

## **Coalbed Methane Resources in Colombia**

Mario Garcia-Gonzalez

Geology, Universidad Industrial de Santander, Bucaramanga, Colombia.

A preliminary evaluation of the coal-bed methane (cbm) resources of Colombia indicates that there are at least 8 regions with large cbm potential. The main coal-bearing formations of Colombia range in age from Maastrichtian to Eocene and the coal ranks varies from semi-anthracite to sub-bituminous. The cbm resource in the main coaly regions of Colombia has been calculated in 17 TCF.

The largest cbm potential is located in the Cesar and Rancheria basins. In the Rancheria basin the Cerrejón Formation of Paleocene age presents up to 55 coal seams of sub-bituminous and bituminous rank with vitrinite reflectance (Ro) values between 0.4 to 0.8%. Coal seams of the Cerrejón Formation present an excellent lateral extension and the large net-coal thickness of more than 50 meters. These parameters allow expecting a large cbm resource.

In The Cesar basin The Barco-Cuervos Formation of Paleocene age, also presents a large coal resource with thick coal seam (from 1 to 8 meters) of sub-bituminous and bituminous rank( Ro 0.5 to 0.8%) . The cbm potential has been evaluate using hydrous pyrolysis (HP) experiments indicating an excellent potential.

The Bogota Plateau in the Eastern Cordillera is a large are of 3,000 km<sup>2</sup> with 9 coalfields. The Guaduas Formation of Maastichtian to Paleocene age is present in numerous syncline structures that are the main target for cbm explorations. The coal rank is between low to high volatile bituminous, and the Ro values vary between 0.5 and 1.5%. The cbm potential was evaluated using desorption experiments and HP indicating a good cbm potential on the location and stratigraphic position.

The Guachinte-Ferreira Formation of Oligocene to Miocene in age in the Cauca basin is characterized by a sub-bituminous coals ( Ro 0.4 to 0.7%) with excellent hydrogen index that explain the large gas generation potential as demonstrated by HP tests. A cbm resource of 2 TFC has been calculated for this basin.

The Lower Magdalena basin presents several large coal deposits in the Cienaga de Oro and Cerrito formations of Oligocene and Miocene ages. These deposits are characterized by sub-bituminous (Ro 0.4 to 0.5%) coals with net coal thickness ranging from 16 to 28 meters which contains biogenic cbm gases.

Other regions with potentially large cbm potential are the Catatumbo basin, the Llanos Foothill basin, the Middle Magdalena basin, and Cauca-Patia basin.