

Shale gas, oil reshape world energy landscape

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File photo shows US workers laying a shale gas pipeline outside Waynesburg, in Pennsylvania. After unleashing an energy revolution in the United States, shale gas and oil are now becoming energy game-changers worldwide, a break with the past whose ramifications are still unclear.

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Thanks to the advent of [hydraulic fracturing](#) technology—used to extract

oil and gas locked in sedimentary shale rock—the United States is on track to become the world-number-one oil producer by 2017 and a net exporter by 2030, according to the International Energy Agency (IEA).

Besides radically changing the US [energy landscape](#), this "fracking" revolution is also reshaping markets overseas.

Thanks to the sudden abundance of cheap natural gas, American electricity suppliers are shunning domestic coal—leading producers to export it at low prices to Europe and Asia.

That trend has revived the appeal of coal-fired power plants in Europe and taken a toll on plans to transition toward gas-burning plants, despite the air-pollution concerns around coal.

Energy experts say the United States will also likely begin exporting [liquefied natural gas](#) (LNG) to Europe and Asia in the next several years.

US authorities have already greenlighted four LNG export terminals.

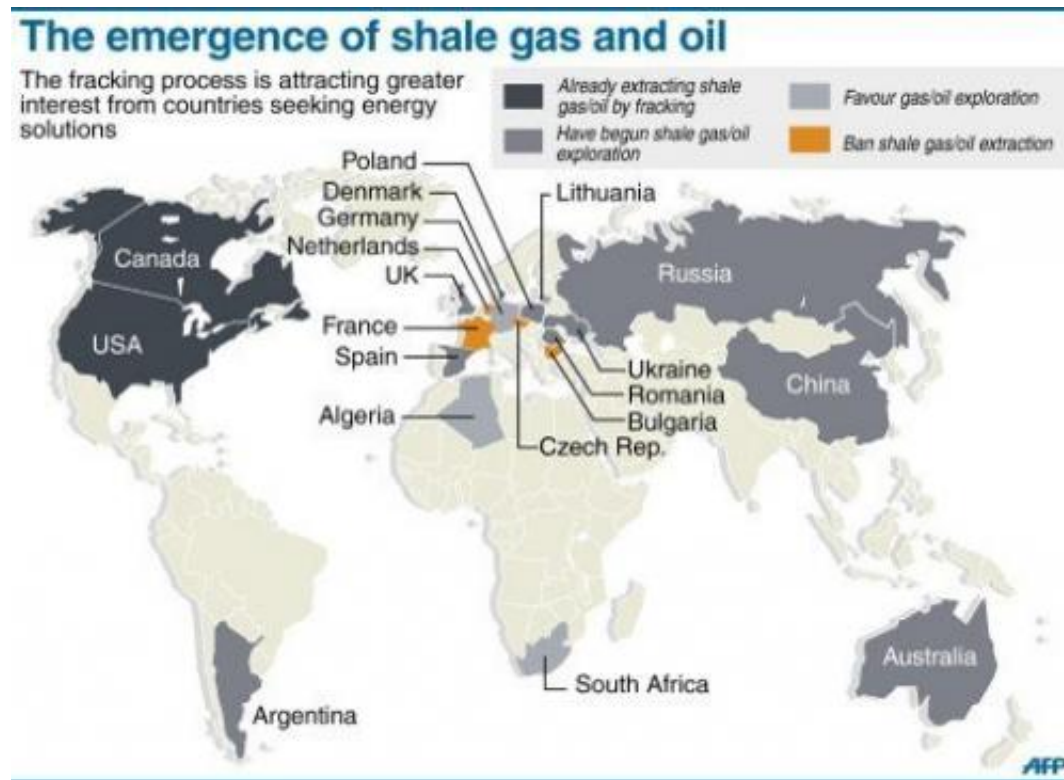
"We anticipate that from around 2016, we are really going to see volumes of LNG coming out of the United States and they are going to change the way that markets connect over the coming decades," said IEA analyst Tim Gould at a recent conference.

"The United States won't export a huge amount of gas, because they'll be looking to keep domestic price levels as low as possible, but eventually there will undoubtedly be more than 10 export terminals geared toward Europe and Asia," said Jerome Ferrier, head of the International Gas Union.

With all its new non-conventional output, the United States is now producing more than seven million barrels of oil per day, returning to the

level of 25 years ago, said Olivier Appert, head of the French institute for oil and new energies (IFPEN).

"The fact that the United States is set to become the top oil producer by 2020, ahead of Saudi Arabia, changes everything," said Appert.



Graphic showing the policy of selected countries on shale gas and oil extraction.

While the size and longevity of the American boom are up for debate, it will redraw the world energy-trade map at least temporarily by making North America less dependant on Middle Eastern oil.

China is on track to take the United States' place as the world's top oil importer in 2017, its oil bill soaring to \$500 billion in 2020, the Wood

Mackenzie consultancy calculated last month.

The United States' bill for oil imports is meanwhile set to fall from a peak of \$335 billion in 2008 to \$160 billion in 2020.

This unexpected turn of events is shaking up the global [oil](#) market.

At first the world's top crude producers, Saudi Arabia and Russia, considered the fracking boom "a speculative bubble that was about to burst", said Appert.

"But today it's becoming a major problem for them," to the point that the Organisation of Petroleum Exporting Countries launched a study on the issue in June, he added.

Keen to emulate the American boom, more than a dozen other countries around the world are currently exploring for shale hydrocarbons or moving in that direction.

But environmental fears around fracking—in which a high-pressure mixture of water, sand and chemicals is blasted deep underground to release hydrocarbons trapped between layers of rock—may stop other countries from embracing the shale revolution with the same fervour as the United States.

"The United States is atypical because landowners hold the underground rights to their property, and despite all the local protests, they're encouraged to drill," said Ferrier of the International Gas Union.

"It's clear that in Poland, Romania, Great Britain, that won't happen as easily."



Workers change pipes at a rig exploring the Marcellus Shale outside the town of Waynesburg in Pennsylvania. The United States is on track to become the world-number-one oil producer by 2017

Energy-hungry China has the world's largest shale-gas reserves, according to preliminary estimates, but recently began exploration returned disappointing initial results.

However, "the energy challenges in China are such that the country needs every exploitable resource, and if there's shale gas there, it will probably be tapped," said Ferrier.

"The problem will be finding the water for fracking."

Europe also faces tricky questions on shale gas.

The continent depends heavily on Russian gas, with North Sea deposits quickly running out.



British police watch an anti-shale gas and fracking protest outside parliament in London.

The European Union has so far failed to adopt a unified gas strategy, but policymakers consider the issue strategically vital.

EU Energy Commissioner Guenther Oettinger said in May that shale gas could be a good bargaining chip in reaching new deals with Russian energy giant Gazprom.

"I am sure (that) to have some [shale gas](#) option is a good instrument for our long-term negotiations (with) Gazprom and Russia," he said.

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