

a steady flow of

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The first floating liquid natural gas regasification plant in the world, the FSRU Toscana, is towed into the Grand Harbor in Malta in July 2013. The converted ship will be moored in Livorno, Italy, and used as a gas terminal and export point. REUTERS

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## Diversifying energy supplies — and conserving more of what it already uses — would help Europe alleviate supply shocks

By *per Concordiam* Staff

Ukraine once possessed some of Europe's richest deposits of exploitable natural gas. The Galician gas and oil fields, first discovered during Austro-Hungarian administration in the 19th century, made the region an energy pioneer. The first commercially successful kerosene lamp was invented in Lviv, and that western Ukrainian city was among the first to be illuminated by gas street lighting. Though Ukrainian fields still pumped huge quantities of gas as late as the 1980s, domestic production has since been superseded by foreign competitors, most notably Russian state-controlled gas producer Gazprom.

A nagging sense of energy insecurity in Europe, exemplified by the gas pipeline interruptions instigated by Russian suppliers in the winter of 2009, has left countries such as Ukraine searching for alternatives. Reinvigorating Ukraine's gas industry through a combination of conventional and unconventional drilling is one prong of the strategy that would leave Europe better able to fend for its own energy needs. Also important to the strategy is boosting energy efficiency, promoting renewable energy and diversifying sources of fossil fuel to include more Central Asian, Middle Eastern and North American suppliers.

To stem what they consider unfair business dealings from Gazprom, European leaders have also stepped up scrutiny of the Russian energy conglomerate. In September 2012, the European Commission launched an antitrust investigation into accusations that Gazprom acts as a monopoly that manipulates gas prices. "Depending on the outcome, the probe could result in heavy fines or force Gazprom to overhaul its business practices across the EU in order to comply with the bloc's antitrust rules," the *Financial Times* noted in February 2014.



## UKRAINIAN ENERGY MARKET

Ukraine is Russia's largest single natural gas customer, a one-sided relationship that has produced unwelcome geo-political consequences. Of the roughly 50 billion cubic meters (bcm) of gas consumed in Ukraine each year, 30 bcm comes from Russia. The rest is supplied by the country's shrunken domestic gas industry. Part of the problem is that Ukraine remains among the least energy efficient countries in the world, a throwback to the days when energy was cheap and subsidized.

Poland provides a possible model on how to improve efficiency. By one main measure, Ukraine's neighbor to the west has reduced wastefulness far beyond the EU average. Its "primary energy intensity," defined as energy consumption relative to the size of the economy, has improved dramatically. "With only moderate energy saving, matching the endeavors of Poland, Ukraine could go down to a consumption of 30 bcm a year within five to 10 years," Anders Aslund of the Peterson Institute for International Economics told Canadian parliamentarians in May 2014.

Another way to promote Ukrainian energy independence is to resurrect abandoned gas fields, partly through the use of unconventional drilling. Multinational energy companies such as Chevron and Royal Dutch Shell predict the country harbors 10 bcm of these once hard-to-reach deposits. Though hydraulic "fracking" remains controversial in parts of Europe (gas is released from porous shale rock using blasts of water, sand and chemicals), it has helped turn the United States into a potential gas exporter and could do the same for some European countries, energy experts say.

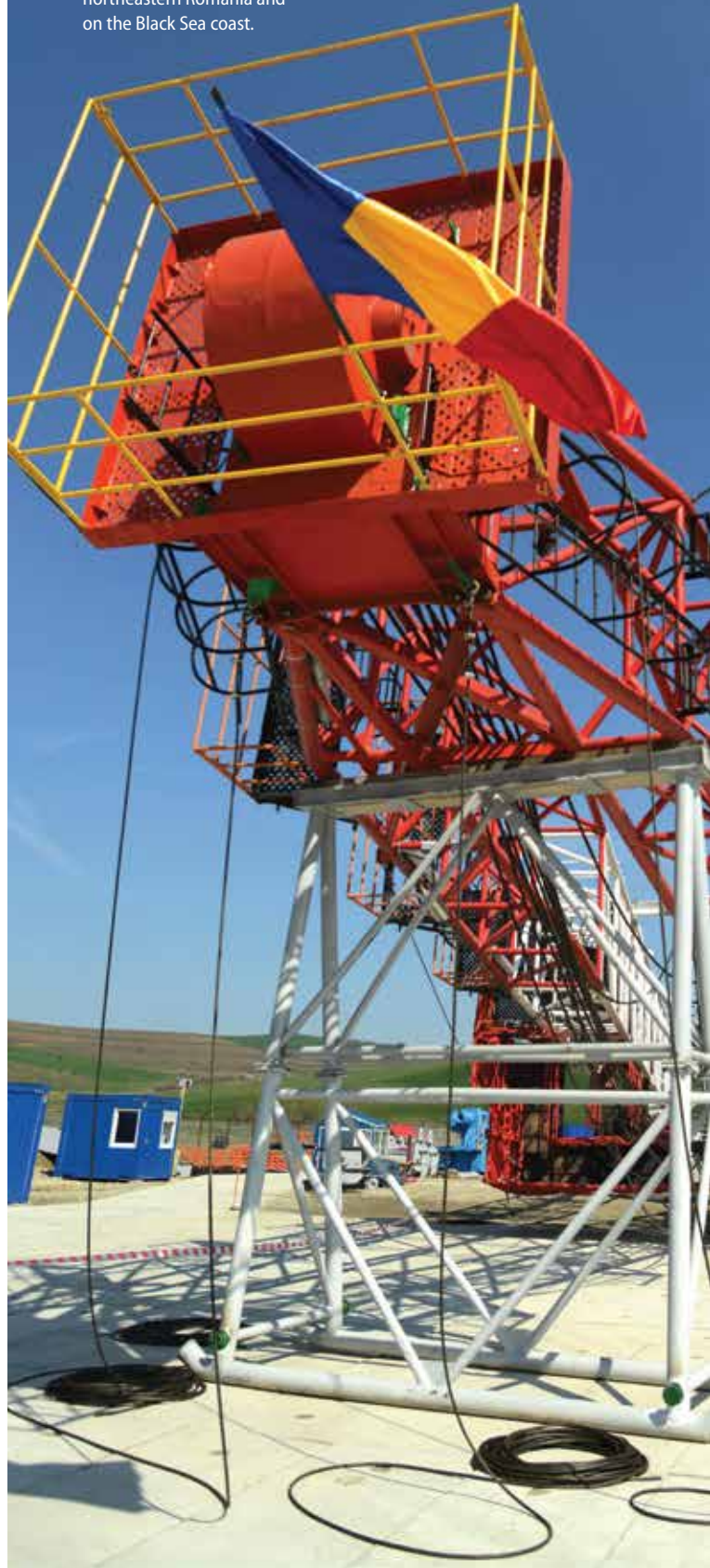
The proposed construction of a liquefied natural gas (LNG) terminal on the Black Sea in Odessa could also diversify Ukraine's imports, replacing piped Russian gas with ship-borne Middle Eastern and North American gas. "Ukraine could reach gas balance in five years, even if it is not likely, and it could be oversupplied in five to 10 years," Aslund noted in his 2014 testimony.

## PROGRESS IN THE EUROPEAN UNION

The EU has made large strides since the dark days of 2009, when Russian gas destined for Europe was prevented from reaching Ukrainian pipelines. The 25 to 30 percent of its gas supply it receives from Russia represents a decline from just a couple years ago. Nevertheless, some EU members, clustered in Eastern Europe and the Baltic states, remain totally dependent on Russian gas shipments. (See chart)

In the past few years, the EU has engaged in an accelerated continentwide effort to build LNG terminals that, supplied with sufficient foreign imports, could theoretically displace Russian shipments in a few years. Qatar, a major Middle Eastern producer, exports increasing amounts of LNG to Europe and now supplies close to 10 percent of the EU's needs. The U.S. and Canada have both been touted as sources of European gas, at least in its liquefied form, but the high price of trans-Atlantic shipping and lack of export terminal capacity in North America have crimped such designs.

A Romanian flag flies in 2014 atop the first shale gas exploration site, in Pungesti, Romania, near the Moldovan border. Multinational energy giant Chevron has permits to explore for gas in northeastern Romania and on the Black Sea coast.



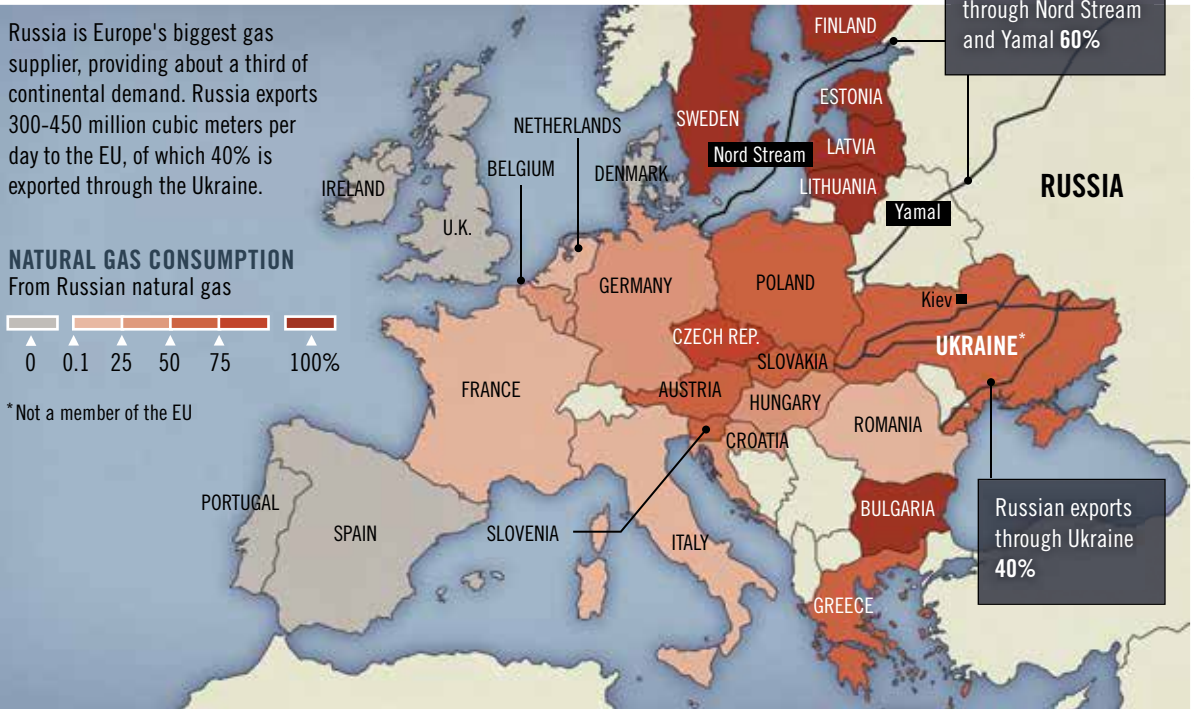
# EU Imports of Russian Gas

Russia is Europe's biggest gas supplier, providing about a third of continental demand. Russia exports 300-450 million cubic meters per day to the EU, of which 40% is exported through the Ukraine.

## NATURAL GAS CONSUMPTION From Russian natural gas



\* Not a member of the EU



Source: Gas Infrastructure Europe, Reuters, industry data

Germany's focus on building renewable energy infrastructure, particularly solar panels and wind turbines, has proven to be a costly investment. But happily for Europe's largest economy, on sunny and windy days, these renewable sources can fulfill a large percentage of electricity demand, although backup power plants, usually fueled by gas and coal, are still necessary. This partial shift toward renewable energy is enshrined in the EU's 20-20-20 energy targets — a 20 percent reduction in greenhouse gas emissions, 20 percent better energy efficiency and 20 percent greater usage of renewable energy by 2020.

The politically charged issue of gas pipelines continues to rear its head as well. Germany gets a quarter of its gas from Russia, much of it through Gazprom's recently built NordStream Pipeline across the Baltic Sea. But the EU is also throwing support behind plans for a series of interconnected pipelines to connect southern Europe to the Caspian Sea. Projects such as the Trans-Adriatic Pipeline could deliver relatively inexpensive Central Asian and Azerbaijani gas to Italy and the Balkans by as early as 2019.

Meanwhile, the EU has begun overhauling pipelines so that gas can flow in two directions instead of one. For example, Eastern European countries facing interruptions of Russian gas could readily tap surplus Western European gas through so-called interconnectors. "The EU has done far more than the U.S. over the last decade to modernize its energy infrastructure and diversify its supplies," *Forbes* magazine declared in April 2014.

## CONCLUSION

Russia is financially dependent on its European gas sales. One-quarter of its economic activity is generated from such sales, not to mention nearly two-thirds of its total exports. But recent Ukrainian history, including the severing of Gazprom shipments during the depths of winter in 2009, suggests reliance on single sources of foreign gas is a risky proposition.

As a cleaner-burning fuel, gas will remain a large part of Europe's energy mix. That's why securing diverse supplies of the fuel is so critical. Exploitation of domestic sources of gas, including deposits recoverable by fracking, is viewed as a critical part of the continent's push for energy security. So is building pipelines to the Caspian Sea and importing liquefied gas from the Middle East, Africa and North America.

And in a country such as Ukraine, where energy conservation has been a low priority, boosting efficiency in homes and factories is every bit as critical as finding new gas supplies. Poland's success at doing just that can serve as a model.

"The EU internal gas market has further integrated since 2009 and is now better equipped to face external shocks. In particular, additional gas interconnectors, reverse flow capacities, storage sites and LNG facilities have already and will further enhance the security of EU gas supplies," a March 2014 report from the Brussels-based Centre for European Policy Studies noted. "Yet, some regions remain more vulnerable than others." □



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