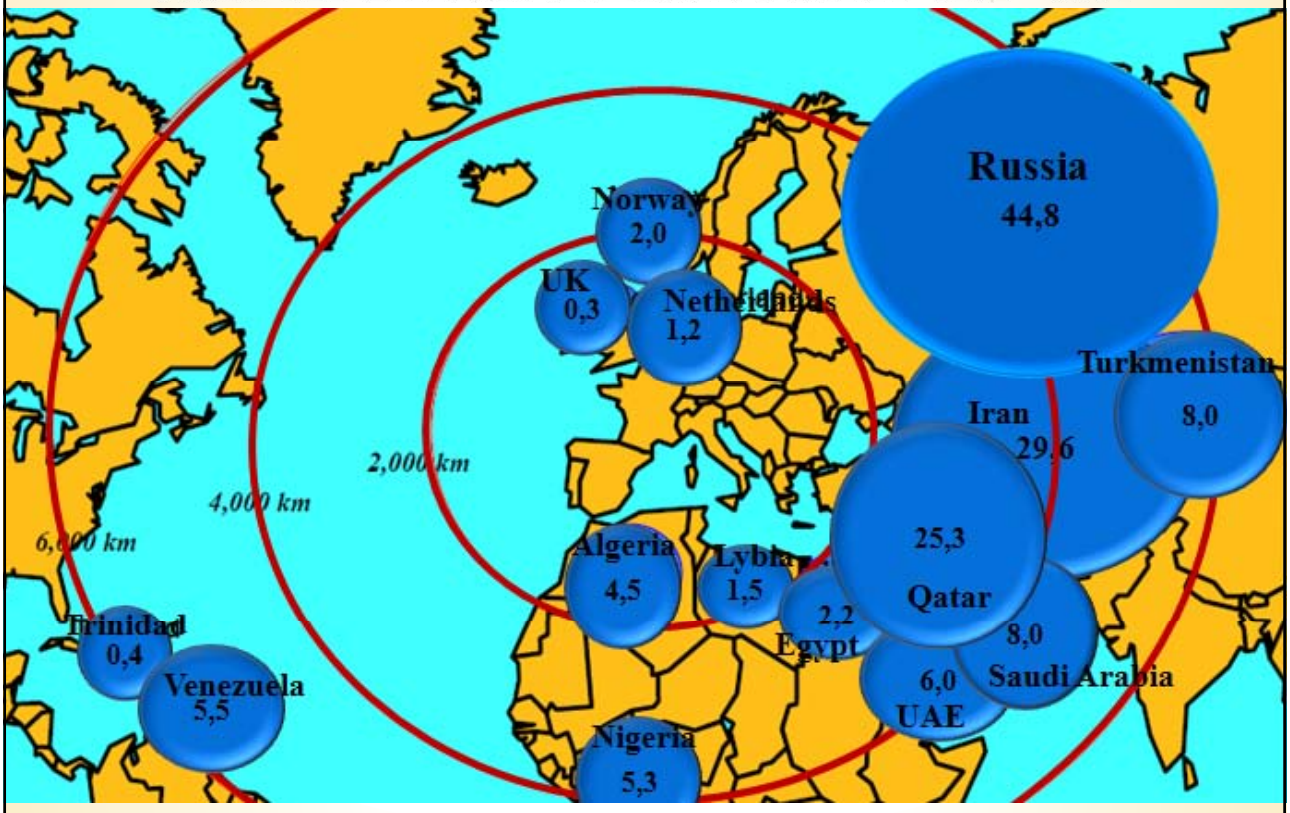
Elena Telegina

Director of the Institute of Geopolitics and Energy Security
Corresponding Member of Russian Academy of Sciences
Dean, International Energy Business Department
Doctor of Economics, Professor
Russian University of Oil and Gas

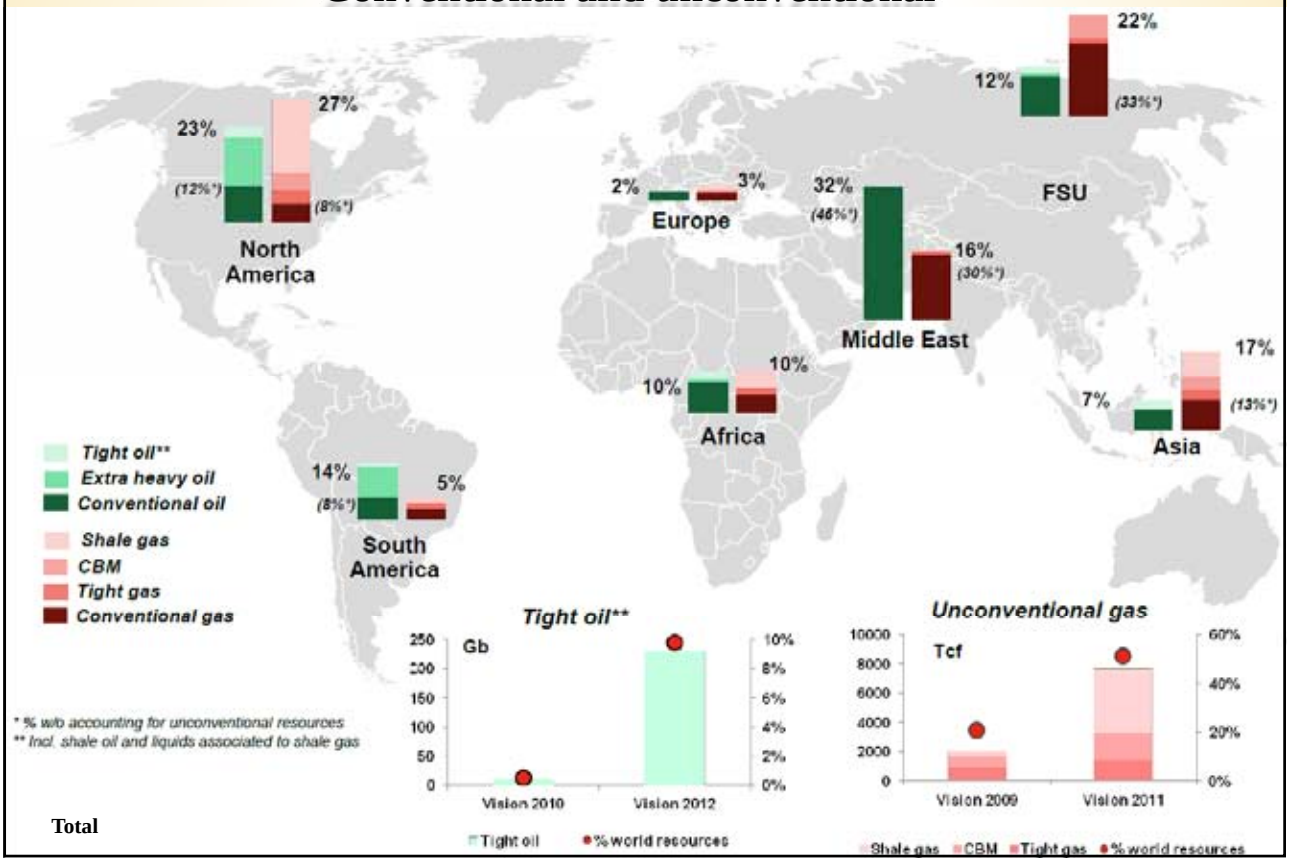
Nice December 2012

Huge gas reserves targeting Europe, tcm, 2011



BP Statistical Review of World Energy 2012, ENGIN

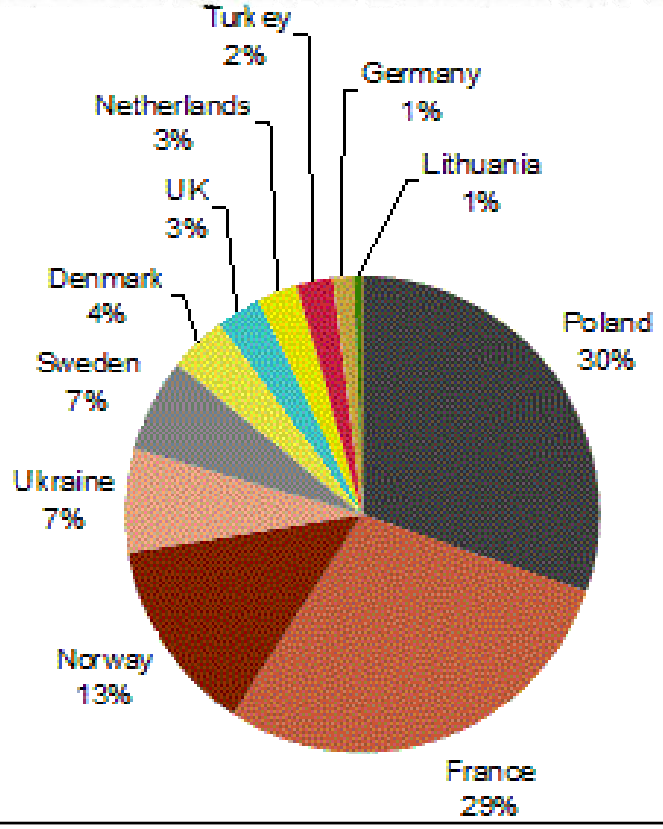
World Oil and Gas: Conventional and unconventional



Total

Shale Gas in Europe

Technically Recoverable Shale Gas Resources by Countries, %, 2011



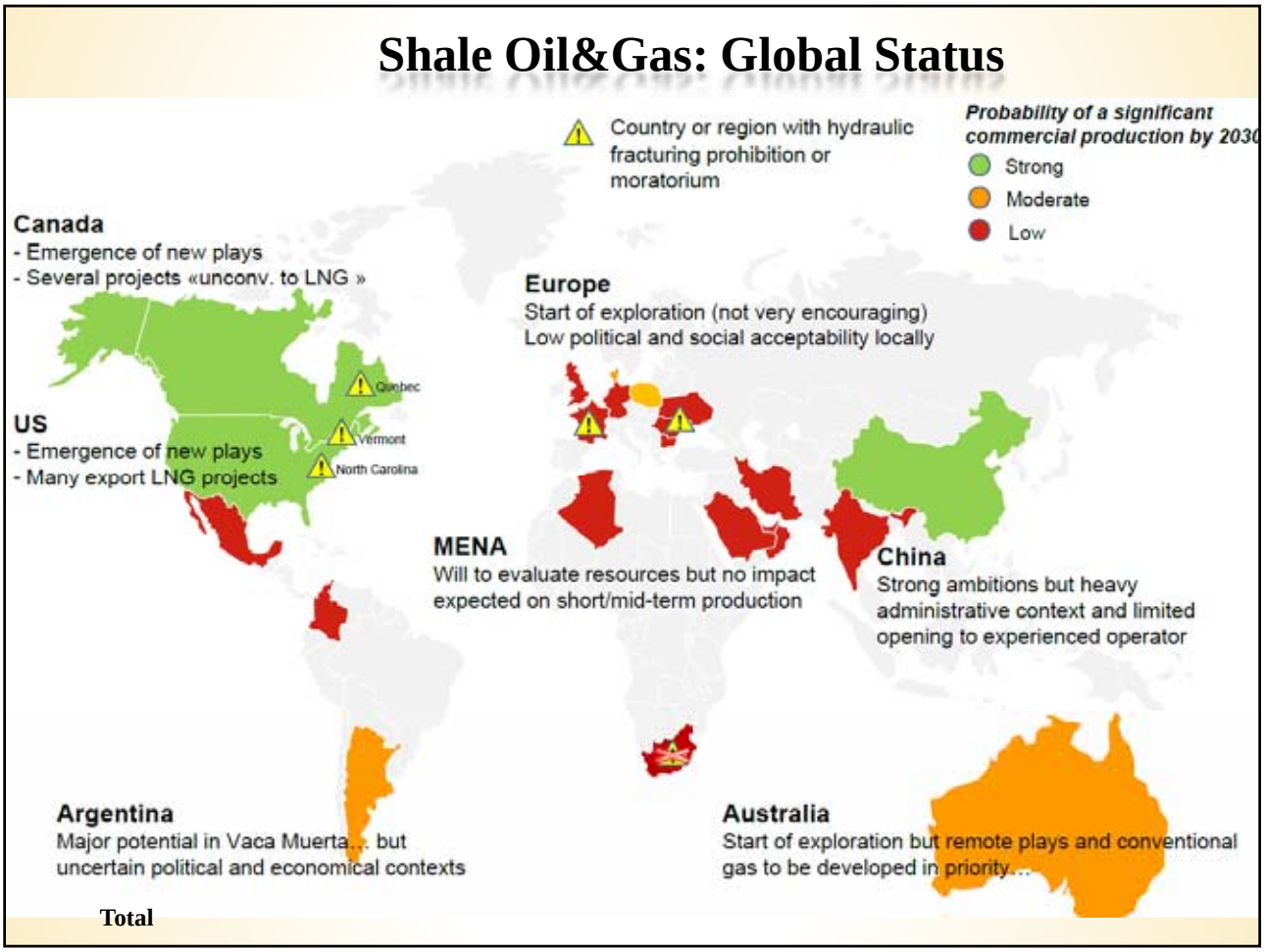
GlobalData, EIA 2012

Risks in the future of shale gas

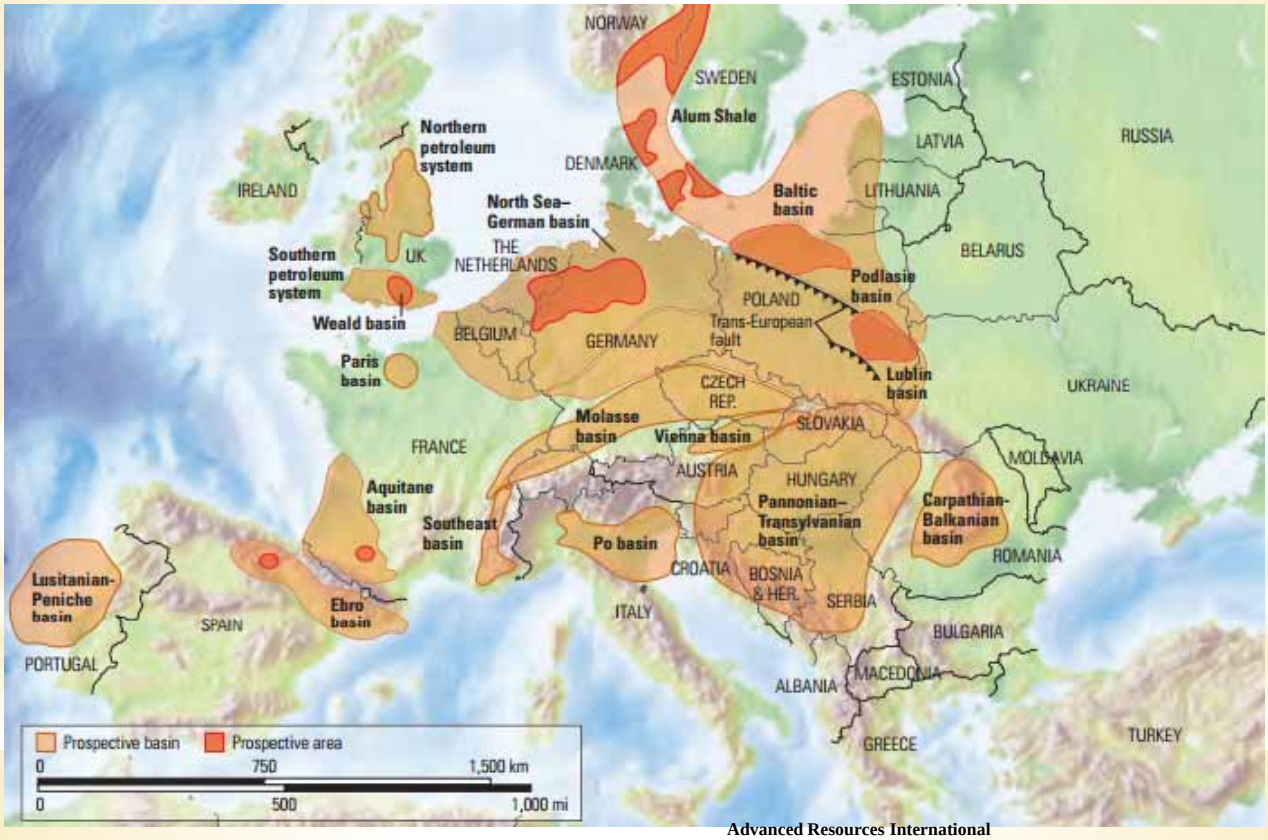
- **Economic and population growth will continue to put pressure on the world's energy supplies.**
- **Due to natural gas price uncertainty, managing costs and financial risks are top priorities**
- **Shale gas may slow investment in renewables and need regulation. Private companies cannot develop a full-scale shale gas industry on their own.**
- **Due to risks, the industry needs to control reputational risks and public opinion.**
- **As shale gas transforms supply and demand of the world's energy mix, geopolitical factors will create risks and challenges.**

ENGIN,KPMG

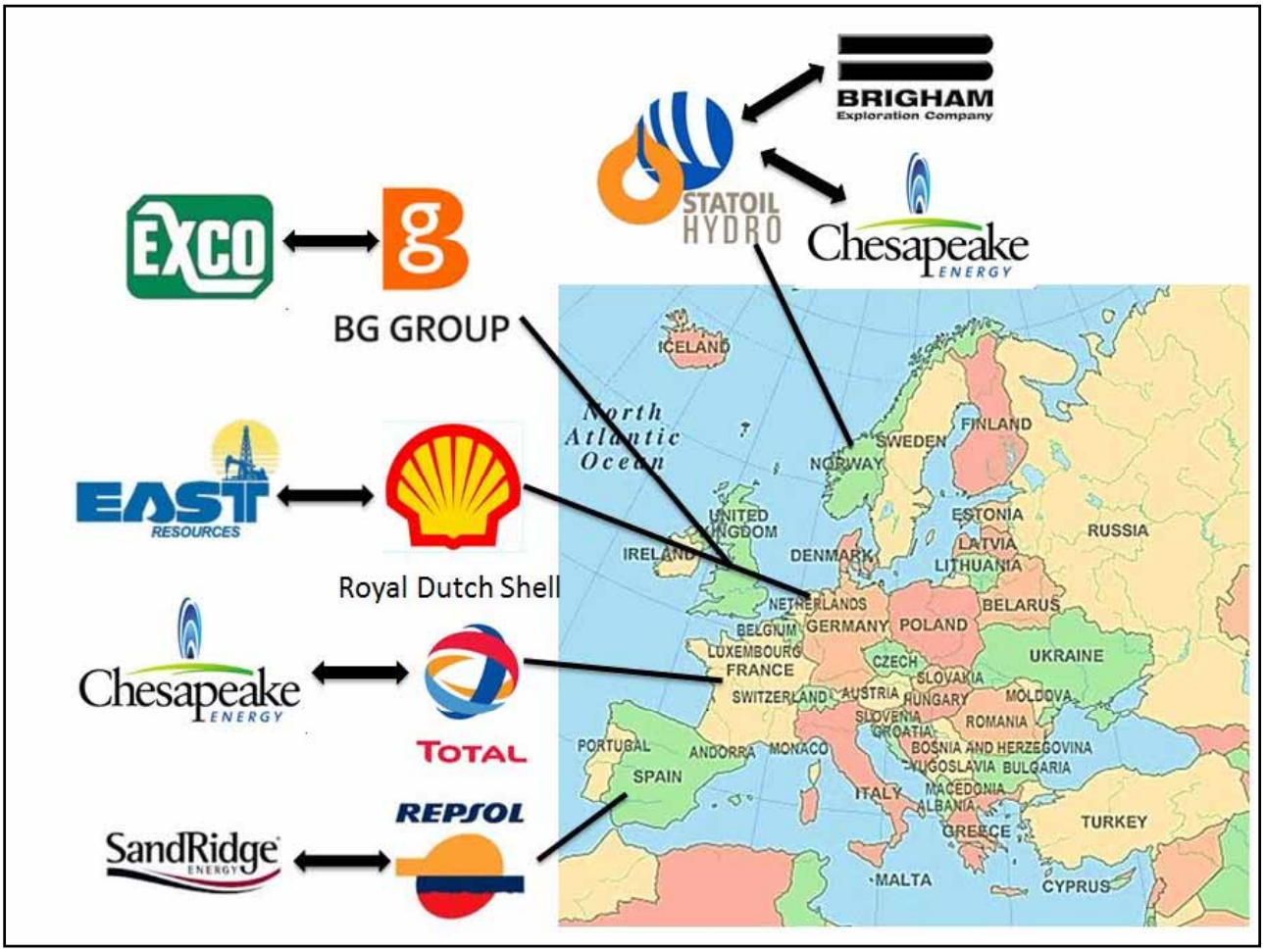
Shale Oil&Gas: Global Status



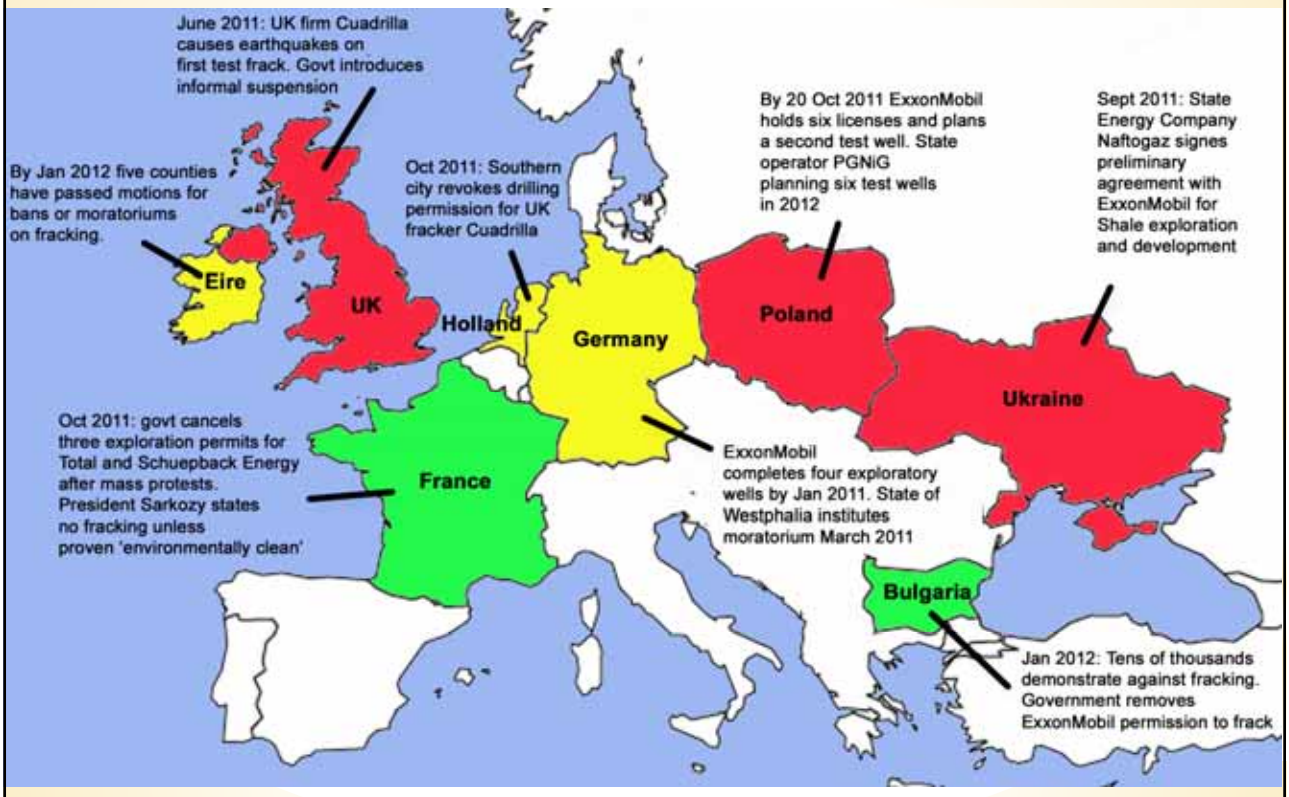
European Shale Basins



Advanced Resources International

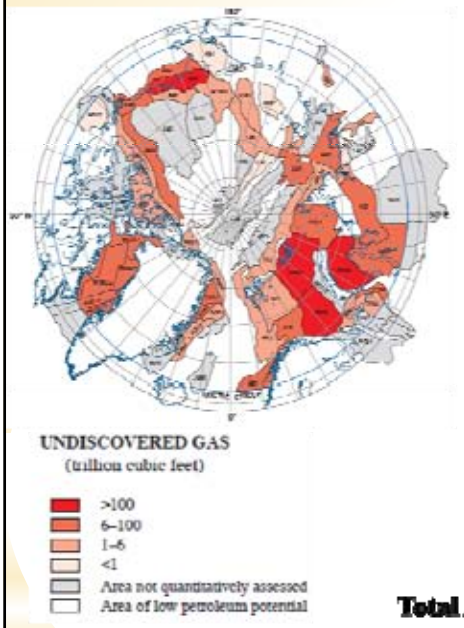

BRIGHAM
Exploration Company
STATOIL
HYDRO
Chesapeake
ENERGY
EXCO
BG GROUP
EAST
RESOURCES
Royal Dutch Shell
Chesapeake
ENERGY
TOTAL
SandRidge
ENERGY
REPSOL
ICELAND
North
Atlantic
Ocean
SWEDEN
FINLAND
NORWAY
ESTONIA
LATVIA
LITHUANIA
RUSSIA
UNITED
KINGDOM
IRELAND
DENMARK
NETHERLANDS
BELARUS
BELGIUM
GERMANY
POLAND
LUXEMBOURG
FRANCE
CZECH
UKRAINE
SLOVAKIA
SWITZERLAND
AUSTRIA
HUNGARY
MOLDOVA
SLOVENIA
ROMANIA
CROATIA
BOSNIA AND HERZEGOVINA
PORTUGAL
ANDORRA
MONACO
YUGOSLAVIA
BULGARIA
SPAIN
ITALY
MACEDONIA
ALBANIA
GREECE
TURKEY
MALTA
CYPRUS

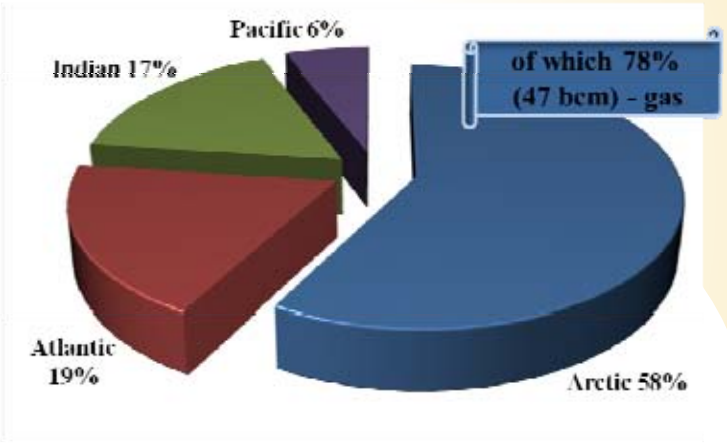
Fracking in Europe – Protests Grow



GenWhy Press

Arctic Gas Resources

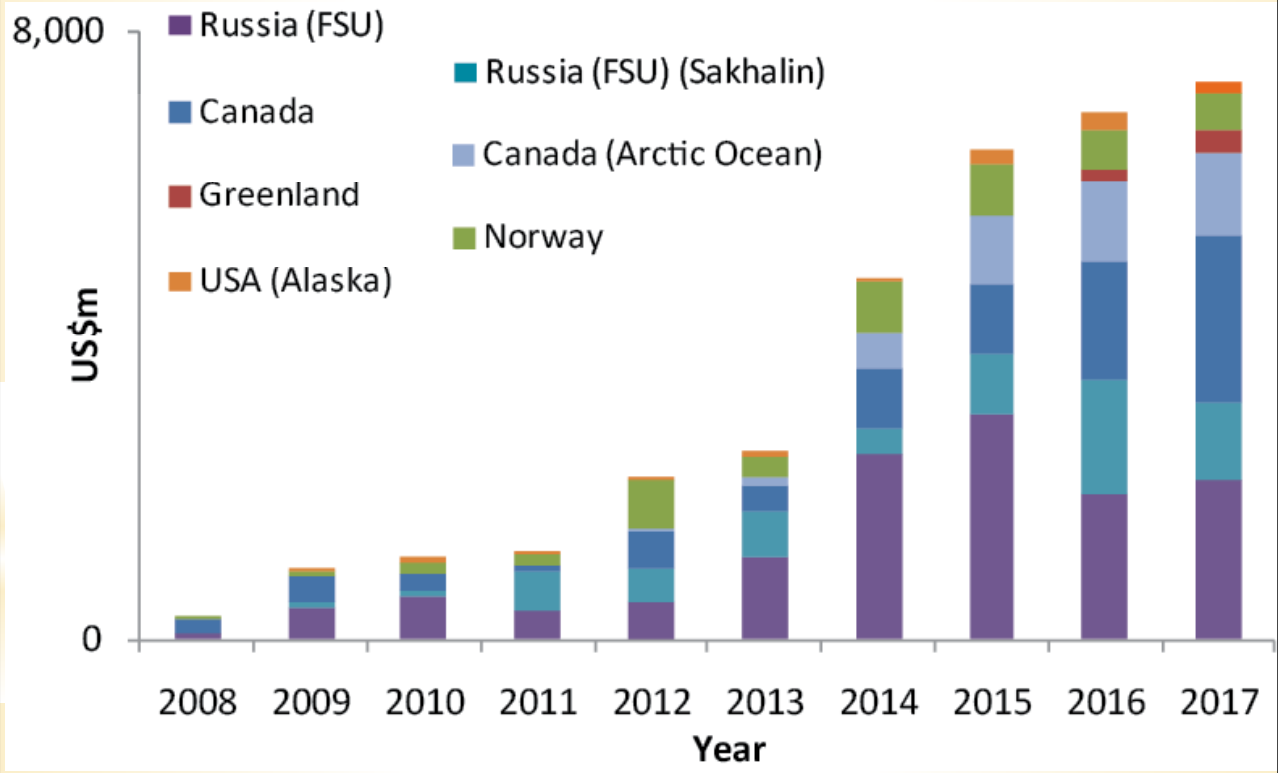




Total Arctic hydrocarbon resources - about 200 bln toe
Probable gas resources – about 26% from current proven gas resources
Probable oil resources – about 7% world proven oil resources

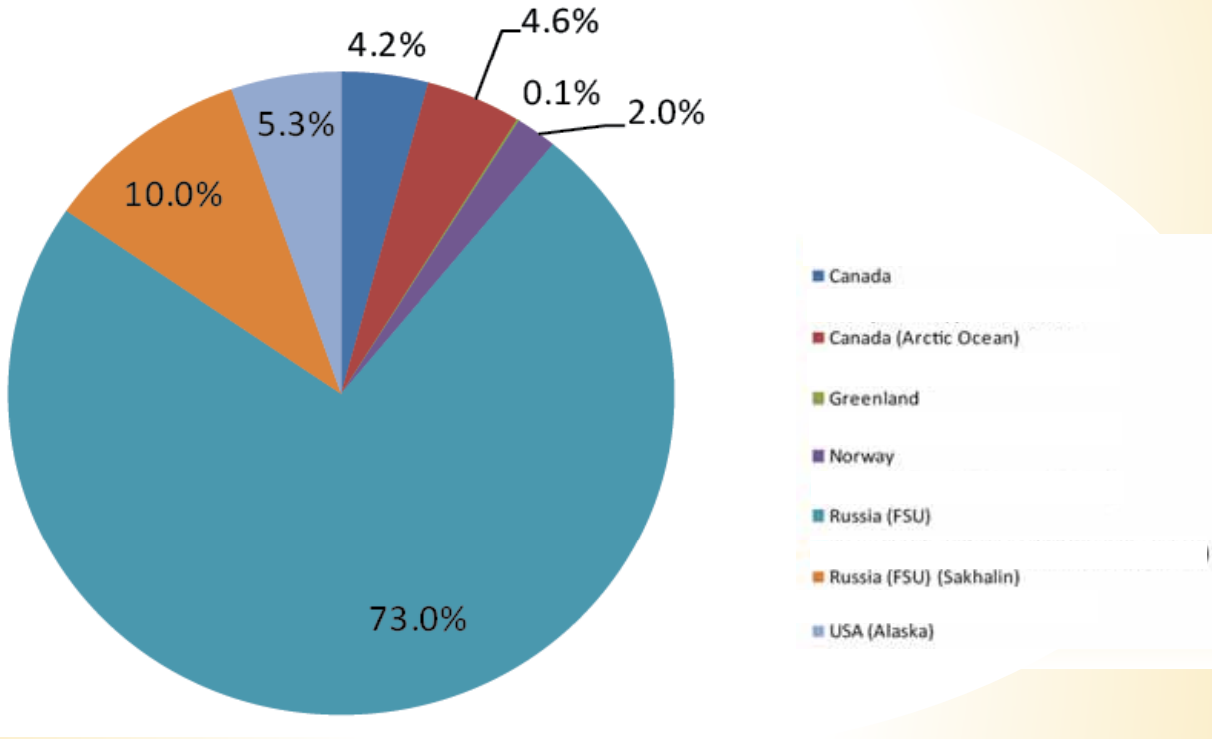
Final Report U.S. Geological Survey Oil and Gas Resource Assessment of the Russian Arctic, 2010, ENGIN

Forecast for Offshore Oil and Gas Capex in the Arctic and Sub-Arctic Regions, 2008-2017



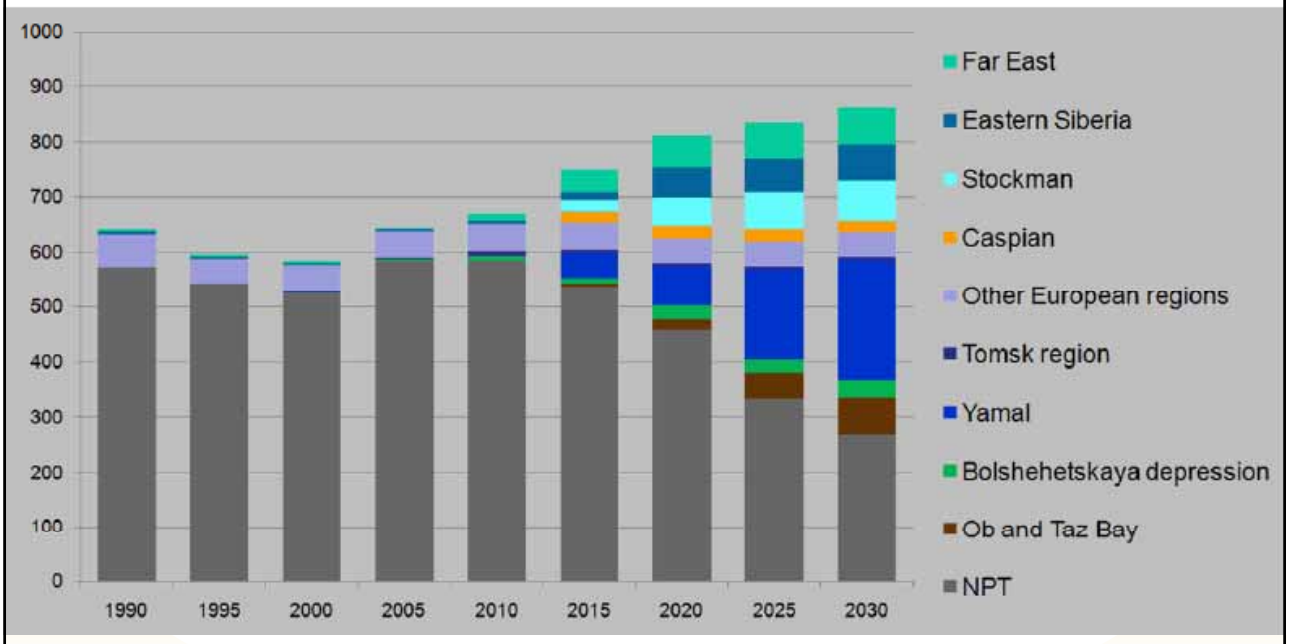
ENGIN, Infield Systems Data

Share of Offshore Hydrocarbon Reserves by Country in Arctic and Sub-Arctic Regions



ENGIN, Infield Systems Data

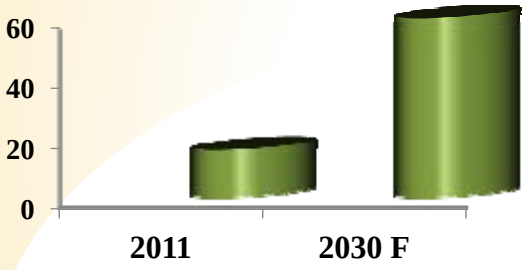
Russian Gas Production, Bcm



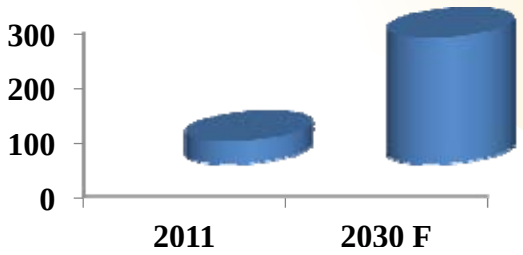
Gazprom, ENGIN

Russian Oil&Gas Shelf Production

Oil, mln t



Gas,Bcm



Planned Fiscal Regime for Shelf Projects

Category	Shelf	IRR, %	Royalty,%
1	Baltic and Azov Seas	16,5	30
2	Black Sea Shallow shelf	18,5	15
3	South of Barents and Okhotsk Seas	20,5	10
4	North of Barents and Okhotsk Seas and Eastern Arctic	22	5
*	Continental shelf, Caspian Sea	16-22	5

Russian Minenergo, Government, ENGIN

ROSNEFT – ExxonMobil Strategic Cooperation, 2012

ROSNEFT

ExxonMobil

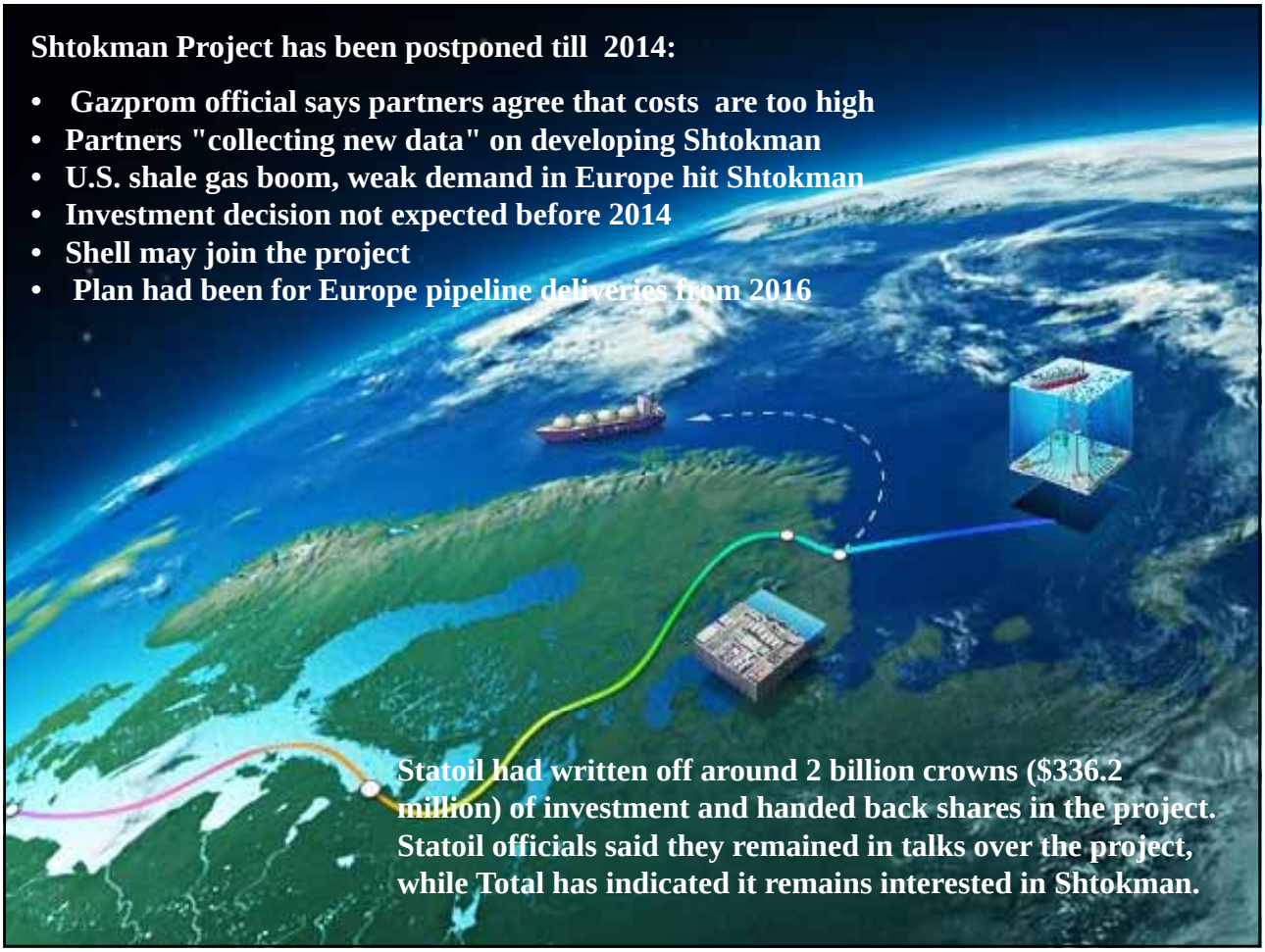
30 % in:

- **West Texas Unconventional Exploration,**
- **Gulf of Mexico deepwater Exploration,**
- **Cardium (Alberta, Canada) Tight Oil Development**

Joint cooperation in:

- **Kara Sea**
- **Black Sea**
- **Tight oil in Western Siberia**
- **Offshore Arctic**
- **Research and Design Center**

The initial cost of preliminary exploration on Russian shelf is estimated at over US $3.2 billion.


Shtokman Project has been postponed till 2014:
• Gazprom official says partners agree that costs are too high
• Partners "collecting new data" on developing Shtokman
• U.S. shale gas boom, weak demand in Europe hit Shtokman
• Investment decision not expected before 2014
• Shell may join the project
• Plan had been for Europe pipeline deliveries from 2016
Statoil had written off around 2 billion crowns ($336.2 million) of investment and handed back shares in the project. Statoil officials said they remained in talks over the project, while Total has indicated it remains interested in Shtokman.


Thank you for your attention!