

Gas Security

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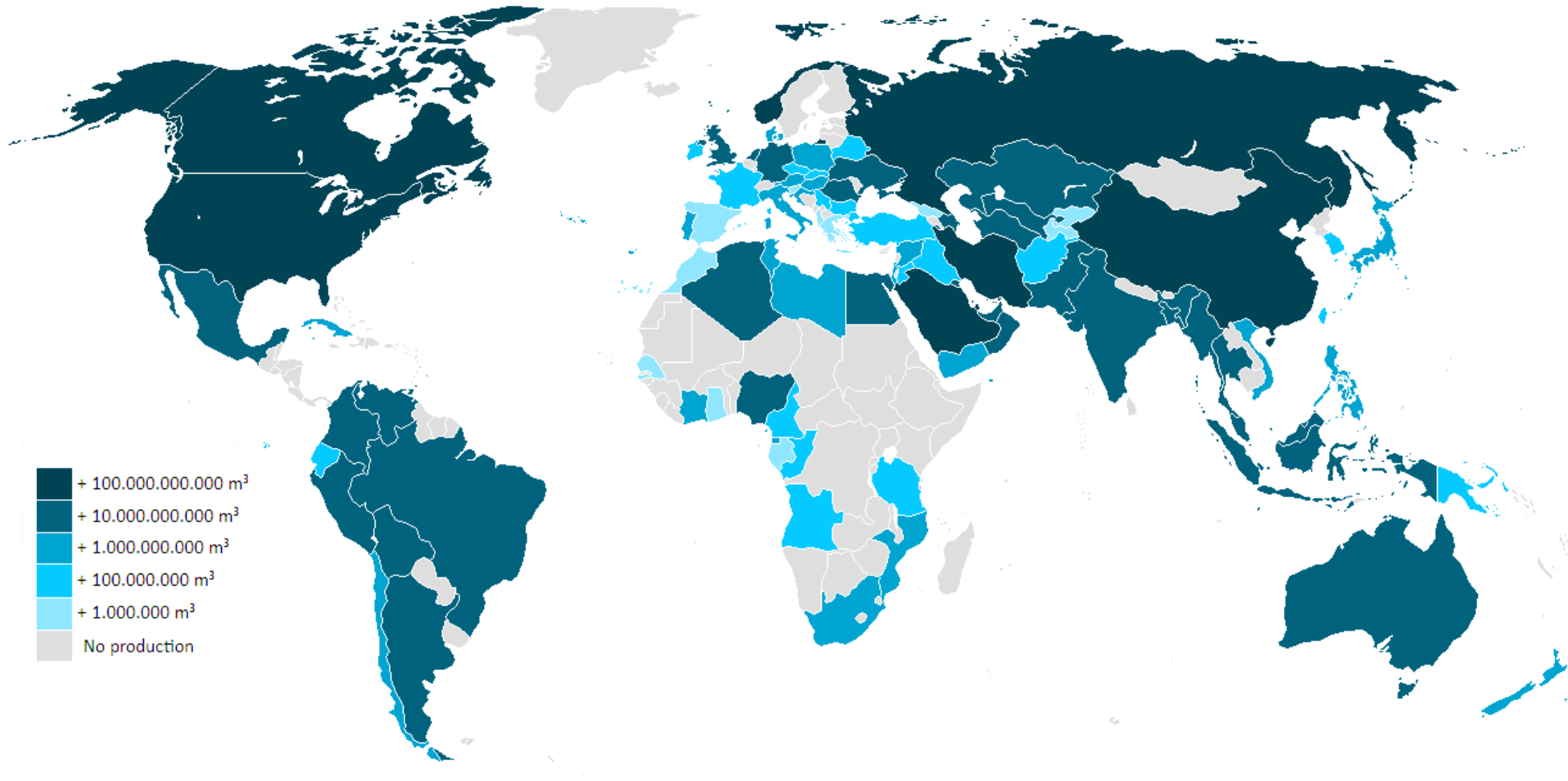
History of gas

“Natural gas is a fossil fuel, this means that it is, essentially, the remains of plants and animals and microorganisms that lived millions and millions of years ago”



- ✓ 1st major pipelines was constructed in 1891.
- ✓ Pipeline was 120 miles long.
- ✓ Natural gas from wells in central Indiana to the city of Chicago.

Where is gas located? (gas distribution)



Where are the pipelines for gas transport in Europe?



Who is consuming, and how much?

Table: Dry Natural Gas Consumption (Billion Cubic Feet)

	2009	2010	2011	2012	2013
North America	28.044,52	29.187,93	29.883,59	31.014,59	NA
Central & South America	4.383,46	4.896,74	5.032,35	5.577,16	NA
Europe	19.140,31	20.524,87	19.199,22	18.684,42	NA
Eurasia	19.164,90	21.615,69	22.061,57	22.013,67	NA
Middle East	12.485,44	13.378,77	14.089,40	14.826,14	NA
Asia & Oceania	18.518,94	20.676,93	22.220,41	23.164,60	NA
World	105.325,97	113.857,70	116.395,16	119.555,81	NA
United States	22.910,00	24.087,00	24.477,00	25.533,00	26.037,00
Russia	13.502,51	15.470,65	15.328,05	15.436,66	14.602,75
Iran	4.993,44	5.105,84	5.415,20	5.511,04	NA
China	3.125,27	3.768,82	4.623,51	5.180,95	5.706,90

How much do we have?

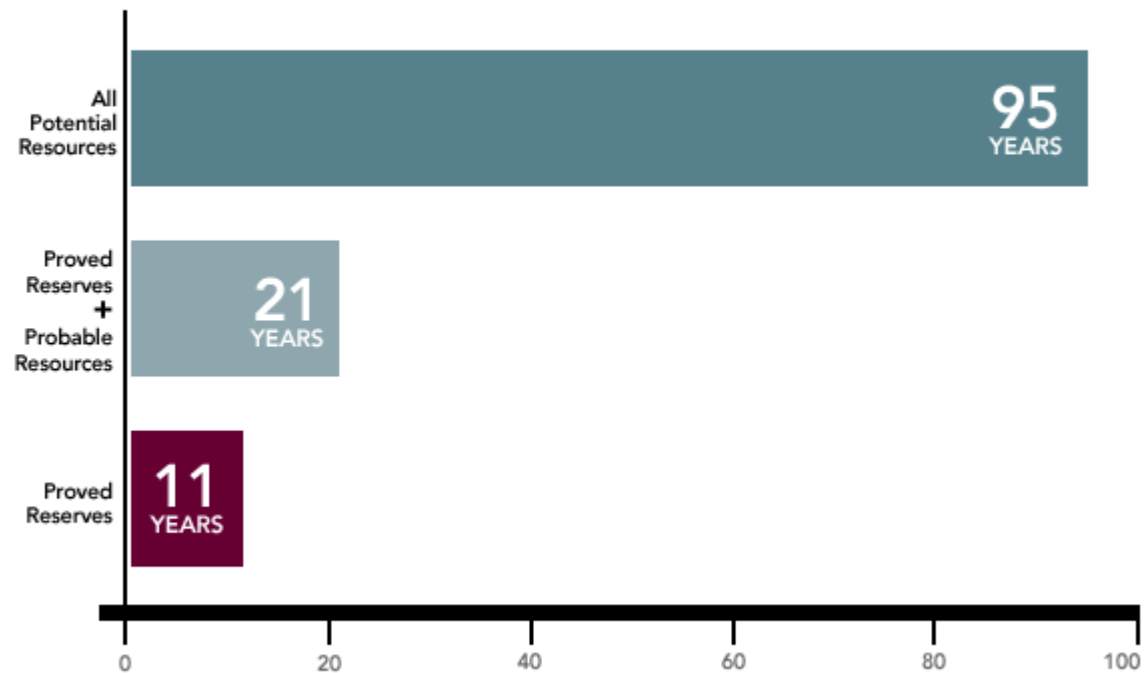
Table: Proved Reserves of Natural Gas (Trillion Cubic Feet)

	2010	2011	2012	2013	2014
North America	347,16	378,54	412,39	393,83	NA
Central & South America	266,80	268,54	270,05	268,92	275,13
Europe	166,31	153,82	146,94	145,52	142,15
Middle East	2.658,27	2.686,37	2.799,98	2.823,23	2.828,08
Eurasia	2.164,80	2.164,80	2.164,80	2.177,80	2.177,80
Africa	496,17	518,55	510,36	514,81	605,96
Asia & Oceania	538,67	537,56	504,75	521,46	539,20
World	6.638,19	6.708,19	6.809,26	6.845,57	NA
Russia	1.680,00	1.680,00	1.680,00	1.688,00	1.688,00
Iran	1.045,67	1.045,67	1.168,00	1.187,00	1.193,00
Qatar	899,33	895,80	890,00	890,00	885,29
United States	272,51	304,63	334,07	308,44	NA

How long is going to last?

Resource	Reserves	Production	Lifetime
Nat. Gas	6557.8 trillion cubic feet	119.006 trillion cubic feet	55.1 years

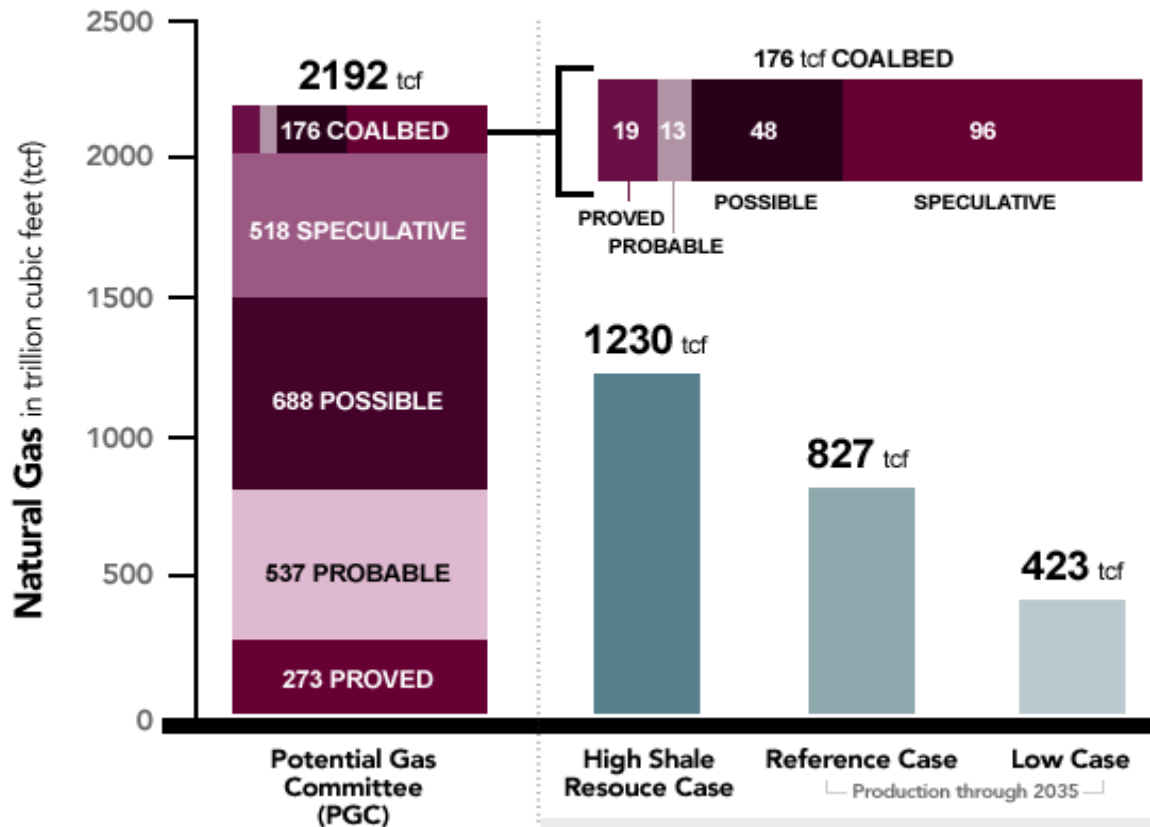
Based on the Potential Gas Committee Estimates and 2010 Consumption Rate (of 24 tcf / year)



Where will be the future gas?

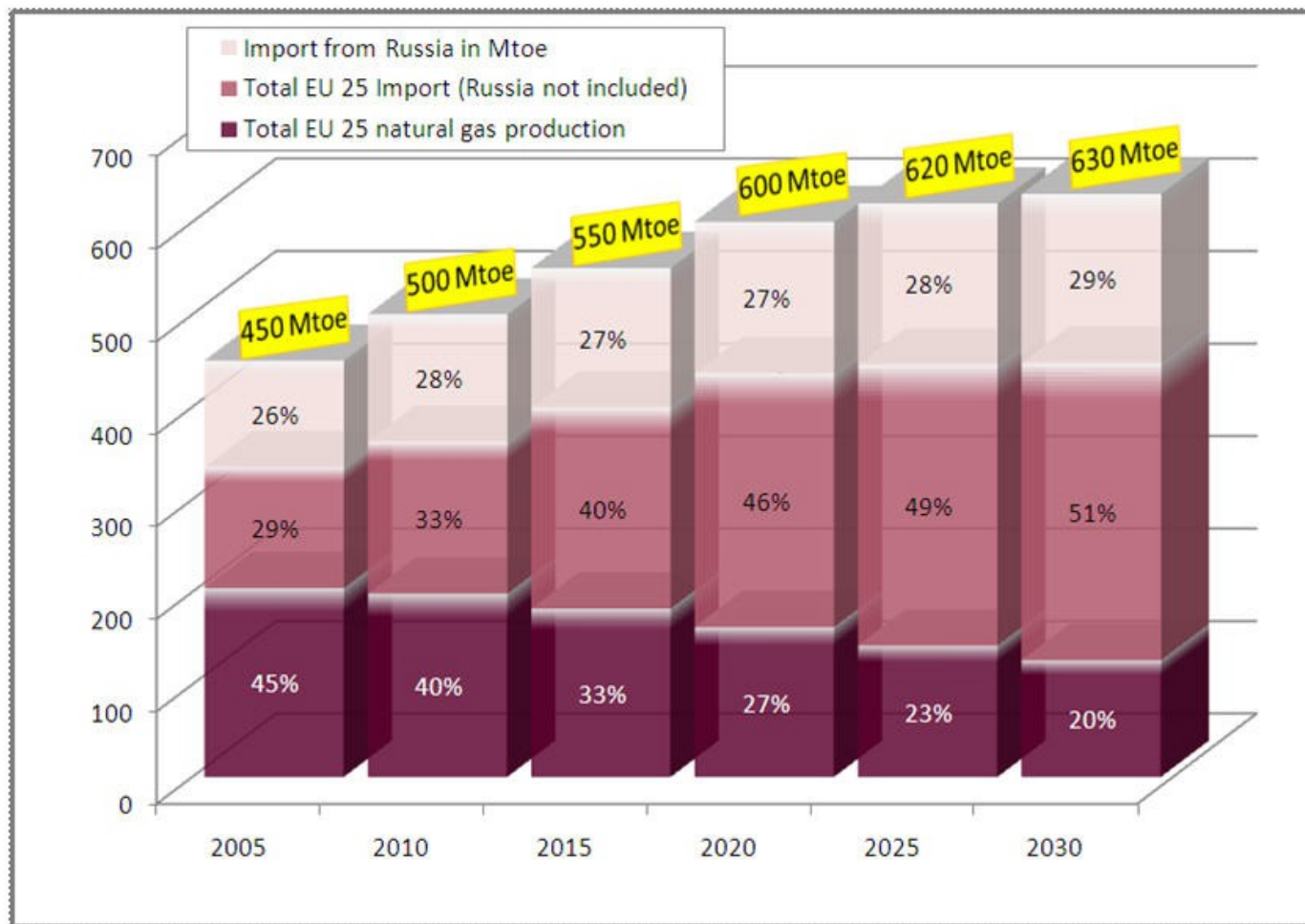
HOW MUCH GAS ARE WE SITTING ON?

Future Natural Gas Supply Estimates



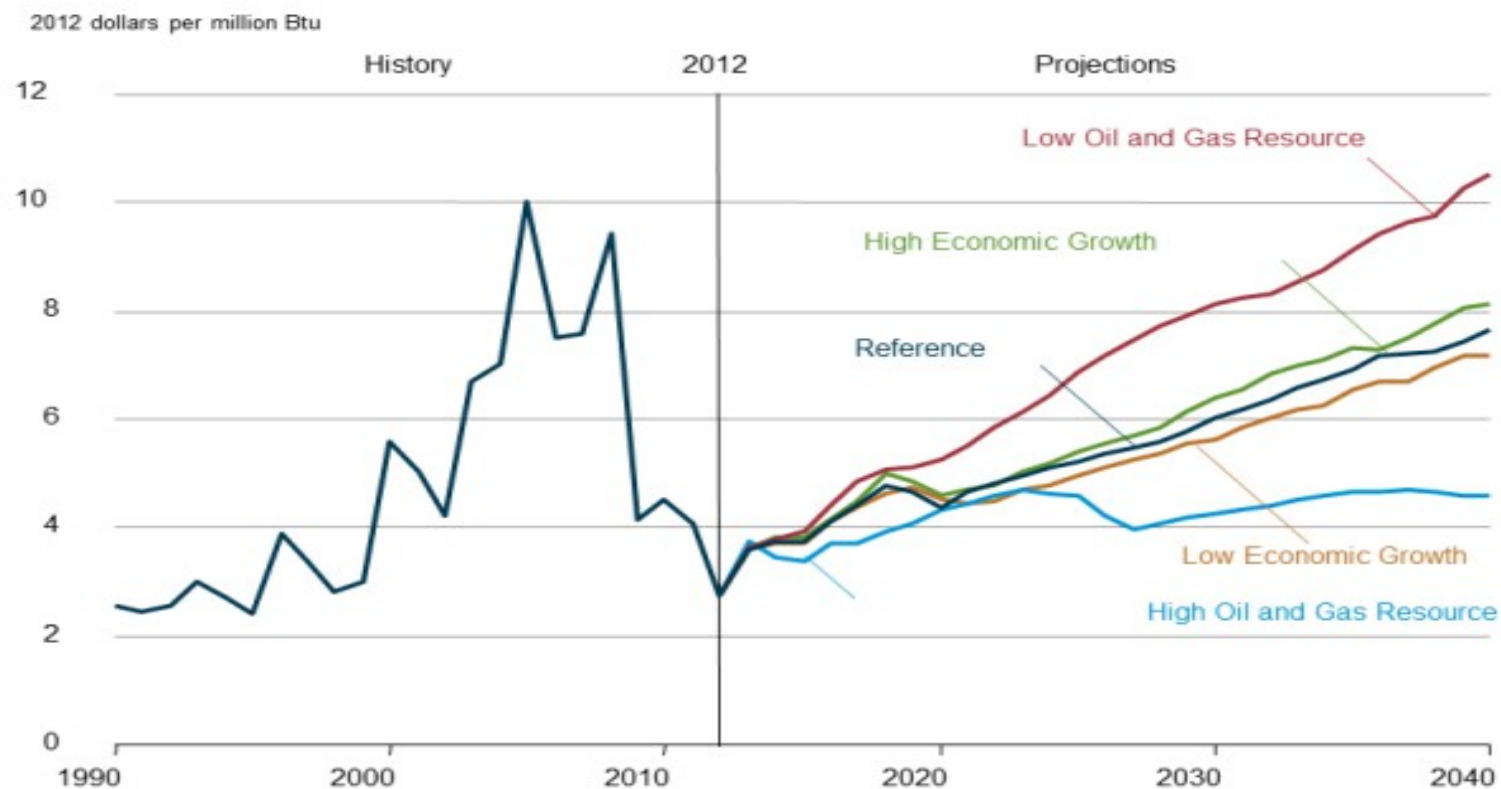
Data from the U.S. Energy Information Administration (EIA)

Where will be the future gas?



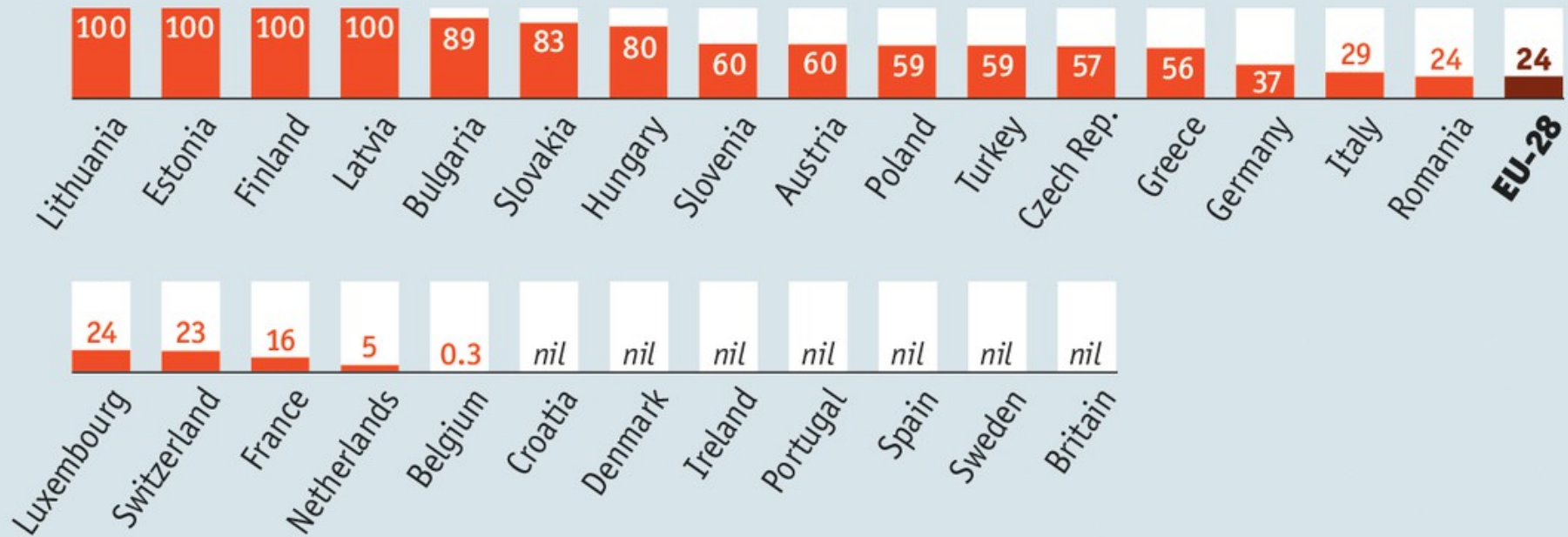
What is going to happen with the price?

Figure MT-41. Annual average Henry Hub spot prices for natural gas in five cases, 1990-2040



What is going to happen to europe?

Gas supplied by Russia, % of total, 2012



Source: Eurogas

The emergency of the TTIP consensus – American shale gas supply => secured and diversified

Differences among countries

EU IMPORTS OF RUSSIAN GAS

Russia is Europe's biggest gas supplier, providing about a quarter of continental demand. A third of gas is exported through Ukraine

EU ENERGY CONSUMPTION OF RUSSIAN NATURAL GAS



58%

Gas consumed in Ukraine that is imported from Russia

66%

Russian gas exported to the EU that transits Ukraine

36%

Germany's gas consumption imported from Russia

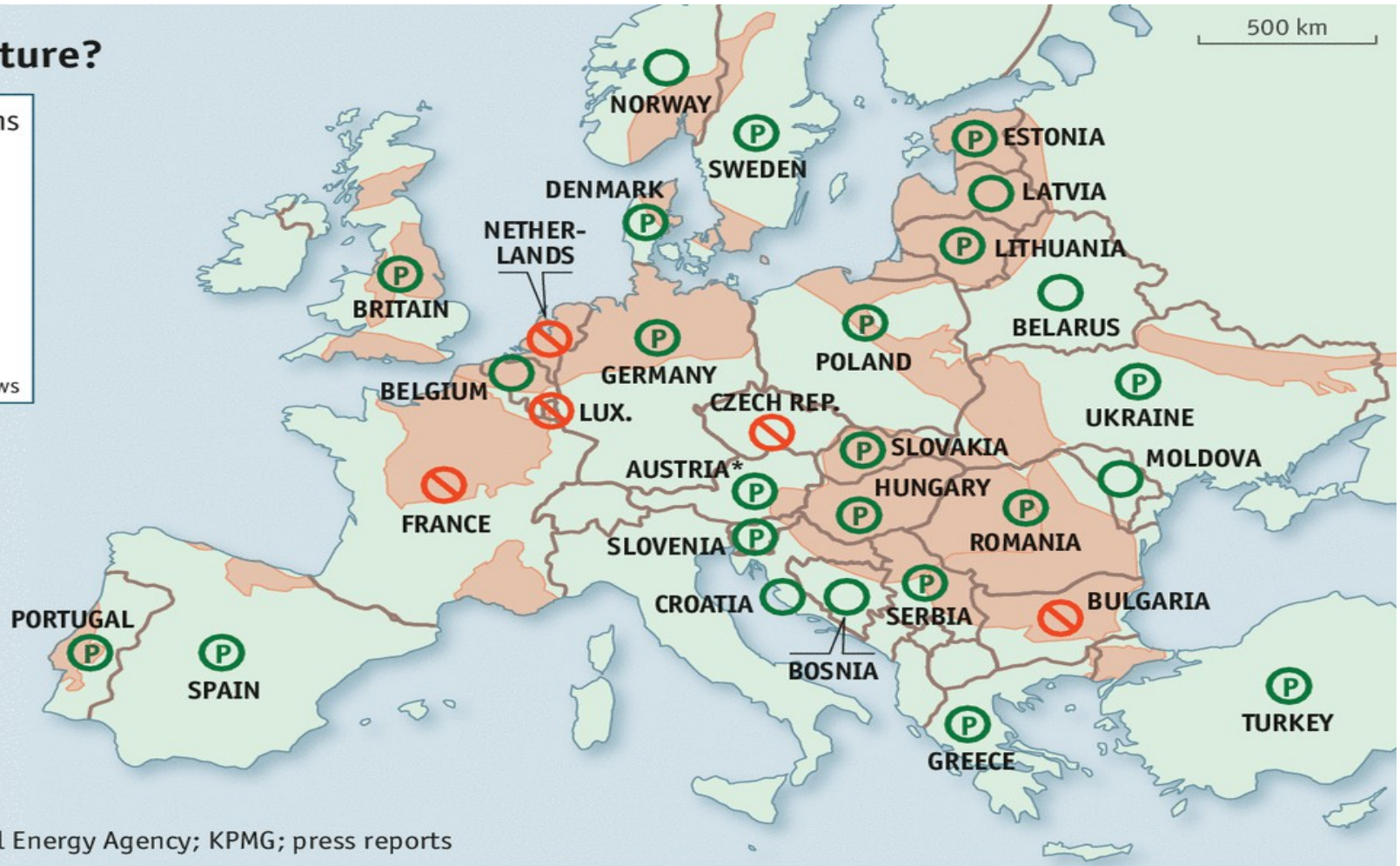
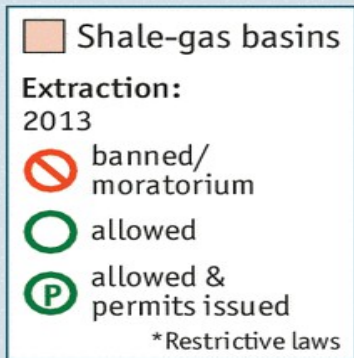
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Until Russia builds a new pipeline - known as South Stream - to Europe under the Black Sea, it would rely on Ukraine for its gas transit

Gazprom deputy head Alexander Medvedev

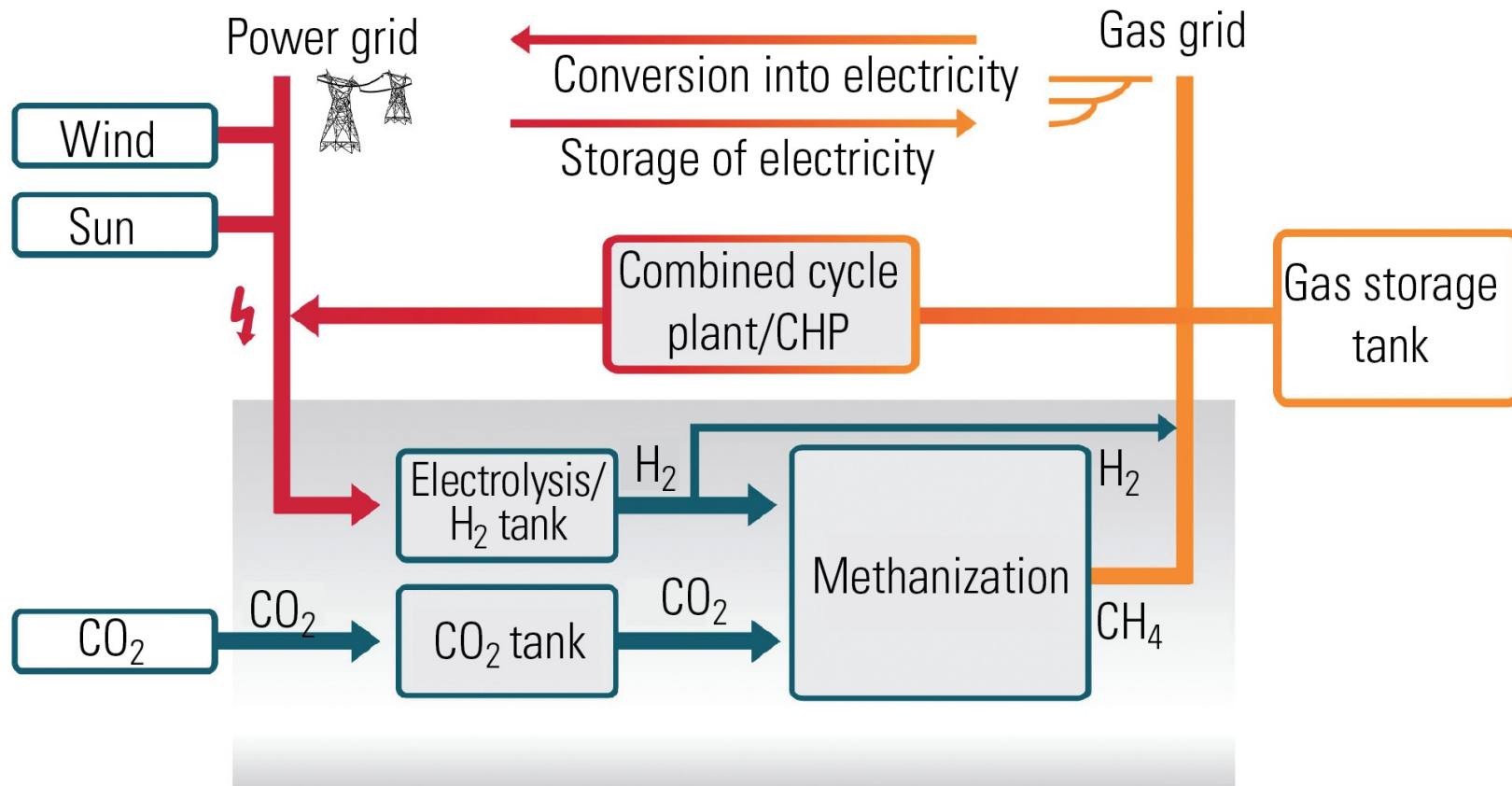
Differences among countries

Fuel for the future?



Sources: International Energy Agency; KPMG; press reports

producing artificial gas?



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