created; whilst that later scenario projects that 854 757 jobs can be created (Econometrix 2012: 66-68).¹ These projections seem convincing. However, the findings of the study can be challenged on the following grounds.

First, the study moves from incorrect methodological assumptions. It argues that the primary aim or objective of the report is to assess the economic opportunities created by shale gas exploration. The authors argue that these economic benefits should be separated from socio-economic and environmental concerns raised by detractors (Econometrix 2013:13). This point of departure is inherently flawed, as it separates economic, environmental and social development. These three are interlinked and should be assessed as connected parts of a holistic view on sustainable development. The key assumption of this study is essentially based on methodological compartmentalization.

Secondly, the independence or academic legitimacy of the study is questionable. It was commissioned by Shell, a company which currently holds the largest extraction permit in the Karoo. This compromises the credibility of the report, especially if it is being used as the main basis to support the job creation argument.

Thirdly, the study – because of its illogical methodological assumptions—ignores the potential for job displacement. As proven earlier, shale gas

¹ This projection is based on a time frame of 25 years

exploration will have negative effects on the two sectors which drive the economy of the region. This will exacerbate socio-economic challenges such as poverty, inequality and unemployment.

Fourthly, the study does not take into account the short life span of these projects. Studies indicate that each well can only be drilled for an average period of 15 years (IEA 2012). This means that this economic activity is not economically sustainable in the long run. This is a serious concern because future generations will not be able to benefit from shale gas extraction. More worryingly, we know that this form of gas extraction requires large amounts of land, which future generations will not be able to use. In simpler terms, the forecasts on job potential and economic opportunities don't take into account the principle of sustainable development.

Lastly, the study also overlooks the proposal by Shell to import labour (Shell 2014). This is quite worrisome because South Africa has a high unemployment rate. All forms of economic activities – especially those conducted by foreign companies— should contribute to the alleviation of the country's immediate socio-economic challenges. Unemployment is one of these and the importation of labour will exacerbate this challenge.

5. Conclusion

This discussion paper contributed to the discourse on shale gas exploration in South Africa. It considered the merits of arguments advanced by both supporters and those who oppose fracking. This was done by examining the following key thematic areas in the debate:

- Water usage
- Green House Gas Emissions
- Public Health
- Land and agrarian reform

- Political Economy of Fracking

The analysis was guided by COSATU resolutions on Climate Change, Energy and Economic Transformation. The paper argued that shale gas exploration contradicts all these resolutions adopted at the 11th National Congress. This argument was informed by the empirical evidence found in published reports and articles on this topic.

Policy Recommendations

- **COSATU should commission an independent study on employment potential in the shale gas industry**
- **Government should retract the temporary exploration permits until it considers the information from an additional independent study**
- **Government should consider an alternative local developmental model for the Karoo. One that is based on the principles of radical socio-economic transformation.**
- **SA should develop the renewable energy sector in the Karoo. These region receives over 200 days of sunlight a year**
- **COSATU should raise the question of developing infrastructure for fracking. This has the potential to cause divestment from renewable energy**
- **Provide additional support to COSATU structures in Karoo who have been opposing fracking**
- **This discussion document should be tabled at the CEC and CC**

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