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RICE UNIVERSITY

JOINT HARVARD/RICE
GEOPOLITICS OF NATURAL GAS PROJECT
RESEARCH PROTOCOL

18 MAY 2011

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Introduction

One of the most striking developments in the global energy landscape of the last five years has been the dramatic change in the prospects for natural gas. While earlier forecasts by the International Energy Agency and respected industry groups anticipated an increase in the global use of gas, the enthusiasm for this fuel source is gaining momentum and the likelihood that natural gas will play a major, strategic role in the world economy is growing. The new gusto for natural gas is in part a product of its many attractive attributes, particularly its relatively low-carbon emissions when compared with other fossil fuels. But the enthusiasm also stems from a new awareness that natural gas resources are more abundant and more economical to develop than previously thought.

The world is seeing, and will continue to see, significant increases in commercially viable natural gas resources. Already, the rapid development of technology allowing the recovery of natural gas bound up in shale formations has caused what many are calling a revolution. By some estimates, there is as much as 1,000 trillion cubic feet (tcf) of technically recoverable shale gas in North America alone, which is enough to supply the nation's natural-gas needs for the next 45 years. Shale gas formations are also being explored elsewhere in the world, with potential in Europe estimated as high as 200 tcf and shale gas discoveries being discussed in China, Australia, and elsewhere. The enormity of the global shale gas will have significant geopolitical ramifications and exert a powerful influence on U.S. energy and foreign policy. Development of large conventional resources from emerging natural gas producing countries such as Iraq, Turkmenistan, and Australia will also play a major role in shifting the geopolitical landscape of the global gas market.

Increasingly, governments, media, and academic researchers are recognizing the importance of this new age of natural gas. The Baker Institute-Stanford University 2006 study on the geopolitics of natural gas concluded that the expansion of the global trade in liquefied natural gas (LNG) and cross border natural gas pipelines would dramatically transform the nature of the natural gas market from three distinct regionally disconnected markets to a globalized, commoditized market increasingly influenced by geopolitical trends and events. MIT's recent study *The Future of Natural Gas* concluded that natural gas will play a leading role in reducing greenhouse-gas emissions over the next several decades, largely by supplanting coal.

The extent to which natural gas will meet these high expectations will depend on a wide variety of factors, including geopolitical conflict, market structure, and environmental policies. In a new two year study, Harvard University's Kennedy School and the James A. Baker III Institute for Public Policy will explore the variety of ways in which

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international politics and security – both within and between countries – will shape the extent to which *both* conventional and unconventional gas will be brought to global and domestic markets in the next 30 years. We posit that it is geopolitics more than geology that will decide whether new gas is brought on line, which infrastructure projects are built, and, as a result, how markets and trade will evolve. This point is starkly illustrated by the reality that many of the countries best-endowed with natural gas are *not* currently significant producers or exporters of gas. The vision of a world significantly powered by natural gas will only be realized if the fractious politics of many of the best resource-endowed countries change.

Study Objectives

While not disregarding the importance of economics and geology in determining the future of natural gas, this study pays particular heed to the geopolitical dimensions of natural gas. It appreciates that the interplay between international politics, security, and energy is multi-directional and therefore seeks to:

- 1) *Identify the political, economic, geopolitical trends and realities that could frustrate or facilitate increases in global gas consumption and production in the decades ahead.* The project seeks to go beyond the acknowledgement that such factors will play a large role in the future to better identify just what geopolitical trends are most problematic if not arrested and which ones must continue if natural gas is to meet the high expectations it has generated among analysts and policymakers today. For instance, what pipeline projects will become feasible – and which will remain “pipe dreams” – as politics change? Will Iran’s growing isolation from the international community continue and, if so, will its vast conventional gas resources remain undeveloped? Will political change come to Venezuela and, if so, how will it affect prospects for Venezuelan gas? Will Russia and China overcome their enduring suspicion of one another to invest heavily in energy infrastructure linking the two countries? Will China meet its ambitious targets to double the share of natural gas in its energy consumption by 2015? Will environmental concerns stymie the shale gas in the United States? Will other countries develop their own shale resources fully?
- 2) *Anticipate the impact of these geopolitical realities, their implications for domestic or global gas consumption and production, and how they will affect global gas markets.* Will long term contracts for gas continue to be under pressure from the spot markets? Will the gradual integration of current regional gas markets continue, given the most likely geopolitical scenarios? How will LNG markets grow in size and direction? Under what scenarios might the United

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States become a net exporter of natural gas? How will the emergence of massive new unconventional natural gas supplies closer to end-use markets alter the landscape for commercial and geopolitical competition for market share among potential natural gas suppliers? How will global trade in natural gas be affected by new unconventional natural gas supplies in key consuming countries and possible increases in exported supplies from traditional suppliers in the Middle East and Russia?

- 3) *Assess how these changes in the global gas market will then, in turn, affect the geopolitical situation.* Who will be the geopolitical winners and losers of the changing gas picture? What are the implications for Russia's economic and political strength of dramatically changing patterns of global gas trade? Will the U.S. position in the world be strengthened by the country's natural gas situation, as American dominance in oil markets in the last century was a backbone of American global influence? Or will changes create new or different constraints in U.S. foreign policy? Will increasingly complex infrastructure arrangements create new opportunities for those looking to disrupt the global economy? Will changes in gas markets provide opportunities for further economic integration of the rapidly changing Middle East?

Methodology

The project uses a multi-step methodology to map out answers to the above questions.

1. *Case Studies.* The study begins with case studies by experts on the countries most likely to affect gas developments at a global level – by driving either consumption or production patterns. These experts will produce chapters explaining the current political and energy situation and identifying the main drivers of political change and their implications for future energy developments. (See below.)
2. *Modeling.* The project employs Rice's Global Gas Model to anticipate how political and economic developments will affect global gas markets. The project modelers will seek input from the case authors to create a base case, which reflects today's realities. They will then take the expert projections of future political and economic outcomes to create a series of scenarios that collectively represent plausible futures. The project will then use Rice's Global Gas Model to map out what these futures will mean for global gas markets.
3. *Expert Reactions to the Modeled Scenarios.* The project will go the extra step of reconvening its country experts to intensively examine and consider the results of

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the model under different political scenarios. Collectively, the group will debate and discuss the possible geopolitical ramifications of such changes in the global gas market. These discussions will be included as the final section of the eventual book.

Case Frameworks

The countries examined in this project span a wide spectrum of cultures, economic levels, energy interests, and geopolitical circumstances. While the contents and analysis will vary considerably between cases, the project asks all case authors to employ a common framework to examine their countries in order to facilitate comparisons and the compilation/integration of information into the Global Gas Model. Specifically, each case author is asked to include:

1. *A basic overview of the energy situation of the country in question.* This section should include information on resource endowments, consumption and production trends, import/export patterns, the general investment climate, existence of NOCs, relative importance of the government or private sector in the energy business, the infrastructure situation, relevant policy background on energy and climate related matters, institutional arrangements, and relationships with neighbors and the region.
2. *A political overview of the current situation and discussion of political drivers of change.*
3. *An assessment of how the political dynamics described above are affecting energy, particular as it relates to gas:*
 - Political stability: does the country have predictable and peaceful mechanisms for the transfer of power or could it be subject to major upheaval or political disconnect?
 - Projections of economic growth: are there questions surrounding the ability of the country to maintain its current path of growth?
 - Government policy: Is the government heavily involved in the energy sector, either through policies that promote or discourage the use or development of certain energy sources or through its pursuit of other policy goals such as those related to climate? Does the government impose any restrictions or offer any incentives for the use of natural gas in the domestic market? Does the government have any restrictions or specific regulations regarding the export of natural gas?

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- Decision making structures: what groups – ethnic, political, tribal, sectarian or other – are involved in the formulation of policy as it relates to natural resources? How is power shared among these groups? Who makes decisions about long term commitments to infrastructure development? Who has the regulatory role over resource development? What role do domestic politics play in influencing investment strategies and business operations of the energy industry?
- Investment climate: how are resources (financial and otherwise) garnered and allocated to develop gas or build infrastructure to transport it? Does the energy industry require external finance for its resource development? If so, does the energy industry have access to international finance? If so, are there any constraints on the country's access to international finance?
- International obligations: is the country a member of regional or international institutions and does it gain support for its cross border energy pursuits from any such institutions?
- Geography: do geographic or geopolitical realities present any particular constraints or opportunities to gas export or import?
- Regional environment and relations: is the country reliant on other countries either to meet its energy needs or to export its resources? Does this pose any unique problems for resource development?

4. *Scenarios, probabilities, and anticipated implications for energy and gas in particular.*