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Alternative (unconventional) sources of energy from India

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India's upstream oil industry travelled a long way since the discovery of oil in the historic Digboi well no. 1. At present India's estimated resource base is 28 Billion Metric Tonnes (BMT) of oil and oil equivalent gas (O+OEG) and proven in place reserve is about 10 Million Metric Tonnes (MMT) of O+OEG. Apart from conventional sources; there are other types of hydrocarbon sources which can serve as alternative energy sources. As the global hydrocarbon resource is declining fast, attention is given on these unconventional sources. In India also exploration & research for these special types of hydrocarbons are being carried out since good prospects are indicated in various basins.

Coal Bed Methane: The adsorbed methane in coal bed is now economically exploited through bore holes at a depth of 500 m to 1000 m. The Gondwana basins containing huge deposits of coal are the best source for CBM. Exploration in almost all the Gondwana Basins is in progress. The prognosticated CBM resource is calculated as 92 TCF and in place gas reserve as 8.39 TCF for 33 blocks under exploration. Commercial production has commenced from one block in Raniganj (South) in Damodar Basin.

Gas Hydrate: Frozen layer of methane hydrate over the seabed sediment is a prolific source of gas hydrate containing both biogenic and thermogenic gas. This ice –like compound is stable in permafrost regions as well as in low temperature/high pressure regimes present in deep oceans. Presence of Gas Hydrates has been established in deep offshore of Krishna Godavari, Mahanadi and Andaman areas.

Oil Shale: Shales highly rich in organic matter from which significant quantities of oil and gas can be generated by synthetic methods are called shale oil. These are generally immature source rocks. In India oil shale prospects has been identified in Cambay, Upper Assam, Assam –Arakan & Rajasthan basins.

Shale Gas: After the extraction of shale gas in USA, India has also started the expedition for the shale. Such gas could either be biogenic and/or thermogenic. Post-migration residual gas or adsorbed gas in shales is exploited by special drilling technology. Targeted basins are Gondwana basins and Petroliferous basins like Cambay, Krishna Godavari, Cauvery, Bengal and Upper Assam. The Gondwana basins could be considered as an important exploration frontier in view of the gas shows, favourable stratigraphy and igneous activities that may help maturation. Deep seated Gondwana rocks below the eastern pericratonic basins are prospective targets for deep basin gas, exploration for CBM started in prospective Gondwana basins in a big way. It is expected that within 5 years CBM will be a major source for supplementary gas production. Gas Hydrates (GH) and Shale Gas are in research stage. It is expected that soon actual exploration could be started.

Biography

Vishavjeet Singh Goraya is a student of Geoscience Engineering at University of Petroleum and Energy Studies, Dehradun, India. The author has presented various papers across India and internationally he has presented the paper in 4th International conference on Geology and Geosciences . He is aan emerging geoscientist from India

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