

## Worldwide Shale Gas Resource Assessment

Event Summary

By: Matthew Ward

On May 5, 2011, the Energy and National Security Program at CSIS hosted Vello A. Kuuskraa, President of Advanced Resources International (ARI), for a roundtable discussion on the results of a joint study with the U.S. Energy Information Administration on a worldwide assessment of shale gas resource potential. Mr. Kuuskraa and his team of researchers completed what they called an 'initial assessment' of some of the world's most promising shale gas plays in 14 regions outside the United States. The presentation focused on key results, the report's scope and methodology and the key assumptions that underlie the results.

Mr. Kuuskraa began his presentation with a brief history of shale gas in the United States, the development of which is seen by many as a 'game changer' for the US energy market, with domestic shale production increasing from 0.39 trillion cubic feet (tcf) in 2000 to 4.87tcf in 2010.

He then launched into the key findings of the report. In total, ARI assessed 48 shale gas basins in 32 countries that demonstrate some level of relative near-term promise, and have a sufficient amount of geologic data for resource analysis. The initial results estimate the international technically recoverable shale resources to be 5,760 trillion cubic feet, which, when added to the estimates for the United States (862tcf) brings the total of the US and these 32 countries to 6,622tcf. Importantly, much of this shale gas resource exists in countries with limited or depleted conventional gas supplies, such as in China, South Africa and Europe.

Kuuskraa then passed off the presentation to Tyler Van Leeuwen, a consultant with ARI, to discuss the report's scope and methodology. He emphasized three key points to keep in mind when reviewing the assessment:

- **Prospective Areas.** The resource assessments only assess the higher quality, "prospective areas" of each shale gas basin. Lower quality areas in these basins, which may hold additional resources, are not included.
- **Success/Risk Factors.** The resource value for each basin was calculated based on: (1) the probability that the shale gas formation will or will not have high enough flow rates to attract developers; and (2) a prediction of how much of the prospective area will be developed in the foreseeable future.
- **Other Countries and Basins.** Significant areas of the world - - Russia, Middle East, Indonesia, Central Africa, etc. - - are not included in the study, mainly due to lack of available data.

To provide an estimate of the 'risked gas in-place' and an estimate of the recoverable resource in a region, ARI used publicly available data from technical literature and studies from each of the selected international shale gas basins. This methodology was employed to make the best use of non-uniform data in order to provide initial assessments.

Kuuskraa concluded his presentation with what he considers to be an important issue in shale gas development that necessitates careful management: the environmental impacts of production including reducing land use impacts and water use, capturing methane emissions and assuring environmentally safe wells and hydraulic fractures. Not only will greater environmental awareness provide the necessary 'license to operate', it will lower costs and give the industry a much needed boost in public support.