



An Initiative By



ICCSA



PDEU

CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO

SEPT '22 to APRIL '23

OIL & NATURAL GAS

Pandit Deendayal
Energy University
(PDEU)
@ Gandhinagar

4th NOV
2022



Stakeholders & Partners



BACKGROUND

At present the Earth is 1.1 °C warmer than the 20th century and Green House Gas (GHG) emissions are still rising at an unprecedented rate due to increasing anthropogenic activities. Major sources of GHG emissions are extraction and burning of fossil fuels, decaying solid waste and agriculture practices. These emissions need to be reduced by 45% by 2030 for keeping the temperatures below 1.5°C. Methane is one of the main constituents of GHGs and has important implications for climate change, particularly in the near term. It has a much shorter atmospheric lifetime than CO² and contributes about one-third of the current anthropogenic GHG - driven warming. In addition to its climate impacts, methane also affects air quality because it is an ingredient in the formation of ground level (tropospheric) ozone, a dangerous air pollutant. With action on climate change becoming increasingly time sensitive, limiting methane offers an extremely important opportunity to achieve rapid results along with other GHGs.

India stands committed to reduce emissions intensity of its GDP by 45% by 2030 as compared to 2005 levels, recently India has taken a strong stand to become a "NetZero" country by 2070. With such ambitious targets, there is need to have focused discussion on GHG emissions, sources, mitigation strategies, technological availability and deployment and so on and methane may be a good starting point along with CO² emissions. Given the above need, ICCSA Foundation has planned a series of brainstorming sessions, across the country, focusing on four major sources of GHG emissions such as Oil and Natural Gas, Agriculture and Livestock, Coal and Coal Bed, Transportation and Solid Waste. This series was unveiled by the hands of Hon'ble Minister of Road Transport and Highways, Shri Nitin Gadkari Ji, on 20th September 2022 in New Delhi under the banner of Climate Goals : Technological Roadmap to NetZero. In continuation to the above, it is proposed to have 1 day brainstorming session at Pandit Deendayal Energy University (PDEU), Gandhinagar on Oil and Gas Industry Sector.

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Message from Director/Convenor

DR. J. S. SHARMA

President,

Indian Association for Air Pollution Control (IAAPC), New Delhi
and Former Group General Manager - Head Environment,
Oil and Natural Gas Corporation Limited.



India is emerging as a Global Leader in Climate Change Initiatives. It has given commitment to achieve net-zero emissions by 2070, during the UNFCCC's 26th Conference of Parties (COP). Hence, it is important for India to continue its efforts to establish a sector-specific baselines data sets, which can help India, delineate an action plan in its focused efforts on reducing GHGs and methane, which have position India in a leadership position in upcoming COPs. With these data sets generated overtime, India will be better poised to take its initiative into a global platform through showcasing India's methane reducing technologies / processes, which have been development and are being implemented across country.

This could be possible when we put together India's technology strength combined with policy in various sectors which are workable and also frugal, leading to large scale multiplier effect. Therefore, it is timely to tackle all sources from different sector emissions arising from human activity and discuss methane emissions and reduction strategies for a positive climate change effect to bring India's ambition of being the leader.

The proposed dialogues across all stakeholders from all sectors will help develop Indian centric strategy from various sectors through cost effective voluntary efforts and deploying known processes. These efforts will assist to capture and profitably use methane emissions. Efforts are needed to compare capabilities, discuss challenges and review emerging technologies for monitoring methane and delineate an action plan for sector-specific efforts which India can implement with a specific timeline.

This series of event "Climate Goals: Technological Roadmap to Net Zero" will not only help develop targeted sector-based methane mitigation strategies but will also strengthen India's position in future climate negotiations.

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Focus Area

OIL & NATURAL GAS

Increased greenhouse gas emissions have changed the global ambient temperature and harmed global climatic conditions. GHG emissions from the oil and gas industry have also contributed significantly to climate change. In Oil and Gas sector, upstream operations lead to more than three quarters of total sectoral GHG emissions, with downstream segment accounting for the remaining share. The sector is responsible for 40 and 60% of methane emissions from its production and leakage worldwide (IEA 2021). Global methane emissions from oil and gas operations fell around 5% in 2020 to 76 Mt and increased by nearly 5% in 2021 to over 120 Mt, mostly due to the rebound in fossil fuel production. Conversely, the Net Zero emissions by 2050 scenario require that total methane emissions from fossil fuel operations fall around 75% between 2020 and 2030 (IEA report, 2022).

While focusing on methane is important, it is important to note that other GHG emissions are also high in the oil and gas sector. In 2021 alone, 144 billion cubic meters of gas was burnt in flares at upstream oil and gas facilities across the globe, resulting in approximately 400 million tons of carbon dioxide (CO₂) equivalent emissions, of which 361 MMt CO₂e was in the form of CO₂ and 39 MMt CO₂e was in the form of methane (The World Bank report, 2022). The methane emission in India in Oil and Gas industry is 30.104 MMtCO₂ equivalent in 2020, and is estimated to rise to 38.966 MMt CO₂ equivalent in 2035 and 48.555 MMt CO₂ equivalent in 2050 (IEA report, 2022). Given the above emission profile of the sector and the ambitious target of Net-Zero, it is important that comprehensive and detailed discussion is done targeting reducing these emissions from this sector while focusing on various aspects such as technology, policy, finance etc which are required for the oil and gas sector. This forms the core of the proposed brainstorming meeting.

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OIL & NATURAL GAS

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International Center for
Climate and Sustainability
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CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO

OIL & NATURAL GAS

In India, Gujarat, Rajasthan and Western Offshore account for most of the crude reserves. Ahmedabad at the centre of this belt of Oil and Gas sector, with institutes / industries like PDEU, IIMA, IITGN, ONGC etc., is an appropriate location for the involvement of industries, regulatory bodies, policymakers, researchers and academia associated with the oil and gas sector to come along and share their knowledge in this field.

ICCSA Foundation in continuation of series of events is organising **Brainstorming Session on GHGs** including **Methane Emission from Oil & Gas Sector** on **4th November 2022** at **Pandit Deendayal Energy University (PDEU), Gandhinagar** from **1000 to 1700 Hrs (IST)**. This brainstorming session is organised with stakeholders and partners **MoEF, Government of Gujarat, CSIR, PDEU, ONGC, AIILSG, CII** and **SERI**.

The outcome of this session will help the organizers to develop roadmap on key strategies and action plan to Mitigate GHGs Emission and develop technologies for its energy transition and preventing climate change.

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DISCUSSION POINTS

CLIMATE GOALS : Technological Roadmap to Net Zero

- Indian centric strategy for reducing methane emissions from oil and gas sectors through cost effective efforts and deploying known processes.
- Targeted methane reductions that can help to achieve India's climate change goals, as well as efforts to capture and profitably use methane emissions.
- To compare capabilities, discuss challenges and review emerging technologies for monitoring methane.
- Sector-Specific efforts which India can implement with a specific timeline.

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EXPECTED TAKEAWAYS

- Awareness on methane emission from Oil & Gas, by highlighting short term and long-term impacts to policymakers.
- Oil & Gas Sector-specific directions for India on methane emissions with an action plan.
- The importance of emission detection and measurement in oil & gas sectors, as well as developing long-term strategies that shall focus on decarbonization.
- Challenges and opportunities in research and development, demonstration, and deployment of technologies in methane detection and mitigations in this sector.
- The findings that will describe the overall strategy for reducing methane emissions across the sector.
- Access to Nobel Laureates, Ministry personnel, Industry leaders of Oil & Gas sector from across the India.
- Opportunities for joint ventures, technology development and funding for methane mitigation strategies.

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International Center for
Climate and Sustainability
Action Foundation

ICCSA is a NPO under the companies act 2013. It is committed to provide a better world for the people and the planet. This organization is established with a focus to plug the gaps in environmental management to provide an institutional platform for coordination, facilitation, advocacy, and regional and international collaboration; with an aim of development of targeted solutions. Its focus is to restore ecosystem health, regenerate nature on Earth to drive sustainable development for a future which is bright, positive and resilient. ICCSA key priorities are to promote local, regional and global partnerships to take effective action for climate and sustainability and to assess impacts of environmental and climatic variability on livelihoods, well-being and economic development.

ICCSA provides strengthening knowledge base on environment matters for effective responses by delivering basic science and technology solutions at grass root for inclusive development of the communities. Provide design, research and evidence based support to government and industries on policy formulation. This also facilitates new coalition and partnership to accelerate climate action and transform our societies towards a sustainable future without sacrificing human development goals.

ICCSA works in an integrated and coherent way to achieve objectives of our national missions/flagship programs while pursuing climate action and sustainable development. This organization understands the world's pressing problems and develops effective solutions to them through focus on the nexus between climate change and sustainable development in developing-country settings. It develops innovative solutions and research best practices for climate change adaptation and mitigation efforts by involving businesses and governments to help them transform commitments into action. To achieve these objectives it is aimed to work with people from varied domains to tackle challenges from many perspectives, not just the environmental one. This will provide far-sighted solutions to the problems and insight to take proper action to solve them.

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Pandit Deendayal Energy University (PDEU) @ Gandhinagar

Pandit Deendayal Energy University (PDEU) has been established by GERMI as a Private University through the State Act enacted on 4th April, 2007. Pandit Deendayal Energy University has been promoted by Government, Industry and Energy & Petrochemical Department to create a world class University in energy education and research with special focus on the oil and gas sector. The University addresses the need for trained and specialized human resource in the domains of engineering, management and humanities.

Its mission is to undertake a unique obligation for Education in Energy, Engineering, Management and Liberal Arts with special responsibilities in domain specific aspects of Energy & Infrastructure. PDEU seek to nurture students of extraordinary motivation and ability, and prepare them for life-long learning and leadership in an increasingly knowledge driven world.

It envisage to establish institutes of excellence in education, competitive edge in research and real time relevance with futuristic thrusts in offering of programmes and undertaking of activities and projects. It intends to expand the opportunities for students and professionals to develop an intellectual knowledge base with leadership skills to compete in the global arena.

PDEU vision is to emerge as a world class Centre of excellence in energy education, research and innovation which will prepare the youth for radical yet sustainable societal transformation.

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METHANE EMISSION FROM THE OIL & NATURAL GAS SECTOR

Friday - 4th November, 2022

Pandit Deendayal Energy University, Gandhinagar

INDIAN STANDARD TIME (Hrs)

0900 - 1000 REGISTRATION

SESSION - 1 : INAUGURAL SESSION

1000 **START OF THE PROCEEDINGS**
ARRIVAL OF THE CHIEF GUEST AND LIGHTING OF THE INVOCATION LAMP

1000 - 1005 **WELCOME ADDRESS**
Dr RAKESH KUMAR VIJ
SUMMIT CO-CONVENOR AND
ADJUNCT PROFESSOR, PDEU

1005 - 1015 **SETTING THE CONTEXT**
Opportunities and Challenges for Sectoral
GHG Emission Reduction from Oil & Gas Sector
Dr J S SHARMA
SUMMIT CHAIR AND CONVENOR
FORMER GGM - HEAD ENVIRONMENT, ONGC

1015 - 1025 **INAUGURAL ADDRESS**
Dr S. SUNDAR MANOHARAN
SUMMIT CO-CONVENOR AND
DIRECTOR GENERAL, PDEU

1025 - 1040 **ADDRESS BY THE GUEST OF HONOUR**
SHRI S. J. HAIDER, IAS
PRINCIPAL SECRETARY
CLIMATE CHANGE DEPT., GOVT. OF GUJARAT

1040 - 1055 **ADDRESS BY THE CHIEF GUEST**
SHRI ANURAG SHARMA
DIRECTOR (ONSHORE), ONGC

1055 - 1100 **FELICITATION OF THE CHIEF GUEST AND GUEST OF HONOUR**

1100 - 1105 **WORD OF THANKS**
Dr RAKESH KUMAR VIJ
SUMMIT CO-CONVENOR AND
ADJUNCT PROFESSOR, PDEU

1105 - 1130 **BREAK** HIGH TEA / COFFEE

SESSION 2: METHANE EMISSION INVENTORY (1130 – 1300)

SESSION COORDINATOR : Dr RAKESH KUMAR, OSD, CSIR, New Delhi

DISTINGUISHED
SPEAKERS
(10 min Each Speaker)

- 1 Mr. MANFREDI CALTAGIRONE (Online)**
Head, International Methane Emission Observatory, UNEP
- 2 DR T K MANDAL**
Chief Scientist, CSIR-National Physical Laboratory
- 3 DR. SUMANA BHATTACHARYA**
Senior Advisor, IORA Ecological Solutions
- 4 PROF. ANURAG KANDYA**
Associate Professor, Pandit Deendayal Energy University

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1210 - 1225

Q&A

1225 - 1230

FELICITATIONS OF THE DISTINGUISHED SPEAKERS

SESSION 3 : METHANE EMISSION, CONTROL AND MANAGEMENT FROM THE UPSTREAM OIL AND GAS SECTOR (1230 – 1330)

SESSION COORDINATOR : Dr J S SHARMA, Director, ICCSA / Summit Chair and Convenor

DISTINGUISHED SPEAKERS
(10 min Each Speaker)

- 1 DR. C LAXMA REDDY**
Additional Director General, Directorate General of Hydrocarbons
- 2 SHRI AJAY DIXIT**
Executive Director, ONGC
- 3 DR. RAKESH KUMAR VIJ**
Summit Co-Convenor and Adjunct Professor, PDEU

1310 - 1325

Q&A

1325 - 1330

FELICITATIONS OF THE DISTINGUISHED SPEAKERS

1330 - 1430

NETWORKING LUNCH

SESSION 4 : METHANE EMISSION, CONTROL AND MANAGEMENT FROM THE MIDSTREAM & DOWNSTREAM OIL AND GAS SECTOR (TIME: 1430 – 1530)

SESSION COORDINATOR : Dr RAKESH KUMAR VIJ, Summit Co-Convenor and Adjunct Professor, PDEU

DISTINGUISHED SPEAKERS
(10 min Each Speaker)

- 1 SHRI M K AZAD**
Ex-GM, IOC, Mathura Refinery
- 2 SHRI SAMAR BAHADUR**
ED, Petronet LNG, Dahej
- 3 SHRI M S SUDARSHAN**
ED, MRPL

1510 - 1525

Q&A

1525 - 1530

FELICITATIONS OF THE DISTINGUISHED SPEAKERS

1530 - 1600

NETWORKING TEA

SESSION 5 : POLICY, BRIDGING THE GAP AND EMERGING TECHNOLOGIES (1600 – 1700)

- Identifying challenges and focus areas of interventions for the reduction of Methane Emissions from the O&G sector.
- Sector - specific efforts which india can implement with a specific timeline.
- Priority steps towards solutions strategy for india.

DISTINGUISHED SPEAKERS
(15 min Each Speaker)

- 1 DR ANJAN RAY (Online)**, Director, CSIR-IIP
- 2 DR RAKESH KUMAR**, OSD, CSIR HQ
- 3 DR ANIL GARG**, CEO, Energy & Environment Foundation
- 4 PROF. RAKESH D. RAUT**, NITIE, Mumbai

1640 - 1655

Q&A

1655 - 1700

FELICITATIONS OF THE DISTINGUISHED SPEAKERS

1700

END OF THE PROCEEDINGS

1700 - 1800

CULTURAL PROGRAMME

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**International Center for
Climate and Sustainability
Action Foundation**

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