



An Initiative By



ICCSA



IIT GUWAHATI

CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO

SEPT '22 to APRIL '23

1st
FEB
2023

Brainstorming Session on
METHANE EMISSIONS
From
AGRICULTURE AND LIVESTOCK SECTOR
@ IIT Guwahati



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 percent 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 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 Net Zero. In continuation to above, it is proposed to have 1 day brainstorming session IIT Guwahati on Agriculture and Livestock Sector.

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Message from Summit Chair



DR. J. S. SHARMA

President, IAAPC, New Delhi
& Former Group General Manager,
Head Environment, ONGC



Prof. P K IYER

Officiating Director,
Indian Institute of Technology,
Guwahati.

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

AGRICULTURE & LIVESTOCK

Increased greenhouse gas emissions have changed the global ambient temperature and harmed global climatic conditions. GHG emissions from agriculture and livestock sector have also contributed significantly to climate change. Agriculture accounts for 40-46 % of worldwide methane emissions, and these emissions are expected to rise by 40% by 2050 due to growing food production. Agricultural is the world's leading source of anthropogenic methane. Manure and gastroenteric leaks from livestock account for around 32% of all human-caused methane emissions (Searchinger, 2021). Methane emissions from paddy cultivation and livestock accounted for 8% and 32% respectively of the total emissions from the sector. Increasing demand for animal protein and growing population will increase the emissions up to 70% by 2050 (UNEP-2021). Methane is also produced and emitted from the decomposition of livestock manure and the organic components in agro-industrial wastewater. Globally, manure management alone contributed an estimated 237 MMTCO₂e of methane emissions in 2010, roughly 4% of total anthropogenic (human-induced) methane emissions (GMI report, 2011).

In India, the majority of agricultural GHG emissions occur at the primary production stage and are generated through the production and use of agricultural inputs, livestock handling and management, farm machinery, soil disturbance, residue management and irrigation. The total GHGs emission from Indian livestock alone is estimated at 247.2 Mt in terms of CO₂ equivalent emissions. Although the Indian livestock contributes substantially to the methane budget, the per capita emission is only 24.23 kg CH₄/animal/year (Chabbra et al., 2012). Having said that, it is important to note that these emissions are "Survival Emissions" for the country and are needed for growth and development. Given above, the sector needs dedicated attention from a balanced point of view so that the emissions can be curtailed without hampering the development of the country. This forms the core of the proposed brainstorming session.

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Guwahati that hosts diverse wildlife and vegetation along with stakeholders and partners like Indian Council of Agriculture Research (ICAR) organisations, Ministry of Development of North East Region (DoNER) and IIT Guwahati is an appropriate location for discussion on Climate Goal related to this field with stakeholders, researchers, governing bodies, policy makers and industries for sharing their views and knowledge in this field.

ICCSA Foundation, in continuation of series of events on Climate Goal: Technological Roadmap to Net Zero, jointly with IIT Guwahati along with partners & stakeholders including MoEFCC, CSIR, DoNER, ICAR, IARI, AILSG, IIT Bombay, CII and SERI etc., is organising brainstorming session on **Methane Emission from Agriculture and Livestock Sector on 1st February 2023 at Indian Institute of Technology, Guwahati from 1000 to 1700 h (IST)*.**

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

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An Initiative By :



International Center for
Climate and Sustainability
Action Foundation

20th
September
2022

@New Delhi
**CURTAIN
RAISER**

4th
November
2022

@Gandhinagar
**OIL AND
NATURAL GAS**

1st
February
2023

@Guwahati
**AGRICULTURE
& LIVESTOCK**

**CLIMATE
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TECHNOLOGICAL ROADMAP TO NET ZERO

C A L A N D E R

21st *
March
2023

@Indore
**LANDFILL
& WASTE**

18th *
April
2023

@Bhubaneswar
**COAL MINING
/ COALBED**

23rd *
May
2023

@New Delhi
TRANSPORTATION

*to be confirmed

DISCUSSION POINTS

CLIMATE GOALS : Technological Roadmap to Net Zero

- Indian centric strategy for reducing methane emissions from Agriculture and livestock sector 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

EXPECTED TAKEAWAYS

- Awareness on methane emission from Agriculture and livestock, by highlighting short term and long-term impacts to policymakers
- Agriculture and livestock sector-specific directions for India on methane emissions with an action plan.
- The importance of emission detection and measurement in Agriculture and livestock sectors, as well as developing long-term strategies that shall focus on de-carbonization
- 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 Agriculture and livestock sector from across the India
- Opportunities for joint ventures, technology development and funding for methane mitigation strategies.

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International Center for
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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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**Indian Institute of Technology,
Guwahati**

Indian Institute of Technology Guwahati, the sixth member of the IIT fraternity, was established in 1994. The academic programme of IIT Guwahati commenced in 1995. At present the Institute has eleven departments, seven inter-disciplinary academic centres and five schools covering all the major engineering, science, healthcare, management and humanities disciplines.

Indian Institute of Technology Guwahati's campus is on a sprawling 285 hectares plot of land on the north bank of the river Brahmaputra around 20 kms from the heart of the city. With the majestic Brahmaputra on one side, and with hills and vast open spaces on others, the campus provides an ideal setting for learning.

The strategic commitment of IIT Guwahati provides the road map for the journey towards excellence. These strategies include the Vision, Mission, Goal and Values that would be instrumental in placing IIT Guwahati among the top academic institutions of the world. The strategies will create new opportunities for the faculty and the students for enhancement of knowledge, performing cutting edge research and development of professional skills. The ultimate aim is to provide the students with an educational training that emphasizes innovation, social awareness, professional ethics and nurture leadership skills. A resourceful environment to promote creativity and entrepreneurship amongst researchers is also being developed while maintaining sustainable goals and upholding the values of highest professional ethics and enrich the lives of humanity.

IIT Guwahati vision is to be recognized globally for excellence in education, research and innovation, and nurture future leaders, to serve the society at large. Its mission is to provide education, research and advancement of knowledge while motivating graduates to play vital roles in achieving excellence in pursuit for developmental activities and serve the society.

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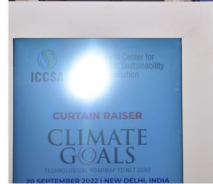




CURTAIN RAISER

20th SEPTEMBER 2022

SOVEREIGN 2, HOTEL LE MERIDIAN
New Delhi





Brainstorming Session on
OIL & NATURAL GAS
4TH NOVEMBER 2022
at Pandit Dindayal Energy University
Gandhinagar



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

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