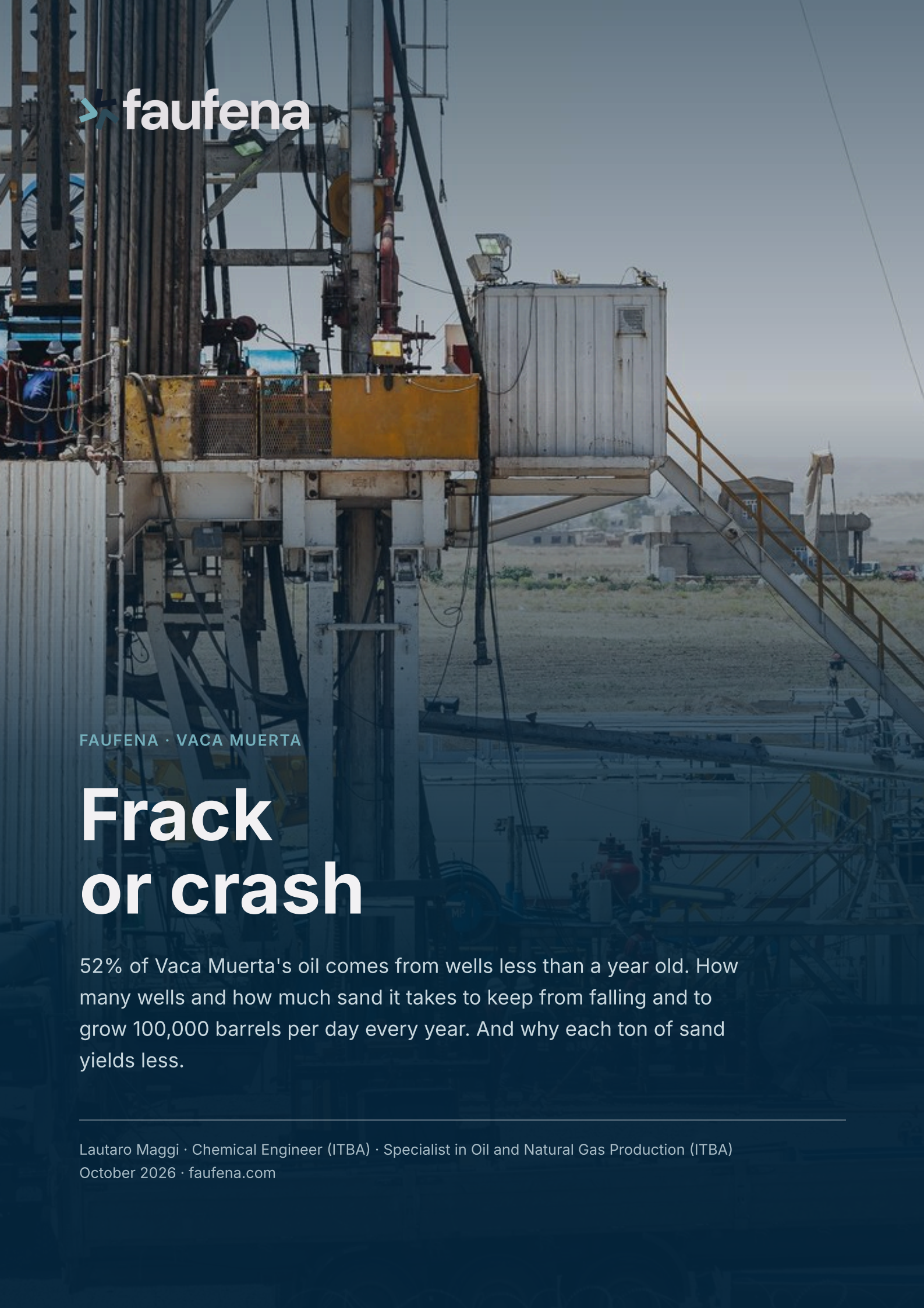


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FAUFENA · VACA MUERTA

Frack or crash

52% of Vaca Muerta's oil comes from wells less than a year old. How many wells and how much sand it takes to keep from falling and to grow 100,000 barrels per day every year. And why each ton of sand yields less.

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Vaca Muerta now produces 670,000 barrels of oil per day. It is the number repeated in every announcement, every conference and every headline. But there is another, less quoted number that explains how it is sustained: **52% of that oil comes from wells less than a year old.**

To sustain that number you have to keep running: drilling, fracturing and hooking up new wells all the time, and bringing in, truck after truck, the sand needed to replace the wells that have already started to decline.

In 30 seconds

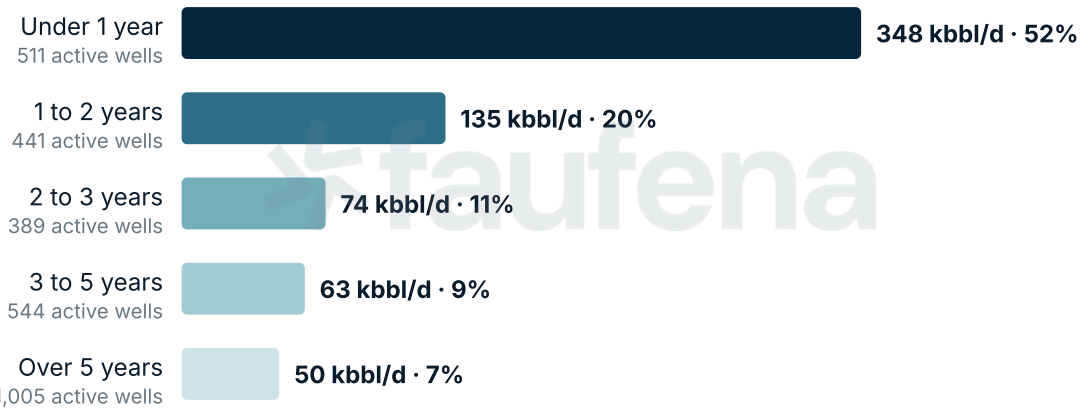
- 52% of Vaca Muerta's oil comes from wells less than a year old. If fracking new wells stopped, Vaca Muerta would fall 39% in twelve months and the country's oil production 31%: from 930,000 to about 640,000 barrels per day.
- For the country to add 100,000 barrels per day next year, 581 new wells and 7.6 million tons of sand are needed. Just to avoid falling, 432 wells and 5.7 million tons.
- Each ton of sand yields 25% less oil than four years ago: from 25 to 19 barrels in the well's first year.
- It is not because of gas: the decline shows up equally in black oil wells.
- If the country wants to grow by 100,000 barrels per day every year, by 2030 almost 10 million tons of sand will have to be brought to Neuquén: about 800 trucks per day.

The treadmill that never stops

In August 2026 there were 2,890 producing wells in Vaca Muerta. Those that came on production in the last twelve months (521, of which 511 are still active) contribute 348,000 barrels per day. The 1,005 wells older than five years, twice as many wells, contribute 50,000.

Where Vaca Muerta's oil comes from

Barrels per day in August 2026, by well age



Source: Argentina Energy Secretariat, production per unconventional well (Vaca Muerta formation). faufena analysis.

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That is the nature of shale. A Vaca Muerta well loses more than half of its production in the first year, a third in the second, and then keeps declining more slowly. Measured by what each group of wells did between August 2025 and August 2026: those under one year retained 47% of their production, those one to two years old 67%, and those two to three years old 74%.

If drilling and fracking stopped tomorrow, **Vaca Muerta oil production would fall 39% in twelve months**: from 670,000 to about 410,000 barrels per day. And since conventional fields are also declining, about 10% a year, **the country's oil production would fall 31%: from about 930,000 to 640,000 barrels per day.** In two years, the drop would reach 44%. It is like running on a treadmill: to stay in the same place you have to keep running, and the faster the treadmill goes, the more you have to run.

Three targets, three calculations

For the calculation we start from a simple assumption: each group of wells declines as it did over the last year, and a new well performs like those that came on in the last year (an average of 668 barrels per day in August). A Vaca Muerta well today takes about 52 frac stages and about 13,100 tons of sand. Conventional production, which still contributes about 260,000 barrels per day, declines 10.5% per year.

Target 1: Vaca Muerta does not fall. About 260,000 barrels per day must be replaced in a year. That means **391 wells** to drill, frac and hook up between September 2026 and August 2027: more than one per day. About 20,300 stages and **5.1 million tons of sand**.

Target 2: the country does not fall. Here we ask Vaca Muerta to also take on the decline of conventional production, about 27,000 barrels per day per year. That means **432 wells**, 22,400 stages and **5.7 million tons of sand**.

Target 3: the country adds 100,000 barrels per day every year. That means **581 wells** over the next twelve months, 30,200 stages and **7.6 million tons of sand**.

What has to be done in the next 12 months

Vaca Muerta wells to drill, frac and hook up, and sand to deliver (Sep 2026 to Aug 2027)



For reference: 521 Vaca Muerta wells came online in the last 12 months. A new well performs like last year's (668 bbl/d) and takes 13,100 tons of sand. Conventional: −10.5% per year. faufena estimate, Energy Secretariat data.

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To put it in perspective: in the last twelve months 521 Vaca Muerta wells came on production, and with that the country grew by about 110,000 barrels per day. Next year, to grow by the same amount, 60 more wells are needed. The treadmill keeps going faster.

And if the target is to grow 100,000 barrels per day every year, the math grows on its own, because each year there is more young oil to sustain:

Year	Wells	Stages	Sand (million tons)	Trucks per day	Country (bbl/d)
2027	581	30,200	7.6	630	1.03 million
2028	636	33,100	8.4	690	1.13 million
2029	685	35,600	9.0	745	1.23 million
2030	730	38,000	9.6	795	1.33 million

That is 34 million tons of sand over four years, with wells identical to today's. The trucks assume 33 tons per trip, every day of the year. And that is only the sand: each stage also takes water, chemicals, hours of frac spread, wireline, coiled tubing, plugs and flowback.

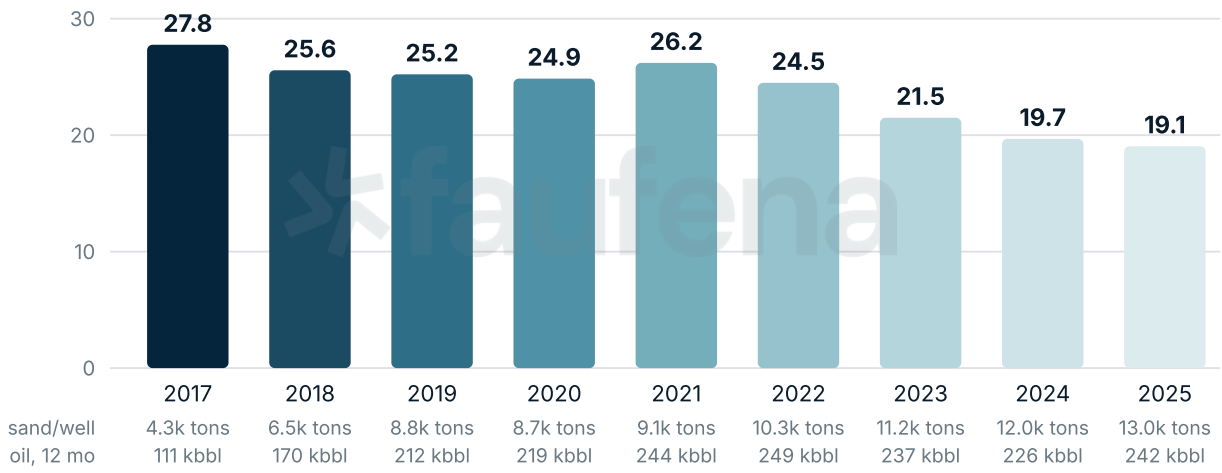
Each ton yields less

Here comes the second problem. Not only does more sand have to be brought in each year: **each ton of sand yields less oil.**

Between 2018 and 2022, a Vaca Muerta horizontal oil well produced in its first year between 24 and 26 barrels for every ton of sand pumped. Then it began to fall: 21.5 in 2023, 19.7 in 2024 and 19.1 for wells that started in 2025. **That is 25% less than four years ago.**

Each ton of sand yields less oil

Barrels of oil in the first 12 months per ton of sand · horizontal oil wells



Year of first production. Median per well, US short tons. Source: Energy Secretariat frac and production data. faufena analysis.

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The explanation lies in the median well. Since 2021, sand per well went from 9,150 to 13,000 tons (+42%), stages from 37 to 50, and the lateral kept getting longer. First-twelve-month oil stayed stuck at about 240,000 barrels. Each new stage adds less than the previous one: diminishing returns.

And the newest wells? Those that started in the second half of 2025 do not yet have a year, so we compare them at six months: 12.2 barrels per ton, versus 16.0 for those that started in the second half of 2021. Somewhat better than those of 2024 (10.9), but far from earlier levels.

Is gas to blame?

A reasonable hypothesis is that sand yields less oil because development has shifted toward the volatile oil window, closer to gas. In that area each well produces more gas per barrel, and part of the sand's work would go into gas.

The Energy Secretariat data say that this explains little. We classified each oil well by its first-year gas-oil ratio (the McCain cutoffs: up to 1,750 scf of gas per barrel of oil is black oil, from 1,750 to 3,200 is volatile):

- The median gas-oil ratio of oil wells did not rise: 720 scf/bbl in 2021, 630 in 2025.
- Wells in the volatile oil window went from 7% to 10% of the total. A shift, but a small one.
- The decline shows up equally within the purest black oil: in wells under 840 scf/bbl, yield fell from 25.2 to 18.2 barrels per ton between 2021 and 2025.
- Counting gas as barrels of oil equivalent, yield also falls: from 30 to 22 barrels of oil equivalent per ton. Gas does not compensate.

Window (2025 wells)	Wells	Sand per well (tons)	Oil, 12 months	bbl per ton	boe per ton
Black oil	239	13,100	239,000 bbl	18.6	20.9
Volatile oil	28	12,800	279,000 bbl	22.2	30.4

Paradoxically, in 2025 volatile oil wells yielded more per ton than black oil wells, in oil as well. There are few wells and they should be viewed with care, but the conclusion is clear: **the loss of sand efficiency does not come from shifting toward gas. It comes from increasingly intensive wells that do not produce more.**

What it means

For operators, that cost per barrel depends more and more on sand logistics and the frac spread, and less on the rock. For the country, that growing 100,000 barrels per day per year requires going from the 5.5 million tons of sand reported in the last twelve months (more than 6.6 once the wells missing from the registry are completed) to 7.6 in 2027 and almost 10 in 2030, with wells identical to today's. If sand per well keeps rising at the pace of the last four years, in 2030 it would be more than 13 million.

For suppliers, that demand is assured as long as the price holds: the treadmill cannot be stopped without the country's production falling by almost a third in a year. Sand, transport, water, frac spreads, well hook-up and facilities are not an activity peak: they are the cost of staying in place.

And for everyone, a question: if each ton yields less, the next improvement will not come from pumping more, but from pumping better. Lateral spacing, stage design, local sand closer to the wells, trains and fewer truck miles. Whoever solves it will be able to run just as fast while spending less.

How we did the math

Energy Secretariat data: monthly production by unconventional well through August 2026 (Vaca Muerta formation) and fracturing data from Attachment IV (domestic and imported sand, stages, lateral). Age: months since the first month with production. Decline: what each group of wells retained between June-August 2025 and June-August 2026 (for those over five years, capped at 5% per year in the projection to 2030). Efficiency: horizontal oil wells with reported fracturing, cumulative oil of the first 12 (or 6) months over sand pumped. Attachment IV does not yet have all the fracs (in 2025 it covers about 92% of shale stages), so sand totals are calculated using sand per well and not the reported sum. Conventional: total national production minus unconventional, April-June 2026 versus 2025. Metric data were converted to US units (tons are US short tons, 1 m^3/m^3 = 5.615 scf/bbl). These are faufena estimates, not forecasts.

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- Fracs in Vaca Muerta, month by month and by field
- Completion: hydraulic fracturing and frac sand · Freight logistics and transport · Well hook-up
- Frac sand companies on faufena: Delta Arenas, Grupo Masur, San Benito Energía

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