



Worldwide Unconventional Gas Resources

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FUELING THE FUTURE



Unconventional Gas in North America

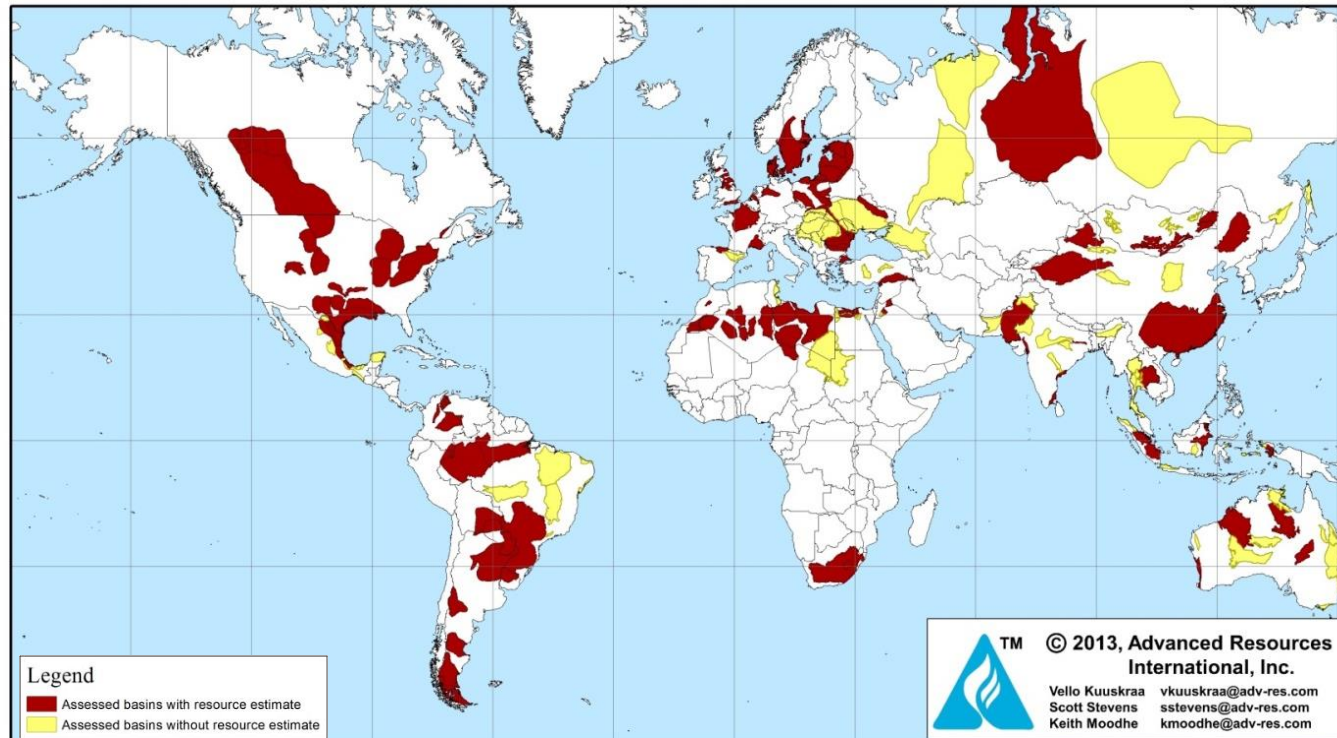
Unconventional gas (shale gas, tight gas sands and coalbed methane) has become the dominant source of natural gas supplies in North America.

- **U.S.** Unconventional gas accounts for 62 Bcfd, equal to over 80%, of the 74 Bcfd of natural gas produced the U.S.
- **Canada.** Unconventional gas accounts for 11 Bcfd of the 15 Bcfd of natural gas produced in Canada.

A combination of factors - - large resources, favorable geology, steady advancements in technology, and existing infrastructure - - have enabled unconventional gas to become a rapidly growing, low-cost source of supply in North America.

World Shale Gas Resources

In 2013, Advanced Resources Int'l, with sponsorship from the U.S. EIA, assessed shale resources in 95 basins located in 41 countries, publishing the results in a 700 page report - - "World Shale Gas and Shale Oil Resource Assessment"



Seven countries accounted for 70% of the 222 Tcm (nearly 8,000 Tcf) of global shale gas resource.

- U.S. 32.9 Tcm
- China 31.6 Tcm
- Argentina 22.7 Tcm
- Algeria 20.0 Tcm
- Canada 16.2 Tcm
- Mexico 15.4 Tcm
- Australia 12.4 Tcm

Commercial-Scale Unconventional Gas Activity

Commercial-scale unconventional gas activity is underway in numerous countries, including:

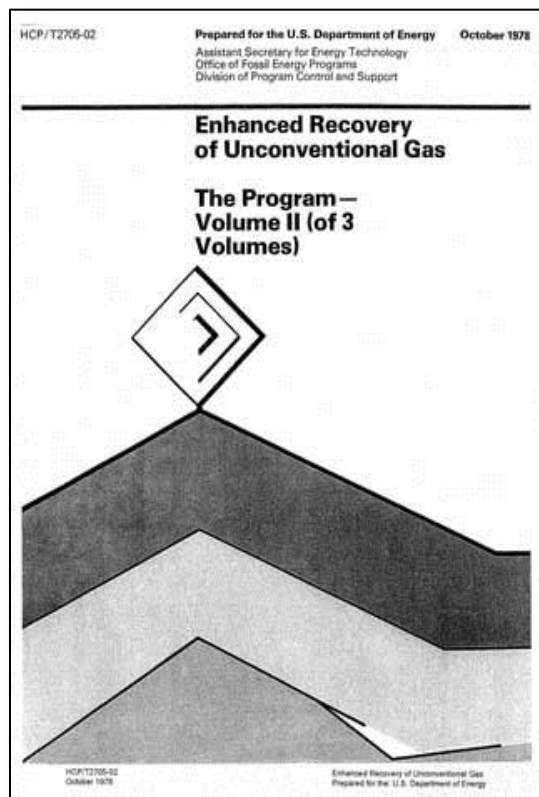
- **Argentina** produces 200 MMcfd (2 Bcm/yr) of shale gas and 500 MMcfd (5 Bcm/yr) of tight gas, primarily from the Neuquén Basin;
- **China** produces 1 Bcfd (10 Bcm/yr) of shale gas from the Sichuan Basin, 2 Bcfd (23 Bcm/yr) of tight gas from the Ordos Basin, and utilizes over a Bcfd (12 Bcm/yr) of a much larger volume of captured CBM/CMM; and
- **Australia** provides nearly 4 Bcfd (40 Bcm/yr) of CBM, as the supply source for three world-scale LNG export plants.

Other countries, such as India, Mexico and Algeria, are also active or have announced plans for pursuing CBM and shale gas.

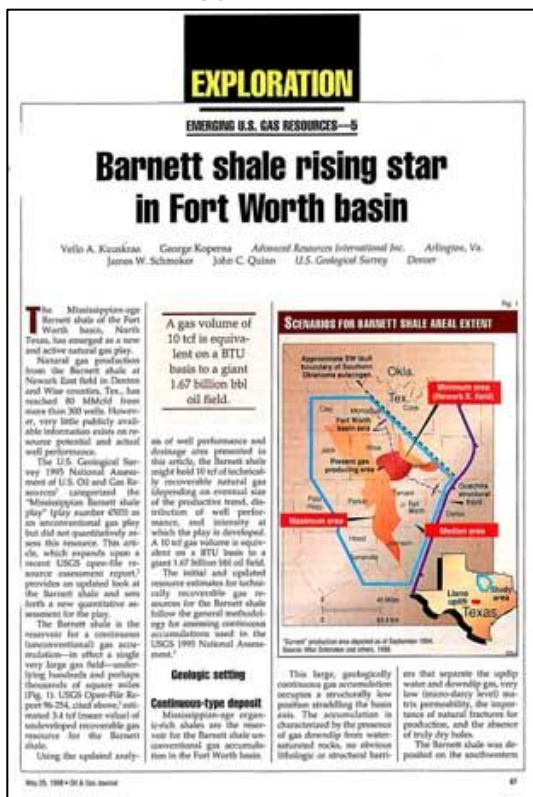
Adapting and Using Unconventional Gas Technology

The “overnight” success of unconventional gas in North America rests on a thirty-year foundation of fundamental science and field-based E&P technology research.

DOE's R&D Program for Unconventional Gas



Breaking the “Technology Lock” for Shale



The U.S. DOE R&D program, set forth in the 1978 report “Enhanced Recovery of Unconventional Gas,” built the scientific knowledge base. GRI’s field-based R&D applied this knowledge, helping “break the technology lock.”

Countries interested in efficiently developing their unconventional gas resources and adapting the technology used in North America will need to combine their own research and technology investments with outside technical assistance.