



An Initiative By



IIT DELHI



CSIR



ICCSA

**27<sup>th</sup>**  
**SEPT. '23**

Brainstorming Session on

# TRANSFORMATIVE TRANSPORT

## NON-CO<sub>2</sub> EMISSIONS AND CLIMATE CHANGE

### @ IIT Delhi

IRD Conference Hall, 7th Floor, Main Building, IIT Delhi

# CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO



In Association with



An Initiative By



IIT DELHI



CSIR



ICCSA

# CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO

## 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 CO<sub>2</sub> 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 "Net Zero" country by 2070. With such ambitious targets, there is need to have focussed discussion on GHG emissions, sources, mitigation strategies, technological availability and deployment and so on and methane may be a good starting point along with CO<sub>2</sub> emissions. Given the above need, ICCSA Foundation has planned a series of brainstorming sessions, across the country, focussing on five 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 on methane emission and developing an action plan for transport Sector.

In Association with



Ministry of Environment,  
Forest and Climate Change  
Government of India



Confederation of India Industry

Brainstorming Session on

# TRANSFORMATIVE TRANSPORT

## NON-CO<sub>2</sub> EMISSIONS AND CLIMATE CHANGE

@ IIT Delhi

**27<sup>th</sup>**  
**SEPT. '23**

### Message from Summit Chair



#### DR. J. S. SHARMA

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

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 datasets, 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 datasets 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.

In Association with







## Focus Area : Landfill & Waste

Increased greenhouse gas emissions have changed the global ambient temperature and harmed global climatic conditions. GHG emissions from oil and gas industry have also contributed significantly to climate change. The largest portion of greenhouse gas emissions are produced by the transportation industry which is about 28%. The primary source of transportation-related greenhouse gas emissions is the combustion of fossil fuels in our automobiles, trucks, ships, trains, and airplanes. Petrol makes up more than 94% of the fuel used for transportation, mostly in the form of gasoline and diesel. Carbon dioxide (CO<sub>2</sub>) emissions from the combustion of petroleum-based fuels like gasoline and diesel in internal combustion engines account for the majority of greenhouse gas emissions from transportation. Methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) are released in relatively tiny quantities during the burning of fuel. Hydrofluorocarbon (HFC) emissions are also produced by the transportation industry.

Methane is a strong greenhouse gas that is mostly linked to waste management, agriculture, and activities in the oil and gas industry. Indirect sources of methane emissions from the transportation industry do exist, though. Some of those are listed below:

- **Fuel Production and Distribution:** The production, refinement, and distribution of fossil fuels, such as gasoline and diesel, can result in methane emissions. Leaks and fugitive emissions from the extraction, processing, and transportation of oil and gas are two possible sources of these pollutants.
- **Natural gas vehicles (NGVs):** NGVs primarily contribute to CO<sub>2</sub> emissions, but they also have the potential to emit methane while being fuelled and driven. Natural gas, the fuel for these cars, can leak methane throughout its extraction, processing, and transportation.
- **Landfills:** By disposing of garbage in landfills, the transportation sector indirectly contributes to methane emissions. Waste produced by transportation-related operations, such as vehicle maintenance and packing, can contribute to landfill methane emissions even though it is not a direct emission from transportation itself.

With a large number of vehicles on the road, India has a sizable transportation industry. Methane emissions are a result of the nation's quick urbanization and rising demand for personal vehicles. Furthermore, methane leaks might come from outdated, poorly maintained cars are also being reported. Road transport and aviation industry including fuel handling have known to be highest contributors to methane emissions. 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 focussing 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.

### In Association with





Brainstorming Session on

# TRANSFORMATIVE TRANSPORT

NON-CO<sub>2</sub> EMISSIONS AND  
CLIMATE CHANGE

@ IIT Delhi

27<sup>th</sup>  
SEPT. '23

Brainstorming session on

## TRANSFORMATIVE TRANSPORT NON-CO<sub>2</sub> EMISSION AND CLIMATE CHANGE

New Delhi the national capital of India is situated along the bank of Yamuna River and sharing borders with the states of Uttar Pradesh and Haryana. Delhi is surrounded by urban satellite cities like Gurgaon, Ghaziabad, Faridabad, and Noida forming the National Capital Region (NCR) along with stakeholders and partners like Council of Scientific and Industrial Research (CSIR), UNEP, IIT Delhi, Jawaharlal Nehru University, Delhi University, CSIR-Central Road Research Institute (CRRI), The Energy and Resource Institute (TERI), SIAM and many more. IIT Delhi is an appropriate location for discussion on Climate Goals related to this field with stakeholders, researchers, governing bodies, policymakers and industries for sharing their views and knowledge in this field.

ICCSA Foundation in continuation of a series of events is organising a brainstorming session on GHGs including methane emission from the Transportation sector on 27th September 2023 at the Indian Institute of Technology, Delhi from 1100 to 1600 h (IST).

The outcome of this session will help the organizers to develop a roadmap on key strategies and action plans to mitigate GHG Emissions, including methane emissions from the transport sector.



In Association with



An Initiative By



IIT DELHI



CSIR



ICCSA

# CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO

## DISCUSSION POINTS

CLIMATE GOALS : Technological Roadmap to Net Zero

- Indian-centric strategy for reducing methane emissions from the Transportation 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 that India can implement with a specific timeline

## EXPECTED TAKEAWAYS

- Awareness on methane emission from Transportation by highlighting short-term and long-term impacts to policymakers
- Transportation sector-specific directions for India on methane emissions with an action plan.
- The importance of emission detection and measurement in Transportation 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 will describe the overall strategy for reducing methane emissions across the sector.
- Access to Nobel Laureates, Ministry personnel, and Industry leaders of the Transportation sector from across India
- Opportunities for joint ventures, technology development and funding for methane mitigation strategies.

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.

In Association with



Brainstorming Session on

# TRANSFORMATIVE TRANSPORT

## NON-CO<sub>2</sub> EMISSIONS AND CLIMATE CHANGE

@ IIT Delhi

**27<sup>th</sup>**  
**SEPT. '23**



**INTERNATIONAL CENTER FOR CLIMATE AND SUSTAINABILITY ACTION FOUNDATION**

ICCSA is a not-for-profit organization incorporated in 2021, 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 knowledgebase 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.

In Association with





An Initiative By



IIT DELHI



CSIR



ICCSA

# CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO



## COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

The Council of Scientific & Industrial Research (CSIR), known for its cutting edge R&D knowledge base in diverse S&T areas, is a contemporary R&D organization. CSIR has a dynamic network of 37 national laboratories, 39 outreach centres, 1 Innovation Complexes, and three units with a pan-India presence.

CSIR's R&D expertise and experience are embodied in about 3521 active Scientists supported by about 4162 technical and support personnel as of 31st March 2022.

CSIR covers a wide spectrum of science and technology – from oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. It provides significant technological intervention in many areas concerning societal efforts, which include environment, health, drinking water, food, housing, energy, farm and non-farm sectors. Further, CSIR's role in S&T human resource development is noteworthy.



## INDIAN INSTITUTE OF TECHNOLOGY, DELHI

Indian Institute of Technology Delhi is one of the 23 IITs created to be Centres of Excellence for training, research and development in science, engineering and technology in India.

Established as College of Engineering in 1961, the Institute was later declared as an Institution of National Importance under the "Institutes of Technology (Amendment) Act, 1963" and was renamed as "Indian Institute of Technology Delhi". It was then accorded the status of a Deemed University with powers to decide its own academic policy, to conduct its own examinations, and to award its own degrees.

Since its inception, over 48000 have graduated from IIT Delhi in various disciplines including Engineering, Physical Sciences, Management and Humanities & Social Sciences. Of these, nearly 5070 received Ph.D. degrees. The number of students who graduated with B.Tech. degree is over 15738. The rest obtained Master's Degree in Engineering, Sciences and Business Administration. These alumni today work as scientists, technologists, business managers and entrepreneurs. There are several alumni who have moved away from their original disciplines and have taken to administrative services, active politics or are with NGOs. In doing so, they have contributed significantly to building of this nation, and to industrialization around the world.

In Association with



Ministry of Environment,  
Forest and Climate Change  
Government of India

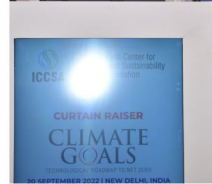


Confederation of India Industry



# CURTAIN RAISER

HOTEL LE MERIDIAN  
New Delhi







Brainstroming Session on  
**OIL & NATURAL GAS**  
4 NOVEMBER 2022  
at Pandit Dindayal Energy University  
Gandhinagar







# Brainstroming Session on AGRICULTURE & LIVESTOCK

1 FEBRUARY 2023  
IIT GUWAHATI







# COAL MINING SECTOR

**CBM & CMM**  
19th & 25th MAY 2023  
IIT BOMBAY







Brainstroming Session on  
**LANDFILL & WASTE**  
 11th & 12th AUGUST 2023  
 TISS, MUMBAI





# CLIMATE GOALS

TECHNOLOGICAL ROADMAP TO NET ZERO



**ICCSA**

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

C-83, Gamma-1, Gautam Buddha Nagar,  
Greater Noida, Uttar Pradesh - 201 307, INDIA  
E-mail : [connect@iccsaf.com](mailto:connect@iccsaf.com) | [www.iccsaf.com](http://www.iccsaf.com)