Fracking wins hearts, minds and wallets in Wyoming's Karoo

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By Donwald Pressly

The town of Pinedale in the US' cowboy state of Wyoming is remarkably similar to the Karoo towns of Fraserburg or Carnarvon. It is also remote and full of tough people who are accustomed to living in a remote environment.

Like Pinedale, which was founded by John F Patterson in 1904, the South African towns could become the service centres for what is an already a well-established hydraulic fracturing industry in Sublette County. Royal Dutch Shell hosted a group, including two University of the Free State academics and the author, to study the impact of the controversial business on the area.

Ann Chambers Noble, the author of Images of America: Pinedale, says that the community – about 2 000 people, including 80 Shell support staff of engineers and chemists – has survived in fierce isolation. They first supplied the ranchers, outfitters and tie hacks.

She reports that the community underwent a fundamental change with the introduction of natural-gas mining in the 1990s but Shell itself has only been involved since 2005.

The process of fracking in Wyoming doesn't appear to have many opponents. The mayor Stephen Smith won election on a pro-fracking ticket. The Museum of the Mountain Man director Laurie Hartwig is unapologetic about her support for the process. "We have had oil and gas (drilling) here since the 1930s," she said.

Lara Ryan, the Wyoming Land Trust executive director, said that the bulk of the mining took place on federal land, but where farmers ran their cattle along the New Fork River, they received compensation.

Jan Willem Eggink, the upstream general manager of Shell South Africa, is adamant that the fracking process is safe. If the experience on the ground in Sublette County is anything to go by, environmental damage is likely to be limited.

The beauty of the process, the engineers in the Shell office in Pinedale argued, were the stringent tests of the integrity of the more or less vertical wells. They are encased with steel and concrete. Clean water is used in the drilling process about 500 metres down where there are aquifers. If a well is found to be faulty, it is plugged.

Although the Sublette County area looks dry and has a low rainfall it is surrounded by mountains, which are capped with snow even in summer, thus the underground water supply is plentiful. There is no need to re-use the the drilling and "fracking" operation water, whereas this will be a key issue in the Karoo. The other key difference is that drilling in South Africa will go down 3 or 4km and then "fracking" legs will be run horizontally. Another difference is the nature of the anticline in Wyoming, where the drilling for "tight gas" is vertical.

Shell is not saying exactly where it will explore for shale gas in the Karoo after the moratorium is expected to end in July, although it has applied for a technical co-operation permit of the area covering the middle of the Karoo from Calvinia in the west to Beaufort West in the south to Carnarvon in the north and running down to Queenstown in the east.

However, Manuel Poupon, a Shell geologist, indicates that the anticipated gas rich-shale runs thinly near the surface at the north of the operating area but gets deeper and thicker – and easier and less riskier to exploit – down south.

Noting that early seismic studies done in the 1960s by Soekor (which merged with Mossgas to form PetroSA) indicated that there could be shale rich enough to produce gas, Poupon said.

Eggink said world energy demand was likely to double between 2000 and 2050 and Shell expects that oil exploitation will initially rise until about 2030 but gently fall thereafter with coal – and particularly gas – making an increasing contribution to the energy mix in the next 40 years.
In the US there has been a dramatic growth in the shale and tight gas contribution to its energy needs since 2005. Its abundance has turned the US from an importer to an exporter of energy.

South Africa needed to be weaned of its dependence on coal, which currently constitutes 90 percent of its electricity supply. "Substituting gas for coal will reduce carbon intensity and greenhouse gas emissions," he said.

Poupon and Eggink indicate that the troubles in Pavillion in the US, where aquifers were contaminated by gas, was likely to have been caused by fracking at shallow levels. Shell had made the commitment to only frack "at least at 1.5km below the surface", said Poupon.

"In most cases in the US farmers have mineral rights who want to make big money… (and) they go to the cheapest operator and this doesn't mean that they do the best job and they end up with these issues that the industry is blamed for."

Shell envisaged at least six wells in the Karoo with a potential investment of $200 million (R1 704m).

The Pinedale anticline is about 250km² with reserves of about 25Tcf which are recoverable, enough energy to power 10 million homes for 30 years. The Karoo shale gas exploration area is about 90 000km².

The potential exploration area of Shell borders the Southern African Large Telescope (SALT) project. Poupon points out that if there are any rigs in the area there will be an exclusion zone of 70km from the project's radio stations dotted around the telescope.

Danie Vermeulen, the director of the Institute for Groundwater Studies at the University of the Free State, said the water difference between Pinedale and the Karoo meant that there had to be tight policing of the management of water if fracking went ahead. Also there would be high costs involved for the development of water treatment plants.

Gideon Steyl, an associate professor of chemistry at the University of the Free State, said the chemicals used in the process of fracturing – which make up about 1 percent of the water injected under heavy pressure at the shale deep underground – were used in tiny quantities.

Donwald Pressly was a guest of Royal Dutch Shell

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