

# Pumping Oil

In recent years, the United States has begun to produce more oil, because a new invention called fracking can release oil from shale (a very fine-grained sedimentary rock).



**Big Geographical Idea:**

Every major invention has geographic effects, because it makes some places more valuable and reduces the desirability of other places.

A fracked oil well in North Dakota can produce 1000 barrels of oil a day for about 4-8 months. The yield slowly declines, averaging 500 barrels a day for another half year, then 200 barrels a day for a year or two.

Do the math, using round numbers to get an approximate total:

barrels/day	days	total barrels	dollars/barrel	dollars income
1000	200	200,000	80	16 million
500	200	_____	80	_____
200	700	_____	80	_____

Now add the dollars of income over three years and write the total here \_\_\_\_\_.

A fracked well in North Dakota costs about 12 million dollars to drill.

How much "profit" does this imply for an investor paying for the well? \_\_\_\_\_.  
(This is why Wall Street likes the so-called "Bakken play" in North Dakota.)

A complete analysis would also include the costs of running the pumps every day and transporting the oil to the refinery for processing into gasoline and chemicals. We will ignore those costs for awhile, in order to make an international comparison.

A typical oil well in the Ghawar oil field of Saudi Arabia has been pumping oil for 9 years. It is currently averaging 10,000 barrels per day, and it is expected to continue at that rate for another 15-20 years. This well is not very deep and cost only 4 million dollars to drill.

During its first two years, the price of oil was \$30 dollars per barrel.

barrels/day	days	total barrels	dollars/barrel	dollars income
10000	700	_____	30	_____

During the three years our example well operated in the Bakken formation of North Dakota, how much money did the Ghawar well bring into the sheikdom of Saudi Arabia?

barrels/day	days	total barrels	dollars/barrel	dollars income
10000	1000	_____	80	_____

Some of the oil income in Saudi Arabia is used to pay for new highways, irrigation projects, and other investments. A lot of money, however, is used to buy weapons, ammunition, security systems, police forces, and many fundamentalist Islamic schools.

Thought question: what policy would you recommend? Here are three suggestions

- 1) provide subsidies to low-income people to help pay for the rising cost of gasoline,
- 2) put a tax on all oil, to persuade people to use less, lower the international price, and generate funds to pay for research on energy alternatives,
- 3) put a tax on oil companies, to help pay for troops to safeguard oil supplies in risky places,

Your policy can combine ideas from several of these suggestions or include new ideas.