



REPORT ON ICUSFFCM- Feb 21st -22nd 2011





CALL FOR PAPERS
International Conference
On
Unconventional Sources of Fossil Fuels
And
Carbon Management
(ICUSFFCM-2011)
February, 21 - 22, 2011
Gujarat Energy Research and Management Institute
Gandhinagar - 382009, Gujarat, INDIA





Themes

- Fossil Fuel Demand, Security, Sustainability and Carbon Management
- Coal Bed Methane
- Oil Shale, Shale and Tight Gas
- Gas Hydrates
- Clean Coal Technologies and Underground Coal Gasification
- Enhanced Oil and Gas Recovery
- Energy Management and Future Perspectives

Organized by
Gujarat Energy Research and Management Institute,
Gandhinagar, Gujarat, India
In association with
Colorado School of Mines,
Golden Colorado, USA
Venue :
Pandit Deendayal Petroleum University,
Raisan Village, Gandhinagar - 382 007,
Gujarat, INDIA



GERMI:

This report is about the International Conference on “Unconventional Sources of Fossil Fuels & Carbon Management” organized by Gujarat Energy Research and Management Institute in collaboration with Colorado School of Mines, USA at Pandit Deendayal Petroleum University, Raisan Village, Gandhinagar during February 21-22, 2011.

Address:-

**Gujarat Energy Research and Management Institute
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Pandit Deendayal Petroleum University Campus,
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REPORT OF
INTERNATIONAL CONFERENCE ON
UNCONVENTIONAL SOURCES OF FOSSIL FUELS
& CARBON MANAGEMENT

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GUJARAT ENERGY RESEARCH AND
MANAGEMENT INSTITUTE
GANDHINAGAR,
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**Report on International Conference on
“Unconventional Sources of Fossil Fuels & Carbon Management”**

21st & 22nd Feb. 2011

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1. Inaugural Function

The Gujarat Energy Research and Management Institute (GERMI) organized an International Conference on Unconventional Sources of Fossil Fuels and Carbon Management in association with the Colorado School of Mines (CSM), USA over the 21st and 22nd of February, 2011. Sixty six papers were presented at the conference. The state-of-art understanding and emerging opportunities to optimize extraction and use of such fuels as coal bed methane, gas hydrates oil shale, shale and tight gas were presented. Enhanced recovery and environmental impacts including carbon markets were the cross cutting themes. Experts from such institutes of repute as the Oil & Natural Gas Commission, Gujarat State Petroleum Corporation, National Geophysical Research Institute, Indian School of Mines, Central Fuel Research Institute, the Colorado School of Mines and the NTNU - Norway, deliberated on the aspects stated. The technical framework for these deliberations was initially developed by GERMI and the Colorado School of Mines. Detailed interactions with experts from several institutions represented in the technical and conference advisory committees of the conference further strengthened the framework. A copy of Invitation card and Minutes to minutes programmes are attached (Annexure 3 & 5).

Following dignitaries were also present on the Dais:

1. **Mr. D. J. Pandian** - Chief Guest at this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Mr. Pandian is a senior officer of the Indian Administrative Services, 1981 batch. He is currently the Principal Secretary for the Energy and Petrochemicals Department, Government of Gujarat; and also the Chairman and Managing Trustee of the Gujarat Energy Research and Management Institute (GERMI). Mr. Pandian was earlier the Managing Director of Gujarat State Petroleum Corporation Ltd., on deputation to the World Bank in Washington D.C., and Director, External Commercial Borrowing, Ministry of Finance, Government of India.
2. **Mr. Tapan Ray** - Patron of this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Mr. Ray is the Managing Director of Gujarat State Petroleum Corporation Ltd.; and also the Vice

Chairman and Managing Trustee of the Gujarat Energy Research and Management Institute (GERMI). He is a senior officer of the Indian Administrative Services, and previously the Principal Secretary for Economic Affairs, at the Finance Department, Government of Gujarat. Mr. Ray holds a degree in Engineering from the Indian Institute of Technology, Delhi; a post-graduate degree in public policy from Princeton University, USA; a Masters in Public Administration from Syracuse University, USA; and a degree in law with various Diplomas.

3. **Prof. H.K. Gupta** - Guest of honor at this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Prof. Gupta is the Panikkar Professor at the National Geophysical Research Institute (NGRI), Hyderabad. He has previously held positions such as the Secretary to the Government of India, Department of Ocean Development, Director of NGRI, and Advisor to the Department of Science and Technology.
4. **Prof. Dag Nummedal** - Member of the advisory committee of this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Prof. Nummedal is the Director of the Colorado Energy Research Institute at the Colorado School of Mines and focusing on broad multi-disciplinary research programmes in both fossil and renewable energy. He is also the Director of the Colorado Carbon Management Centre, a multi-disciplinary and multi-institutional center engaged in research on geological and terrestrial carbon sequestration, as well as economic and policy analysis of different approaches to reductions in carbon emissions from global energy systems.
5. **Dr. V.P. Dimri** - Chairman of the organizing committee for this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Dr. Dimri is the recipient of the prestigious Padma Shri award, one of the highest civilian honors awarded by the president of India for his contribution to Science and Engineering. He is a CSIR Distinguished Scientist, and the former director of Gujarat Energy Research and Management Institute (GERMI) and National Geophysical Research Institute.
6. **Dr. Baleshwar Kumar** - Chairman of the technical committee for this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Dr. Baleshwar Kumar has over 40 years of R&D experience in climate change; carbon abatement; energy security and sustainability; geochemical prospecting of hydrocarbons; geothermal

research, hydrocarbon exploration, early evolution of life, carbon budget changes; event stratigraphy; and paleo-environmental studies.

7. **Mr. Amin Petiwala** - Co-chairman of the organizing committee of this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011. Mr. Petiwala is the Secretary, Gujarat Energy Research and Management Institute (GERMI), and Chief Manager (Finance) of GSPC LNG Ltd.
8. **Dr. R. Gopichandran** - Organizing Secretary of this International Conference on Unconventional Fossil Fuel Sources and Carbon Management-2011, and the Director In-Charge of Gujarat Energy Research and Management Institute (GERMI). Dr. Gopichandran has two doctoral degrees in biological and environmental sciences, and a degree in law; and is an alumnus of the International Visitors Leadership Programme, Department of State, USA. He is one of the leading specialists on ozone layer protection working with the United Nations Environment Programme at the global level.
9. **Dr. Syed Zaheer Hasan** - Convener organizing committee of this International Conference on Unconventional Sources of Fossil Fuel and Carbon Management-2011, and Principal Research Scientist, Petroleum Research Wing of Gujarat Energy Research and Management Institute (GERMI). Dr. Zaheer served State Mineral Development Corporation for two years and before joining this institute he served USA based multinational service company where he was involved in laboratory R & D work providing solution to field related problems and job execution in well cementing and stimulation technology, and chemical quality control for all well operations.

The Conference was inaugurated by **Mr. D.J. Pandian**, IAS, Principal Secretary, Energy and Petrochemicals Department, Government of Gujarat. He highlighted the need for an integrated approach to tackle issues of energy security and sustainability to reduce impacts of vagaries of international markets and the imperatives of environmental efficiency to reduce costs of remediation. **Mr Tapan Ray**, IAS, Managing Director, Gujarat State Petroleum Corporation Limited presided over the launch of the event. His special emphasis was on the urgent need to improve resilience of the energy sector through focused value added technical services that will foster locally adapted solutions. This had to be driven by clear scientific assessments, supported by relevant institutional and market mechanisms.

The Guest of Honor and keynote speaker was Padmashri **Dr. Harsh K. Gupta** (President Geological Society of India and Formerly Director, National Geophysical Research Institute, Hyderabad) highlighted the need to tackle core technical and related environmental issues through a targeted preventive and remediation approach. This was essential to reduce externalities and establish the relevance of such technical advances for the benefit of communities. Prof Dag Numeddal, Director, Colorado Energy Research Institute and Padmashri **Dr VP Dimri** spoke about the relevance of these areas for sustainable management of resources and the urgent need to create cadres of technically sound professionals to meet the growing demands for energy. They also cautioned that these initiatives should however not lose sight of the environmental and sustainability dimensions.

Empirical information regarding the physical and chemical characteristics essential for successful extraction was also presented at the conference. The learnings that emerged from this conference are important for technology and skill up-gradation through industry centered initiatives and sustain development. These insights are also valuable for decision makers in the energy sector because of the emerging implications of a focused framework of economic and environmental management through the imperatives of the 12th five-year plan and the growing impacts of markets around the world. That, alternatives will play an important role cannot be overemphasized; especially when the twin benefits of markets and environmental sustainability have to be ensured. GERMI thanks for the Colorado School of Mines, Golden Colorado for its enthusiastic collaboration. Padmashri Dr VP Dimri and **Dr Baleshwar Kumar** are also gratefully acknowledged for their prime mover roles and fostering the entire initiative.

2. Delegates

A total of 12 foreign delegates from USA, UK, Russia & Norway and 150 Indian delegates from different parts of the country attended the Conference. An annexure of Foreign and Indian delegate is attached (Annexure 4)

3. Scientific Programme

3.1 Abstracts & Technical Sessions

Total 66 papers were presented in 6 sessions among with 53 were oral and 13 posters. An abstract volume was published. Key note speech was given by Prof. Harsh K. Gupta, NGRI, Hyderabad.

Technical Session-1 on Fossil Fuel Demand, Security, Sustainability and Carbon Management, Chairs: Prof. Raymond Levey & Prof. Paritosh Banik

Technical Session-2(A) on Oil Shale, Shale & Tight Gas, Chairs: Prof. Jeremy Boak & Mr. R.N. Pandey

Poster Session

Chair: Prof. T. Harinarayana, NGRI, Hyderabad & Prof. Idar Akervoll, Norway

Technical Session-3 on Coal Bed Methane, Chairs: Prof. Milind Deo & Prof. T.N. Singh

Technical Session-4 on Gas Hydrates, Chairs: Dr. Amalendu Sinha & Dr. Kalachand Sain

Technical Session-5 on Enhanced Oil and Gas Recovery, Chairs: Dr. V.P. Dimri & Dr. R.V. Marathe

Technical Session-2(B) on Oil Shale, Shale & Tight Gas, Chairs: Prof. G.M. Bhat & Prof. M. Kamil