Vaca Muerta’s potential

Growth ahead for the international shale play

Amanda Kupchella, 14 November 2018
Steady progress in Vaca Muerta was led by YPF in early years

Other operators are now contributing to growth and will play an important role in the future of the play

Vaca Muerta production

Source: Wood Mackenzie
Most activity has taken place close to existing infrastructure at the Loma Campana project.
Numerous sanctions are anticipated, but well density is still low on most blocks.
To fully develop a Vaca Muerta block, US$1.9 billion is required on average

A typical Vaca Muerta block is 50,000 acres

50,000-acre Vaca Muerta section by window

- An unconventional license in Neuquen province lasts 35 years
- Commitments range from US$200-$400 million within the first 2-5 years
- Typical lead time to full development is 3-5 years, though there are exceptions
- An accelerated development timeline adds value (a three year delay at Fortin de Piedra could have eroded US$390 million in value)

Assuming three year, fifteen well pilot during which well costs are reduced to US$10.2 million for black oil, US$10.45 for light oil, US$10.65 wet gas, and US$12.2 for dry gas. Assume 80% of the acreage is developed with 160 acre/well spacing. Assume laterals of 2,500 meters, EUR of .61 mmbbl/1.03 bcf for black oil, .53 mmbbl/2.52 bcf for light oil, .41 mmbbl/4.67 bcf for wet gas, 13.1 bcf for dry gas.
Future activity will come mainly from greenfield blocks where few shale wells have been drilled

Shift from vertical to horizontal wells allowed for increased production with fewer wells

Vaca Muerta wells drilled by operator

Source: Wood Mackenzie
Shift in operatorship: we expect companies other than YPF to claim 75% of the play’s production by 2024

Tecpetrol is implementing an aggressive development at Fortin de Piedra; Total operates almost all of the blocks where it has participation

Vaca Muerta production by operator

Source: Wood Mackenzie
Vaca Muerta accounts for half of Argentina’s unconventional gas production

Vaca Muerta shale production will continue to grow as tight gas from other formations remains relatively constant

Argentina unconventional gas production by formation

Source: Instituto Argentino del Petróleo y del Gas
Market constraints limit upside for gas

Argentina is already meeting its domestic gas needs during the summer months, when demand is at its lowest

Argentina gas supply and demand balance

Source: Wood Mackenzie Argentina Gas and Power Service
Our base case requires US$5 billion of investment per year on average; an investment shortfall would slow growth

In our downside, we assume constant investment of US$3 billion per year, resulting in less than half of our base case production by 2024.
Enormous upside remains from potential beyond our base case

The large shale play contains plenty of untapped acreage; some operators are already developing multiple zones

Vaca Muerta well locations

Well locations included in our forecast: 4,676
Potential locations with base case acreage, 80% risking: 8,240
Potential locations with base case acreage, two zones: 16,480
Two zones on base case acreage, plus 20% risking other acreage: 23,843
Two zones on base case acreage, plus 80% risking other acreage: 54,198

Source: Wood Mackenzie
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