Emerging Technologies and Geopolitical Conflict

Governance of Emerging Technologies 2016

May 24, 2016

Brad Allenby

President's Professor of Civil, Environmental, and Sustainable Engineering

Lincoln Professor of Engineering and Ethics

ASU Ira A. Fulton school of engineering

ARIZONA STATE UNIVERSITY

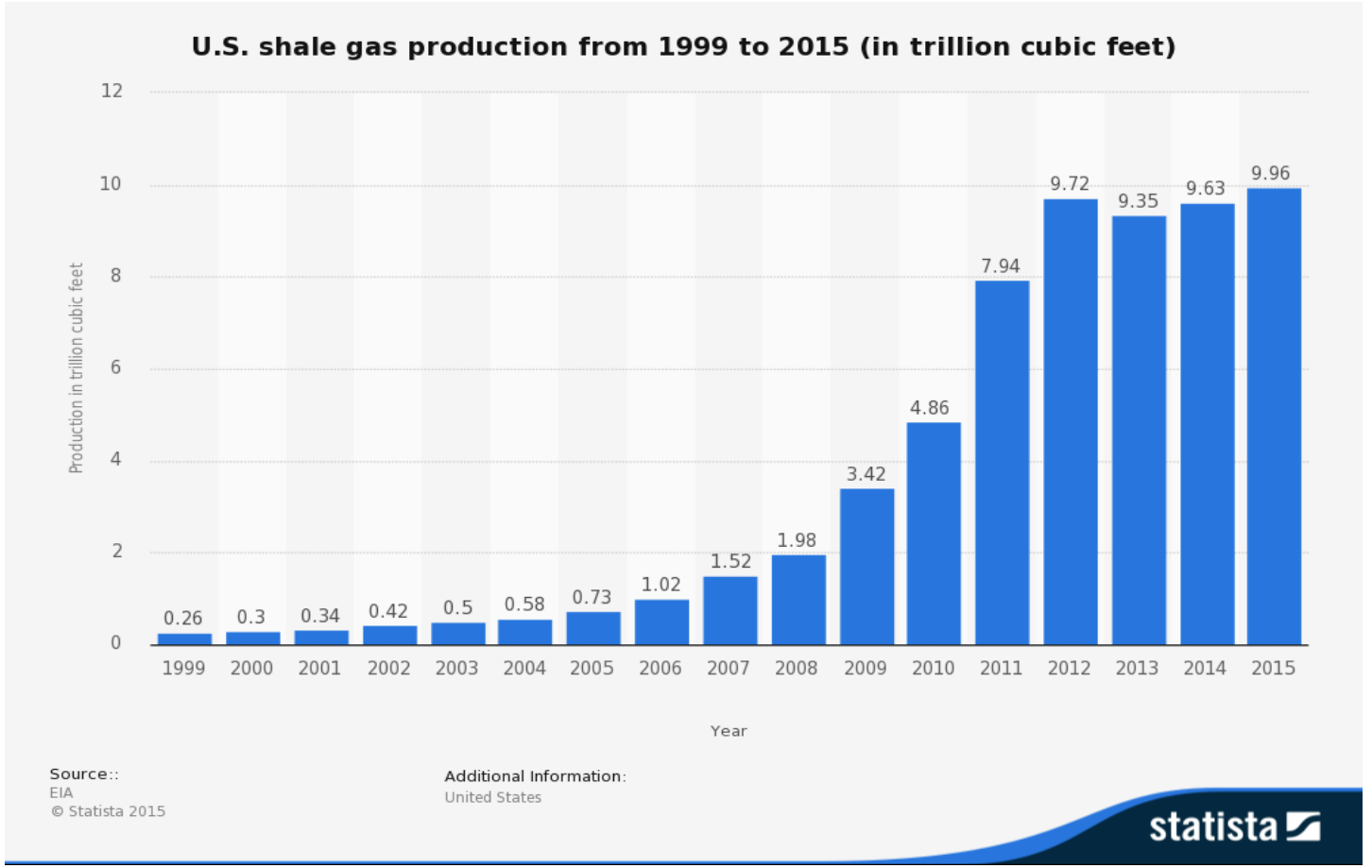
CESEM

Center for Earth Systems Engineering and Management

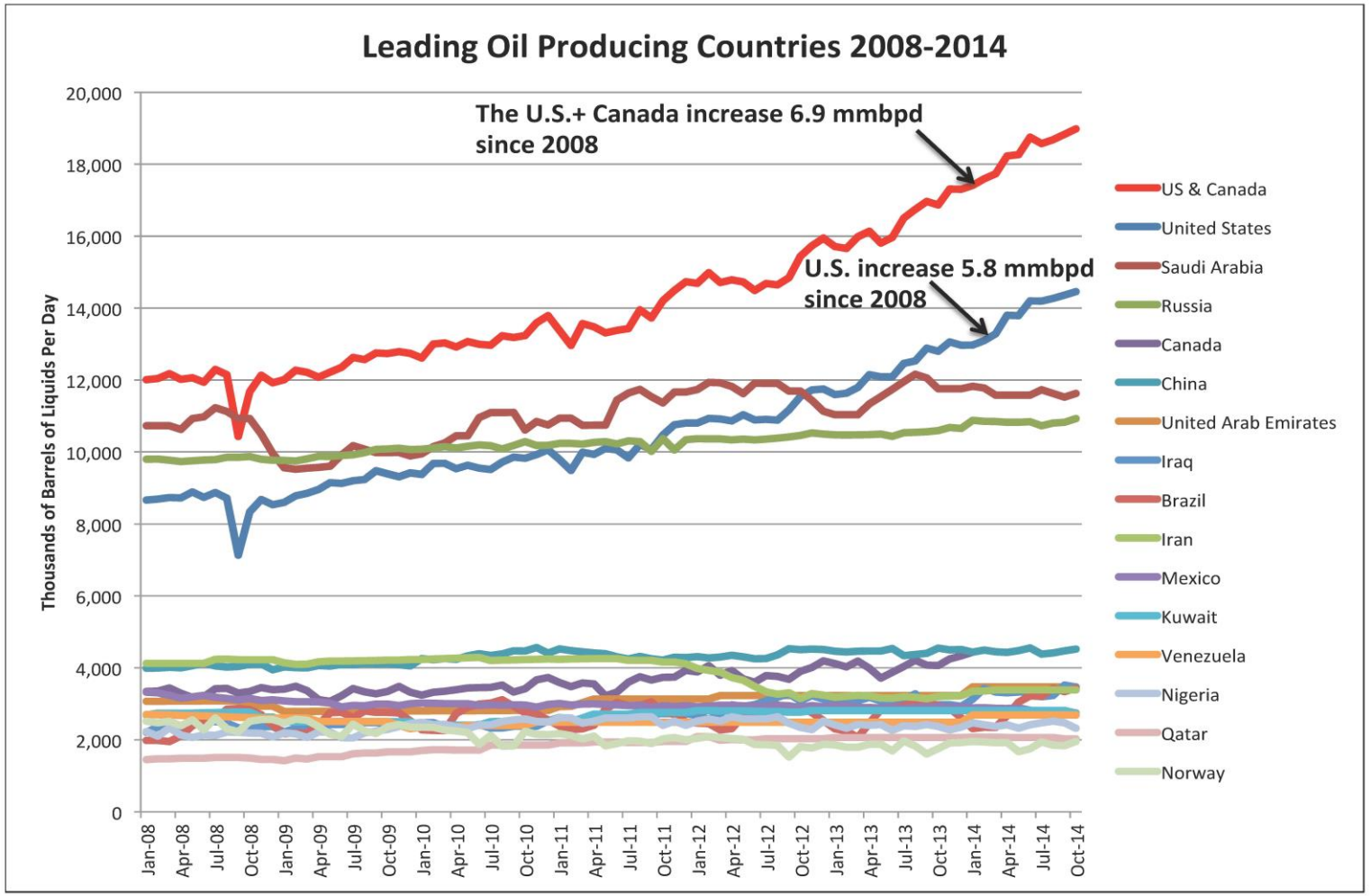
Themes

- Any emerging technology that's powerful enough to be interesting will have significant geopolitical implications that are unpredictable a priori
- Fracking and Military AI case studies show how poorly we understand this, and how badly our institutions respond to the challenge
- And it's important because we live in a world of emerging technologies and on-going, inevitable conflict

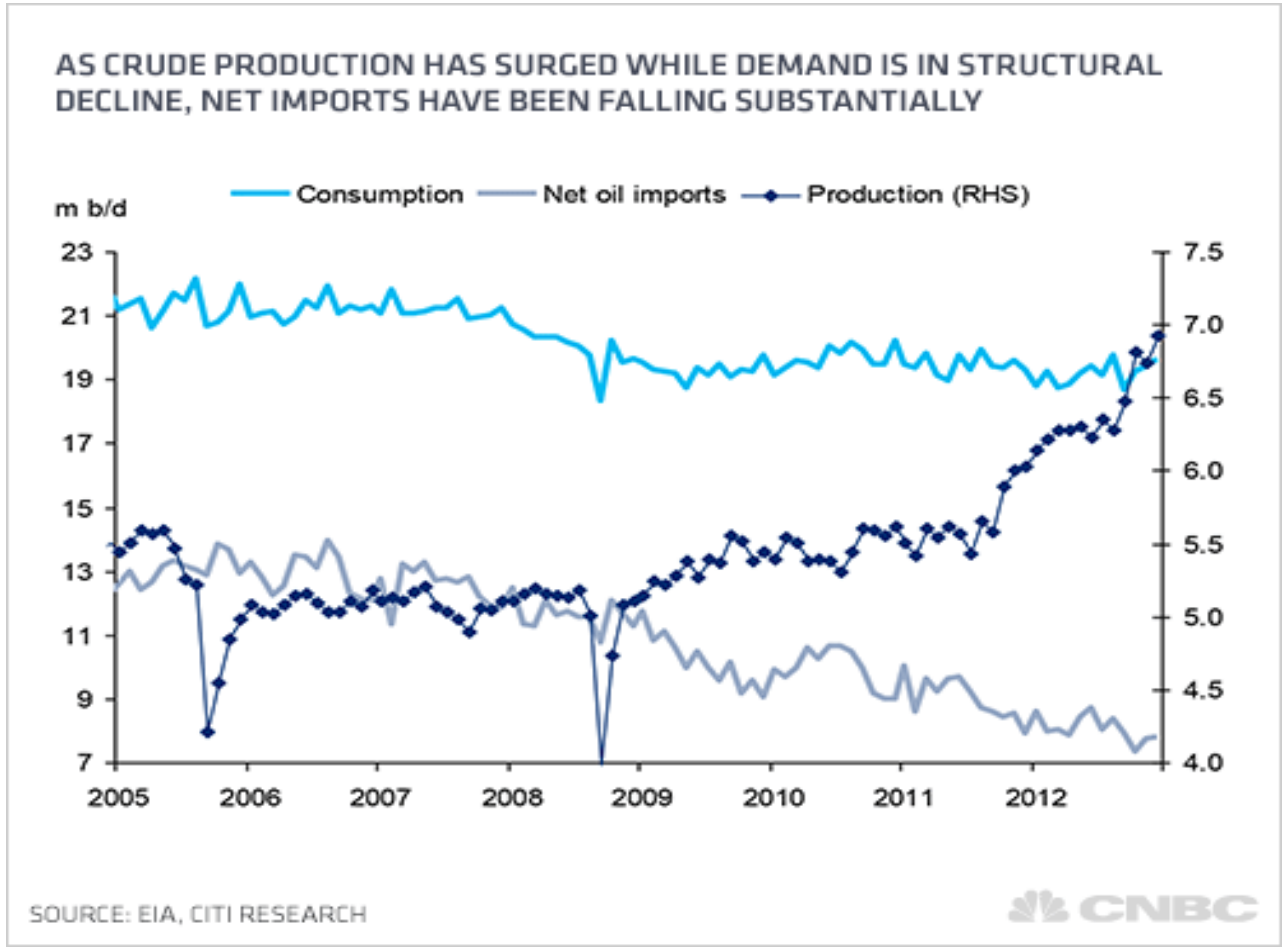
Fracking: US Gas Production Increase



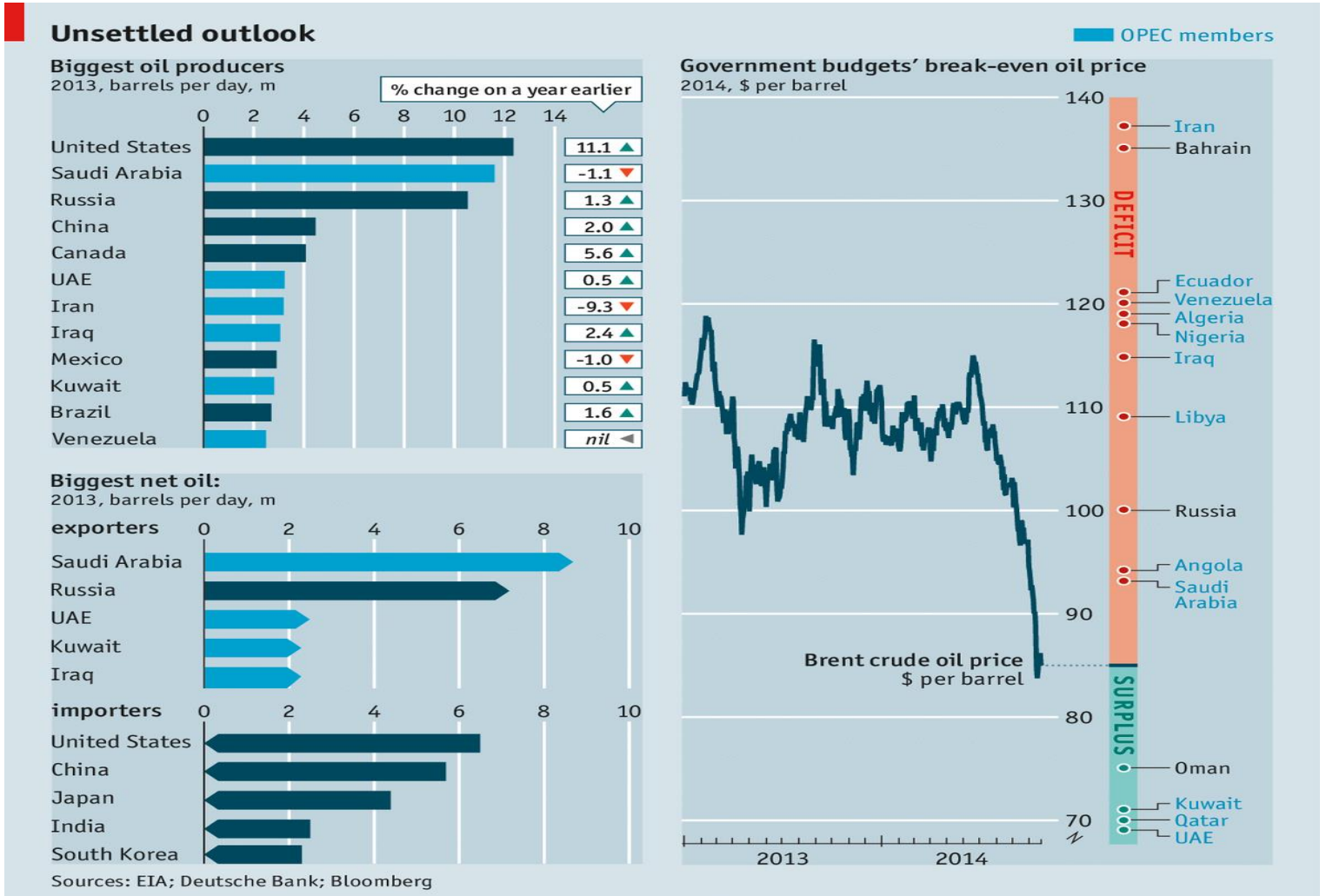
Fracking: US as Swing Oil Producer



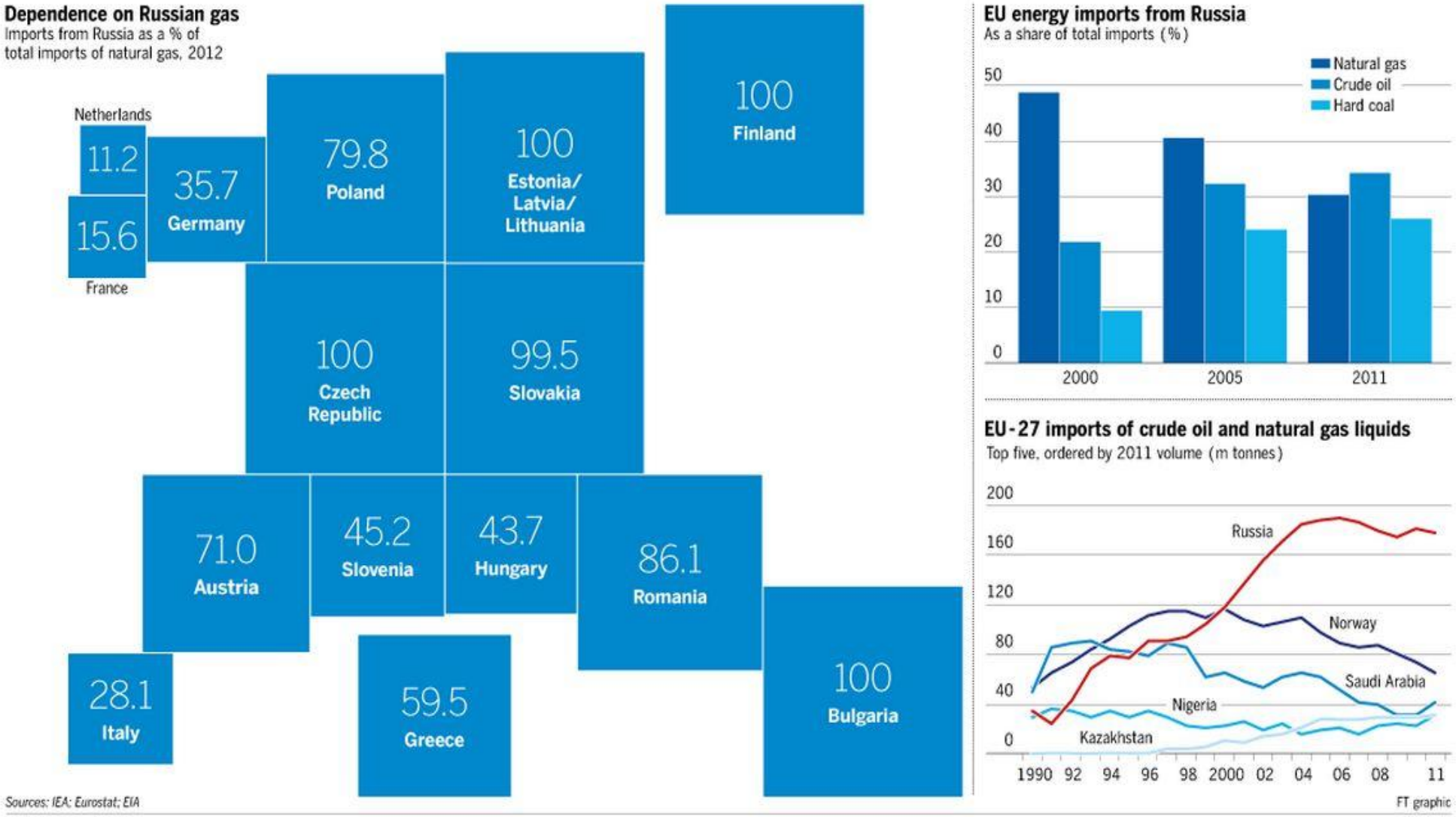
Fracking: Enhanced US Energy Security



Fracking Impacts on Global Balance of Power

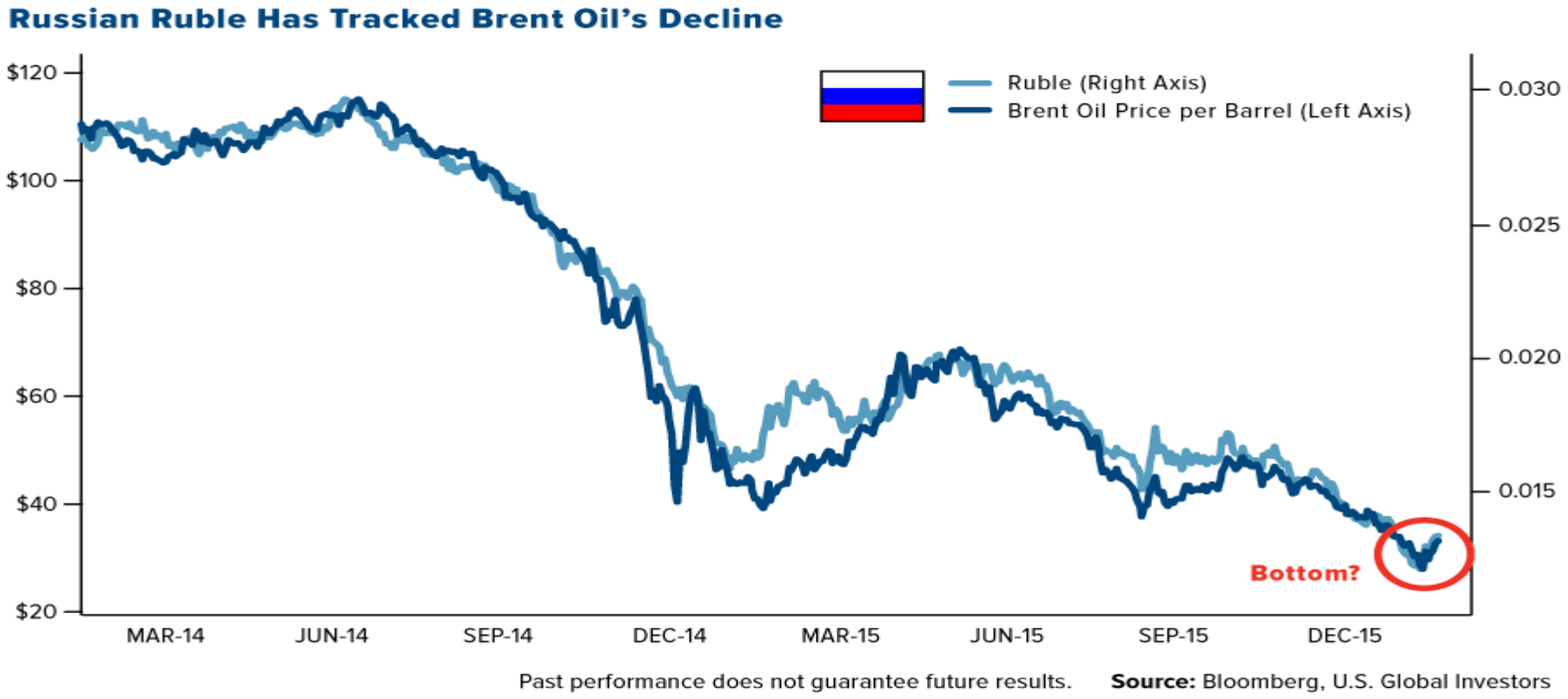


Europe's Dependency on Russian Energy



Oil Price and Strength of Ruble

- Oil and natural gas sales accounted for 68% of Russia's total export revenues in 2013 (EIA)



Fracking Issues in Public Dialog

- Lots of discussion on environmental and economic implications
- Security: not so much . . . And usually in terms of energy independence
- "wielding power or gaining influence abroad – through anti-establishment political parties, disgruntled minority groups, media outlets, environmental activists, supporters in business, propagandist "think-tanks", and others – has become part of the Kremlin's hybrid-war strategy . . . . Russia's most surprising allies, however, are probably Europe's Greens. They are opposed to shale-gas fracking and nuclear power – as is Moscow, because both promise to lessen Europe's dependence on Russian fossil fuels." Russia has been accused of sophisticated efforts to hobble fracking in Europe . . .

"From Cold War to Hot War," *The Economist,* 14 February 2015, pp. 19-22.

AUTONOMOUS WEAPONS: AN OPEN LETTER FROM AI & ROBOTICS RESEARCHERS

- “We therefore believe that a military AI arms race would not be beneficial for humanity. There are many ways in which AI can make battlefields safer for humans, especially civilians, without creating new tools for killing people.”
- “In summary, we believe that AI has great potential to benefit humanity in many ways, and that the goal of the field should be to do so. Starting a military AI arms race is a bad idea, and should be prevented by a ban on offensive autonomous weapons beyond meaningful human control.”
- Letter sponsored by Future of Life Institute, begun July 28, 2015, and signed by over 20,000 people.

Military AI

- Definitional issue: what is “AI”? Signers undoubtedly understand this is an ambiguous term; in discussions of military technologies, some have said that land mines – which sense environment, and act based on that input – are form of AI.
- Definitional issue: “military”?
- References to “autonomous weapons” suggest a traditional definition of conventional military technologies, institutions, and conflicts.
- Concerns framed in terms of universalist Western values.

Hybrid and Unrestricted Warfare

- Russia: Invasion through narrative
- "The focus of applied methods of conflict has altered in the direction of the broad use of political, economic, informational, humanitarian, and other nonmilitary measures – applied in coordination with the protest potential of the population. All this is supplemented by military means of a concealed character, including carrying out actions of information conflict and the actions of special-operations forces. The open use of forces – often under the guise of peacekeeping and crisis regulation – is resorted to only at a certain stage, primarily for the achievement of final success in the conflict."

General Valery Gerasimov, "The Value of Science in Prediction," *Voenno-Promyshlennyi Kur'er* (The Military-Industrial Courier) (trans. Rob Coalson, and available at https://inmoscowsshadows.wordpress.com/2014/07/06/the-gerasimov-doctrine-and-russian-non-linear-war/) (2013).

Hybrid and Unrestricted Warfare

- Chinese Unrestricted Warfare: “it is no longer possible to rely on military forces and weapons alone to achieve national security in the larger strategic sense . . . . Obviously, warfare is in the process of transcending the domains of soldiers, military units, and military affairs, and is increasingly becoming a matter for politicians, scientists and even bankers. . . . Think about the Lockerbie air disaster. Think about the two bombs in Nairobi and Dar es Salaam. Then think about the financial crisis in East Asia. . . . This is warfare in the age of globalization. . . . . financial war has become a ‘hyperstrategic’ weapon that is attracting the attention of the world. This is because financial war is easily manipulated and allows for concealed actions, and is also highly destructive.”

Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (U. S. Central Intelligence Agency trans. from People’s Liberation Army Literature and Arts Publishing House) (1999).

Russian and Chinese Military Strategy is Heavy on AI, but Not "Military AI"

- Russian and Chinese national security doctrine and strategy both relegate conventional military activities to a secondary role. Sophisticated information and Internet technologies and techniques to a large extent replace conventional military force.
- This is an adaptation to US dominance of conventional military force. Adversaries rely on asymmetric forms of conflict, which are deliberately skewed away from traditional military technologies and institutions.
- Both Russia and China have rejected Western values as universal, so adherence to the letter would not restrict their research or deployment of technologies they felt to be appropriate. (see, e.g., China's "Document 9," 2013, Principle 2: "Promoting 'universal values' [is] an attempt to weaken the theoretical foundations of the Party's leadership.")
- The unintentional effect of the call for restrictions on military AI, therefore, is to favor asymmetric powers – such as China and Russia - and those that reject the values implicit in the letter and its signers, over the US.

Summary

- Any technology powerful enough to be interesting will have differential effects on geopolitical power
- Especially in Europe and the US, we are conditioned to critique environmental and economic dimensions of emerging technologies – not so much military or security (e.g., fracking)
- Solution is not to stifle existing debate, but to deepen it: at this point, too often superficial and driven by simplistic ideological analyses, and clear geopolitical/security implications ignored.

Summary

- Deeper methodological issues lurk: how, for example, to balance environmental versus security costs and benefits? How to overcome policy and academic aversion to military and security considerations?
- Institutions reify ad hoc, partial, and arbitrary analyses of emerging technologies. In age of environmental, social, and economic challenges, accelerating technological evolution, and increasing long term geopolitical conflict, we must do better.
- The Anthropocene requires adults. Cf: politics in America, Europe, Russia, China, Brazil, and so forth . . .

ASU Ira A. Fulton school of engineering
ARIZONA STATE UNIVERSITY

“He, only, merits freedom and existence
Who wins them every day anew.”

(Goethe, 1833, *Faust*, lines 11,575-76)