

Challenges of Coalbed Natural Gas Development in Northwestern Bangladesh

Ricky Hildebrand
Gustavson Associates, Boulder, CO.

Scattered, isolated deposits of Permian high-volatile bituminous coal constitute a potential resource for the energy-deficient region west of the Jamuna (Brahmaputra) River. Five coalfields (Barapukuria, Dighipara, Jamalganj, Khalaspir, and Phulbari) have been delineated so far by remote geophysical surveys and subsequent exploratory drilling. Individual coal beds as much as 47 m thick have been reported at depths between 100 and 1,200 m below surface level. Total coal resource estimates range from 2,000 to 5,000 Mt. Total gas-in-place estimates calculated by various indirect methods range from 31 to 60 Gm³ (1 to 2 Tcf).

To date, no comprehensive investigation to define discovered coal gas resources and establish commerciality for any of these prospective reservoirs has been attempted. General coal composition (proximate analysis), petrography, and thermal maturity (Ro) data are available for each coalfield. Other reservoir conditions that need to be quantified by exploratory drilling and core sampling include direct gas content measurements, gas composition and gas storage capacity analyses, as well as reservoir volume and density measurements.

In-situ permeability and hydrologic tests of prospective reservoirs are also needed to evaluate the production potential of the coal gas prospects. Studies of the Barakapuria coal deposit, in conjunction with development of the first underground coal mine in the region, indicate that hydrologic conditions within the basin may be problematic for dewatering reservoirs to initiate gas production. Hydrogeology of the Jamalganj deposit may be more favorable for reservoir dewatering.

Comprehensive desktop studies of the five coalfields that consider gas content information from analogous areas would provide a basis for ranking the coal gas potential of each prospective basin. Then, a site-specific exploratory drilling program could be designed to evaluate the gas resource potential of the most likely prospect.