energise 2020

ENERGY INNOVATION
FOR A SUSTAINABLE ECONOMY

11th-13th February, 2020 | The Park, Hyderabad, India

ENERGY INNOVATION FOR A SUSTAINABLE ECONOMY

CONFERENCE PROCEEDINGS

Organisers

Alliance for an Energy Efficient Economy

MacArthur Foundation

ACEEE American Council for an Energy-Efficient Economy

Co-Organisers

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF SCIENCE & TECHNOLOGY
Government Of India

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PREFACE

India is at an inflexion point - driven by economic growth, a large and growing population, and rapid urbanization, India's energy consumption is expected to grow faster than that of any other major economy in the world. A combination of supply-side and demand-side interventions will be required to meet India's growing energy demand. In the wake of a global climate emergency, India's energy transition must be viewed from the perspective of climate action and sustainability. This bifold challenge is being addressed differently by different stakeholder groups - the public sector, the private sector, the civil society and academia. However, given the cross-sectoral nature of India's energy transition, there is a need and opportunity to align and strengthen the individual efforts of these diverse stakeholder groups and build integrative solutions. In this spirit, AEEE and MacArthur Foundation, with support from ACEEE, developed Energise 2020 to serve as a collaborative platform to align and resonate individual efforts to maximise results.

Energise 2020 was held at The Park in Hyderabad on 11-13 February 2020. The conference spanned 3 days and included curated paper presentations supported by plenaries and moderated panel discussion. The conference was preceded by an event on February 10 (pre-conference event), to deliberate over the implementation of the India Cooling Action Plan (ICAP). Energise 2020 is the second edition of two such conferences; the inaugural conference, INSPIRE, was held in Jaipur in 2017. Energise 2020 brought together 250+ Indian and international participants from diverse stakeholder groups representing the triple sector i.e. the public sector, the private sector, and the civil society. International participants from 8 countries added a global perspective to the dialogue and presented opportunities and challenges from their native experiences that India can learn from.

I wish to express my sincere thanks to our sponsors for their generous support, without which Energise 2020 would not have become a success. We are also very grateful for the government and the diplomatic support that the conference received.

It is my distinct pleasure to present to you the proceedings of Energise 2020 which encapsulates the key takeaways and highlights from the conference simply and succinctly. I hope students, researchers, industry practitioners and policymakers will find the descriptions of the dialogues and discussions that ensued at Energise 2020 usefu.

I thank you and look forward to welcoming you to the next edition of Energise in 2022.

Satish Kumar
(Convener - Energise 2020)

ACTION ITEMS

Presented below is a list of action items that came out of the discussions and deliberations at Energise 2020, which AEEE commits to pursuing in the near-term:

- **Create a stronger bridge between the industry and R&D community:** AEEE is committed to engaging industry and business partners in our ongoing and upcoming policy and research work. Whilst developing Energise as a stronger linking bridge between industry and the R&D community, AEEE will continue to leverage our projects to create collaborative engagements between the R&D (both government and private) and the industry stakeholder groups - this will help align user preferences, industry action, and research priorities.
- **Enhance awareness about energy efficiency using public-focused awareness campaigns:** Training and capacity building programs are already a core component of AEEE's work. AEEE will step beyond the professional community to make energy efficiency relevant to lay consumers using media-based public awareness campaigns and targeted nudging.
- **Promote state and city-level leadership in energy efficiency:** In its state energy efficiency index work, AEEE has taken the first step of benchmarking energy efficiency sector-wise in Indian states. As a next step, AEEE will focus on state-level actions such as workshops, energy data management frameworks and support for policy formulation in certain sectors such as buildings, space cooling, and cold-chain in some targeted states and cities. AEEE will also explore opportunities with government stakeholders to demonstrate city-level interventions, which can then serve as a model for replication in other cities.
- **Strive for integrative solutions and actions by leveraging robust data frameworks:** AEEE will help strengthen institutional capacity and mechanisms to collect demand-side data at the country, state and city levels; AEEE will also explore how utility and smart meter data can be combined with design, behaviour and other data points using artificial intelligence and machine learning to realise the full potential of energy efficiency.
- **Strengthen Energise as a platform for advancing collaboration and research efforts:** Whilst continuing to strengthen the triple sector approach at Energise, we aim to increase the focus on rigorous research and analysis and have a more balanced mix of new and seasoned researchers in the next round of Energise. We also hope to have the next set of research papers published in a Scopus-indexed journal of reasonably good standing.

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1 INTRODUCTION

India's energy consumption, driven by economic growth, a large and growing population, and rapid urbanization, is expected to grow faster than that of any other major economy in the world. Concurrently, India is also transitioning to a sustainable energy future amidst international commitments like the Paris Agreement (2015), the Kigali Amendment to the Montreal Protocol (2016) and Sustainable Development Goals 2030. Energy efficiency can emerge as a low-cost mediator between the drive towards economic maximization and environmental sustainability. To realize this pressing need in the wake of a global climate emergency, it is important to create policy frameworks supported by evidence-based and data-driven research and development – this is where Alliance for an Energy Efficient Economy (AEEE) steps in.

AEEE, in association with MacArthur Foundation, with support from American Council for an Energy-Efficiency Economy (ACEEE), hosted Energise 2020 (Energy Innovation for a Sustainable Economy), a biennial energy efficiency conference, at The Park in Hyderabad on 11-13 February 2020. This was prefaced with a pre-event on 10 February 2020. Energise 2020 is the second edition of two such conferences; the inaugural conference, INSPIRE, was held in Jaipur in 2017.

The present and upcoming editions of Energise aim to address the following two-fold objective:

- Energise aims to become an enabling platform for the torchbearers of energy efficiency and sustainability from three diverse stakeholder groups – the public sector, the private sector, and the civil society. This triple sector leadership approach is being pursued by AEEE to create a robust ecosystem of energy efficiency professionals, which will benefit policymakers and business leaders alike.
- Energise aims to make high-value research and analysis available to larger audiences, to close the knowledge gap and in turn help in creating a knowledge repository for India to enable data-based decisions in policy-making and businesses.

The conference received significant government and diplomatic support from the Ministry of Environment, Forest & Climate Change, Department of Science & Technology (DST), Bureau of Energy Efficiency, Niti Aayog, and the British High Commission. Key policymakers and dignitaries spoke at Energise 2020: Mr Anil Kumar Jain IAS, Secretary, Ministry of Coal; Mr Ajay Misra IAS, The Special Chief Secretary, Energy of Telangana; Mr Uttam Kumar Nalamada Reddy - Hon'ble Member of Parliament, Member, Standing Committee on Energy; Dr Sanjay Bajpai, Head Technology Missions Division (Energy, Water & all Other), Department of Science and Technology; Dr Amit Love, Scientist 'D' / Joint Director, Ozone Cell Ministry of Environment, Forest & Climate Change.

The conference received generous support from private sector sponsors i.e. Danfoss, Grundfos, Carrier, EESL, Oorja, Saint-Gobain, Siemens, Schneider Electric, Tabreed, cKinetics. Peer support was noted in CEPT University (CRDF), CEEW, CLEAN, NRDC, and Prayas (Energy Group). Energise experimented with charging a registration fee from the participants – a bold move in India where it is hard to convince participants that a high-quality conference has an associated opportunity cost for access to learning new ideas, powerful networking, and meaningful experiences.

The organizing team took care to make the conference sustainable through various means. Canvas backdrops replaced the poly-vinyl chloride flex backdrop, and single-use plastic bottles were replaced with reusable glass bottles to stay hydrated at the conference. The conference mobility was kept electric with a green travel partnership, and plantable seed calendars were given out as mementos to Energise speakers. The decision to make the conference app-based helped maintain a dynamic live agenda with ample opportunities for networking and kept the conference paperless.

The subsequent chapters describe the organization of the conference around paper presentations and supporting sessions and their main takeaways, key participation statistics, social and print media activities, and a gallery of pictures from the conference.

2 ORGANIZATION OF THE CONFERENCE

The conference spanned 3 days - February 11 to 13 - and included curated paper presentations supported by plenaries and moderated panel discussion. There was a pre-conference event on February 10 to deliberate over the implementation of the India Cooling Action Plan (ICAP).

2.1 PRE-CONFERENCE EVENT

Sustainable cooling is an area of critical priority for India with multiple socio-economic ramifications, and its urgency has been emphasized at a national level by the release of the India Cooling Action Plan (ICAP) in March 2019. The pre-conference event brought diverse stakeholders together with a focus on advancing the intent of the ICAP. The inaugural session welcomed distinguished guest speakers from the Ministry of Environment, Forest and Climate Change, the Telengana government, the Andhra Pradesh government, and the Administrative Staff College of India. This was followed by two panel discussions. The first discussion invited a diversity of perspectives - from the industry, civil society and multilateral entities - on catalysing the implementation of the ICAP. The second discussion explored the opportunities and role of partnerships and coalitions in addressing cooling - given the cross-cutting and multi-dimensional aspects of cooling, collaborations are increasingly critical in order to integratively and optimally solve the cooling challenge.

2.2 PAPER PRESENTATIONS

Bringing out credible research in the public domain can have a tremendous influence on effective policy making and scaling business innovation. Therefore, the paper presentations formed the raison d'être of the conference. 50 papers were presented at the conference. The organizers used a double-blind peer review process for paper selection in order to raise the bar for showcasing research on pressing policy and market questions. The peer-review effort was led by 38 technical committee members including four senior advisors and nine panel leaders comprising leading national and international experts from academia, policy think tanks, and foundations, consulting, and the industry, to lend a balanced perspective to the whole peer-review process. Over 150 abstracts were received in mid-2019, from which around 50 papers were accepted for presentation. The softcopy of these papers (paper proceedings) was shared with the delegates on a pen-drive and is available to download here https://www.energiseindia.in/energise-2020-paper-proceedings/. The papers were grouped under three tracks – Buildings and Communities, Energy Efficiency for Business Competitiveness and Urban Infrastructure and Utilities (Figure 1).

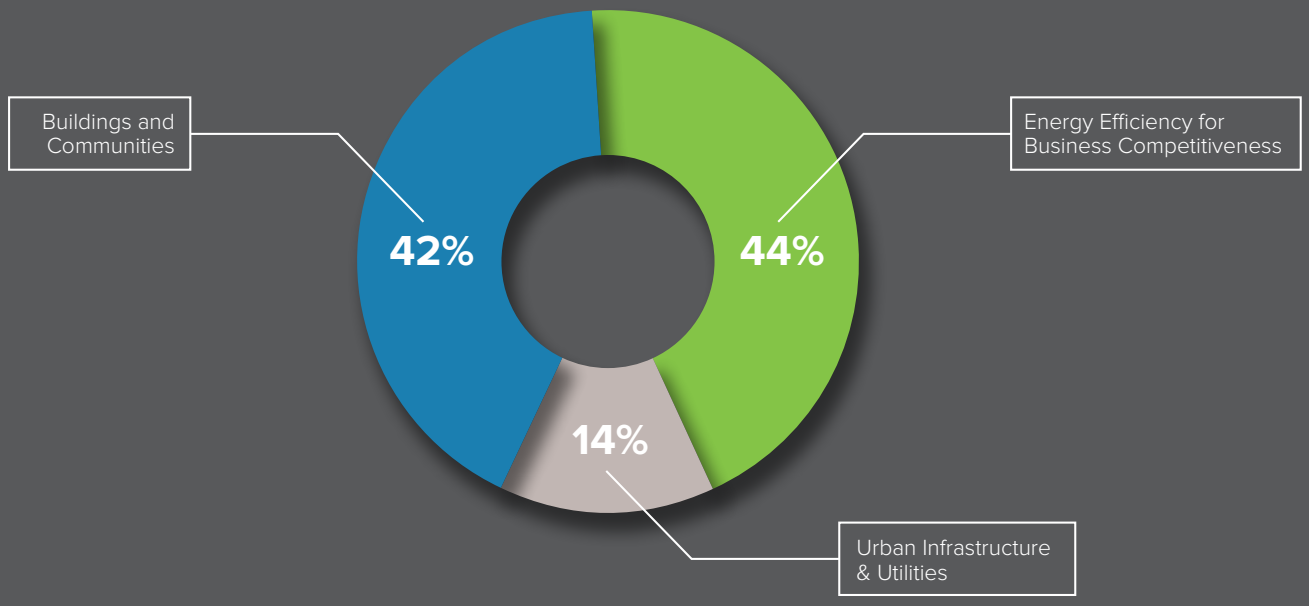


Figure 1: Share of Paper Presentations by Track

A wide variety of topics was covered at Energise 2020, as the only paper-based conference on energy efficiency in India - this gave energy efficiency professionals from varied backgrounds an opportunity to present and share their work. Given below is a list of topics included in each of the three tracks.

Buildings and Communities	Energy Efficiency for Business Competitiveness	Urban Infrastructure and Utilities
• Building Energy Codes and Standards • Relevant Policies at the National & Sub National Level • Thermal comfort • The embodied energy of construction materials and technologies • Role of building energy simulation • Climate responsive design • Building technologies and controls • Space cooling and low energy cooling technologies • Net-zero buildings and neighbourhoods • Behavioural and socio-cultural aspects affecting energy use • Post occupancy evaluation • Building Energy Performance • Standards and Labelling of Appliances • Super-Efficient Appliances	• Energy efficiency in Industries and MSMEs • Relevant Policies at the National & Sub National Level • Energy Data analytics and IoT • M&V or EM&V Policy • Asset management • Green supply chains • Energy Productivity • Business Models for energy efficiency • Financing for energy efficiency • Role of ESCOs in transforming energy efficiency markets	• Sustainable modes of transport and freight • Relevant Policies at the National & Sub National Level • Mobile air conditioning sustainability • Electric mobility – modes and business models • Batteries and charging infrastructure for electric vehicles • Smart Grids and Smart Cities • Promoting energy efficiency in the Public Sector • Demand-side measures in Utilities • Building Stock and Benchmarking

2.3 SUPPORTING SESSIONS

The paper presentations were supported by plenaries, moderated panel discussions, and keynote speeches (Figure 2). These sessions covered the technological intricacies of energy efficiency and its practical implementation. Some of the important themes brought to the fore included the role of energy efficiency in energy transition roadmaps, effective business models, the importance of partnerships for amplified results, and creating a culture of data-driven policies. These supporting sessions brought together diverse opinions from different stakeholder groups – the public sector, the private sector, and the civil society.

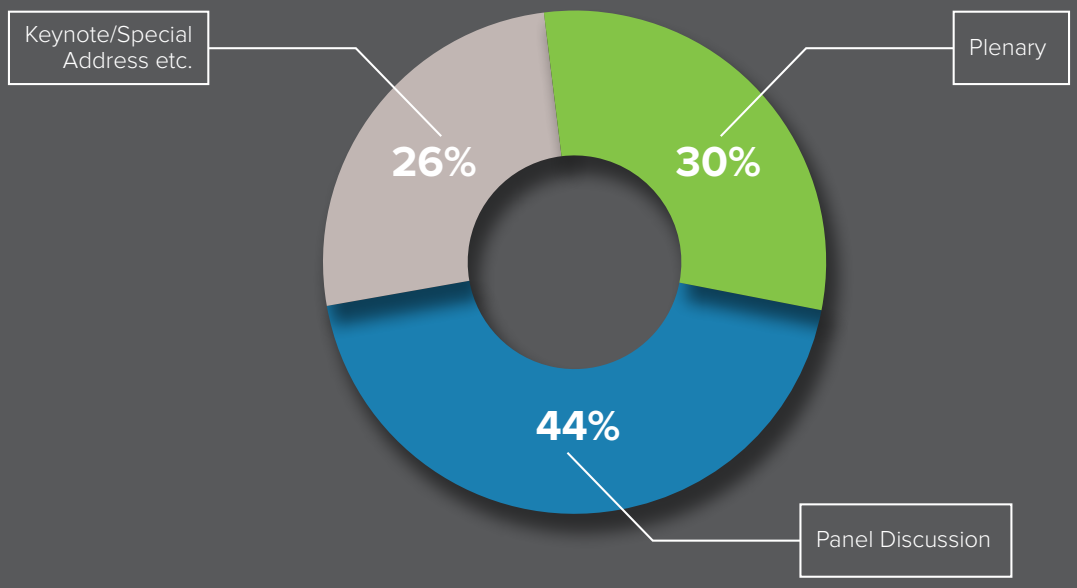


Figure 2: Time Spent on Type of Supporting Sessions (11-13 February 2020)

3 PROCEEDINGS

3.1 Detailed Proceedings

The proceedings of the plenary sessions, the panel discussions, and the keynote addresses have been summarized below:

10 Feb 2020 (Day 0): Pre-conference Event on Advancing the Intent of the India Cooling Action Plan	
Inaugural Session **Speakers:** • Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE • Dr Ashok Sarkar, Senior Energy Specialist and Task Team Leader (Energy Efficiency), The World Bank • Mr Ajay Mishra IAS, Special Chief Secretary (Energy), Telangana Government • Dr S K Pattanayak IAS (Retd.), Director General, Administrative Staff College of India, Hyderabad	Dr Kumar welcomed the distinguished guests from the government, the global civil society family, bilateral and multilateral organizations, foundations, businesses, and the press, and all other delegates to the Pre-conference Event. This cooling event was prefixed to the main conference to specifically discuss sustainable cooling and to explore partnerships on global cooling initiatives. Sustainable cooling is a high priority area for India – India represents 30% of the world's cooling demand (Cooling Degree Days (CDD) x population). However, cooling is not synonymous with air-conditioning in India – ceiling fans, air coolers, and passive cooling measures are central to India's cooling future (e.g. Dr Sarkar pointed out that cool roofs were able to reduce indoor temperatures by 6°C in rural schools in Telangana). Mr Mishra highlighted some important transferable lessons from the state of Telangana: (i) The deployment of solar power plants using the PPP model and solar rooftop demonstrates the importance of making intervention measures financially beneficial, at least in the short-term. (ii) Telangana's massive tree-planting campaign underscores the effective role of simple measures, and the importance of public awareness and engagement. The session brought to fore the cross-cutting nature of cooling and consequently the importance of engaging multi-sector specialists in India's cooling discourse. The presence of policymakers and cooling experts at the inaugural session was a glowing reminder that we are passionately united in charting a sustainable cooling future for India. It helped set the scene for subsequent sessions designed to help think through how we can collectively deliver the many socio-economic benefits associated with cooling.
Executive Session: Catalysing the Implementation of ICAP **Moderator:** Dr Amit Love, Scientist 'D' / Joint Director, Ozone Cell, MoEF&CC **Panellists:** • Mr Markus Wypior, Deputy Director, GIZ – India • Mr Chirag Baijal, Managing Director, Carrier Air-Con • Dr Archana Walia, Director – India Program, CLASP • Mr Sudheer Perla, Country Manager India – Business Development, TABREED • Dr Ashok Sarkar, Senior Energy Specialist & Team Leader (Energy Efficiency), The World Bank • Prof. Pawanexh Kohli, Ex-CEO, NCCD & Chief Advisor DAC&FW	This session provided an opportunity to hear a diversity of perspectives from the industry, the civil society, and multilateral entities on how on-the-ground implementation of the ICAP can be fast-tracked. Dr Love laid the context for the discussion by describing the driving force beyond ICAP – the MoEF&CC recognized that cooling was a 'black box' and helped integrate energy efficiency and refrigerant transition (as postulated in the Montreal Protocol) in ICAP. MoEF&CC has now set up 6 thematic groups to implement the recommendations of the ICAP, and states are a part of these thematic groups in order to aid in its implementation at the state level. Dr Walia pointed out that BEE's S&L program can be leveraged to drive ICAP implementation - S&L can be made more stringent to align with the best available technology in the market. Mr Baijal said that this supply-side management should be complemented with demand-side measures. The panellists agreed that the collection of good quality and granular data will be key to fast-track energy-efficient cooling appliances – however, this will be a labour-intensive and expensive exercise. Secondly, innovative financial models will help surpass the first cost bias and shift focus to operational costs – in this context, it will be useful to explore the role of development banks and MBOs in de-risking private investment in energy efficiency. Prof. Kohli stressed that energy efficiency is more about energy productivity rather than energy-saving and that a robust and energy-efficient cold-chain will help build a strong food-energy nexus and alleviate food wastage.

Panel Discussion: Exploring Partnerships Across Borders: Synergies Between the Global Cooling Initiatives and India's Cooling Coalition

Moderator: Dr Satish Kumar, President & Executive Director, AEEE

Panellists:

- Mr Benjamin Hickman, Regional Technical Advisor, Asia & Europe, UNEP
- Ms Anjali Jaiswal, Director, NRDC India Program
- Ms Shikha Bhasin, Programme Lead, CEEW
- Ms Clotilde Rossi di Schio, Specialist: Energy and Transport and Cooling for All initiatives, SEforALL
- Mr Shubhashis Dey, Associate Director - Energy Efficiency Program, Shakti Sustainable Energy Foundation

This panel discussion was premised on the multidimensional nature of cooling and the many benefits of interdisciplinary collaboration to achieve integrative solutions. Given their aligned objectives, this session sought to explore synergies and partnership opportunities between the national and global cooling coalitions, to share lessons and broaden positive impacts. The panel discussion reaffirmed the role of partnerships and how alignment amongst coalitions will reduce complexities and help amplify the common goals. The panellists highlighted that strategic communication, knowledge sharing, and a range of cross-cutting solutions are necessary for driving climate-sensitive cooling.

11 Feb 2020 (Day 1)

Inaugural Session

Speakers:

- Mr Upendra Bhatt, Managing Director – cKinetics and Chairperson, AEEE
- Mr Jarnail Singh, Deputy Director (India), MacArthur Foundation
- Mr Andrew Fleming, British Deputy High Commissioner to Andhra Pradesh and Telangana
- Dr Sanjay Bajpai, Head - Technology Missions Division (Energy, Water & All Other), Department of Science & Technology, Government of India
- Mr Steve Nadel, Executive Director, ACEEE
- Dr Satish Kumar, President & Executive Director, AEEE

Mr Bhatt welcomed the gathering to an information-rich and exciting three days. The conference was inaugurated by the ceremonial lighting of the lamp, followed by an array of thought-provoking and interesting speeches by eminent speakers. Mr Singh alluded to the previous decade (2010-20) as the decade of innovation, and the decade ahead of us (2020-30) as the decade of climate action, with energy efficiency as a key pillar of India's clean energy transition addressing both climate action and development. Mr Fleming remarked that the Government of India's commitment to clean energy (e.g. International Solar Alliance, clean energy aspects of the Budget 2020-21, etc.) makes India a natural partner for the UK for advancing the agenda of a low carbon economy; the UK and India have forged meaningful partnerships on alleviation of climate-vulnerable communities, R&D, electric mobility in cities, the role of private financing, power sector reforms, etc. Dr Bajpai spoke about how R&D and innovation today needs to be guided by considerations of sustainability and not technical merit alone - there is a need to move from a technology-centric approach to a more holistic approach where lifecycle implications, scalability, and overall environmental impact are taken into due consideration. Mr Nadel touched upon the need to reinforce leadership at the state and city-level to percolate government policies and the socio-economic benefits associated with them to a larger consumer base. Dr Kumar delivered the vote of thanks.

The following reports were launched at the inaugural session:

- CEPT: Design Guide for Practitioners for Design of Low Energy Residences
- SEforALL: Switching Gears: Enabling Access to Sustainable Urban Mobility
- Shakti Sustainable Energy Foundation and Vasudha Foundation: India Power Outlook Series (Volume 1)
- AEEE: Increasing Energy Access by Using Super-Efficient Appliances in Rural Homes and Productive Businesses: India Stakeholders Mapping Report

Keynote Address by Mr Srinivasa Raju Chintalapati, Founder and Investment Advisor, iLabs Group	Mr Raju delivered a compelling keynote speech. He stressed on reducing system-wide inefficiencies and enhancing energy productivity. Most importantly, the keynote started a conversation about the role of changing behaviours in the larger context of the energy transition – at the level of government, corporations, and individuals. Changing behaviours, i.e. the choices we make around energy, can bring about a paradigm shift in our energy transition journey - this became a recurrent theme of the conference and was circled back to in many subsequent sessions. Mr Raju also invoked the importance of goal setting for carbon neutrality to spur change.
TechnoBuzz	Technobuzz was an industry exhibition along the sideline of the paper presentations and other supporting sessions on the first two days of the conference. It was an opportunity for technology providers to present to the conference delegates, innovative and high-efficiency products and services that they were excited about. The participating companies were Armstrong Fluid Technology, Saint Gobain India, Carrier, Tabreed, Grundfos Pumps, Eurovent, Schneider Electric, Siemens, Oorja Energy, and EESL.
Plenary Session: Role of Energy Efficiency in Energy Transition Roadmaps **Moderator:** Mr Anil Kumar Jain IAS, Secretary, Ministry of Coal, Government of India **Panellists:** • Dr Arunabha Ghosh, Founder & CEO, CEEW • Mr Steve Nadel, Executive Director, ACEEE • Mr Chinmaya Acharya, Interim CEO, Shakti Sustainable Energy Foundation • Ms Jennifer Layke, Global Director – Energy Program, WRI • Dr Ashok Sarkar, Senior Energy Specialist & Team Leader (Energy Efficiency), The World Bank	This plenary aimed to explore the role of energy efficiency in a sustainable and smooth energy transition, in the backdrop of a flurry of changes like a changing energy mix, electrification of the vehicle fleet, and the decarbonization of the industrial sectors. Mr Jain alluded to recent reports that energy efficiency and renewable energy can have comparable savings potential and remarked that the pace of development of renewable energy should be replicated for energy efficiency in India. Dr Sarkar mentioned that according to World Energy Outlook (2019), energy efficiency can meet as much carbon emission reduction targets as renewable energy - and a fertile policy ecosystem will enable technological disruption. Dr Ghosh stressed that we need to re-position energy efficiency within the larger context of the energy transition by broadening the dialogue to include aspects such as business productivity, cost competitiveness, job creation, and energy equity. It was reiterated that demand-side opportunities although cost-effective, are risky; a transformative approach to overcoming first-cost barriers through distribution frameworks, policies, and implementation can help drive new investment in energy efficiency. Mr Acharya focused on market mechanisms to drive the uptake of energy efficiency. Ms Layke drew attention to a zero-waste economy. The audience interaction brought in a new discussion point i.e. targeted consumer nudges can help transform behaviour to reap significant benefits.
Plenary Session: Coupling Innovation & Technology with Effective Business Models **Moderator:** Mr Ranganath Nuggehallli Krishna, Managing Director, Grundfos **Panellists:** • Dr Sanjay Bajpai, Head - Technology Missions Division (Energy, Water & all Other), Department of Science & Technology • Mr Madhusudhan Rao, Managing Director, Oorja Energy • Mr Chirag Baijal, Managing Director, Carrier Air-Con • Mr Ravichandran Purushothaman, President Danfoss - India • Mr Venkat Garimella, Vice President, Schneider Electric	The past decade was described as the decade of innovation at the conference. Innovations in energy efficiency are spurring cost savings for businesses and consumers while leading the way in decreasing energy consumption. However, the first cost bias continues to encumber the uptake of these solutions. Dr Bajpai expressed that many-a-time innovations are unable to scale up beyond the lab/pilot stage. In this regard, meaningful partnerships between R&D organizations and the industry to incorporate user preferences early on can help innovations scale-up. Mr Baijal pointed out there is an opportunity to focus on knowledge as a service - e.g. how can optimization of existing assets add to the bottom line without expensive capital investment. Mr Kumar said that ambitious climate action goal-setting at the level of corporations and even countries can encourage stepping-up and strengthening energy efficiency interventions.

• Mr Venkatesh Dwivedi, Director, Energy Efficiency Services Limited • Special address by Mr Rajiv Kumar, Managing Director, Microsoft IDC and Corporate Vice President, E+D India	
Presentation: Switching Gears: Enabling Access to Sustainable Urban Mobility by Ms Clotilde Rossi di Schio, Specialist: Energy, Transport, and Cooling, SEforALL	Fossil fuel-based transport contributes to global warming and air pollution. This presentation assessed the status of the energy-mobility nexus and its applicability in Indian cities. It was presented that many Indian cities are excellent targets to support sustainable urban mobility through early intervention including integrated energy, land use, and mobility, and targeted demand-side management.
Panel Discussion on Low Energy Cooling Residential Design Guide for Practitioners **Panellists:** • Prof. Rajan Rawal, Executive Director, CEPT University • Prof. Malcolm Cook, School of Architecture, Building and Civil Engineering, Loughborough University • Dr Yash Kumar Shukla, Technical Director, Building Systems and BEPL, CEPT University	Low Energy Cooling and Ventilation in Indian Residences (LECaVIR) is a research project carried out in partnership by Loughborough University, UK, and CEPT University, India to explore the prospects for reducing refrigerant-based air-conditioning whilst maintaining acceptable indoor air quality and thermal comfort. CEPT presented some control strategies to choose between natural ventilation and artificial ventilation depending upon the weather, and occupant feedback. These will be further studied in an experimental setup. The design guidelines prescribe the applicability of these strategies in different apartment layouts.
12 Feb 2020 (Day 2)	
Plenary Session: Creating a Culture of Data-driven Energy Efficiency Policies: How End-Use Energy Data can be a Game Changer **Moderator:** Dr Rahul Tongia, Fellow, Brookings India **Panellists:** • Dr Bhaskar Natarajan, Advisor, AEEE • Dr Anna Agarwal, Fellow, Centre for Policy Research • Mr Umesh Bhutoria, CEO, EnergyTech Ventures • Mr Tanmay Tathagat, Director, Environmental Design Solutions • Professor Vishal Garg, IIIT Hyderabad • Mr Srihari Dukkipati, Fellow, Prayas (Energy Group)	Dr Tongia helped set the context and began the discussion by asking some pointed questions around data. At what point does granular data begin to cause market transformation? What role can data play in informing new business models? Mr Dukkipati listed out different types of data that are required to enable decision making and policy action: aggregate demand data across consumer segments, appliance ownership, market data (sales and production, even at the state level), appliance performance data, smart meter data, and building design data. Dr Natarajan added that the timeliness of data is important. Prof. Garg said that there is a need to shift from black-box analysis to understandable and explainable AI - e.g. the user should know why an AI system is making a certain decision, and not just see that the decision has been made. Dr Agarwal pointed out that strategic data collection can help us understand how consumer preferences change with time, income, etc. - and this can help inform policy action. Mr Bhutoria explained how the government can emerge as a platform for enabling energy data management, which is founded on the principle of centralized governance and decentralized applications. Mr Tathagat said that there is an opportunity for strategic data collection - and finding ways to leverage this data in a cross-functional way to arrive at integrative (and not siloed) solutions - this is where the role of partnerships and coalitions comes in. During the audience interaction, Dr Satish Kumar touched upon real-time display of energy consumption on appliances and how this can be a game-changer and cause a paradigm shift in the way appliances are used.
Keynote Address on by Ms Shloka Nath, Head - Sustainability and Special Projects at Tata Trusts & Executive Director, India Climate Collaborative	In her address, facilitated by video conferencing, Ms Nath recommended that philanthropic organizations should support innovations and R&D that focus on long-term gains rather than immediate gains; and climate financing should take more risks. She also stressed that effective communication is at the heart of climate action and that the right messaging will play a very important role in connecting with lay consumers and making climate stewardship relevant to them.

Panel Discussion on BHAVAN Fellowship Programme **Moderator:** Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE **Panellists:** • Dr JBV Reddy, Scientist E, Technology Missions Division (Energy, Water & all Other), Department of Science and Technology • Ms Saranya Anbarasu, Research Associate, CARBSE • Ms Subhashree Basu, Associate Program Officer, Indo-US Science and Technology Forum (IUSSTF) • Dr Chaitali Basu, Assistant Professor, SPA, Delhi	The Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships are envisaged to create a sustainable and vibrant linkage between the US and India. This session provided a brief introduction to the BHAVAN program. The panel highlighted that the BHAVAN Fellowship Programme has the potential to emerge as a key platform for a long-term collaboration between Indian and the US academia. BHAVAN will provide an excellent opportunity for Indian students to pursue higher studies abroad and expand networking and exposure.
Executive Panel Discussion: Roadmap for Deployment of Public Charging Infrastructure for Electric Vehicles in India **Moderator:** Mr Jagabanta Ningthoujam, Senior Associate, Rocky Mountain Institute **Panellists:** • Ms Srujana Raghupatruni Patnaik, Founder, Cellerite Systems • Mr Karthik Gogula, Assistant Manager, Bounce • Ms Aanchal Kumar, Environment Economist, EESL • Mr Abhishek Ranjan, Additional Vice President and Head Renewable, DSM & EE and Energy Analytics Head Power Scheduling, BSES Rajdhani	This session focused on identifying the key elements of a possible roadmap for building an EV charging infrastructure in India. It was discussed that it is important to put a definition around fast charging. Mr Ranjan said that 'fast charging' should be comparable with current benchmarks i.e. 5 minutes to fill petrol for 400 km range. The panel suggested various options for the siting of charging points: apartment owners and community associations can be reached out to since 2 & 3 wheeler charging will most likely be mainly residential; charging stations can co-exist with other services in public spaces too; battery swapping should be seriously considered. The role of EV charging in load balancing and in helping with DER and RE integration was also touched upon. The panel brought out several barriers to rolling out public charging including the lack of standardization, low utilization of charging infrastructure in some places, low EV penetration, and the lack of ToD tariff for EV.
Executive Panel Discussion: India Focus Sector-Specific Energy Transition Strategies **Moderator:** Mr Upendra Bhatt, Managing Director – cKinetics and Chairperson, AEEE **Panellists:** • Dr Steven Fawkes, Managing Partner at EnergyPro Ltd & Partner at Cameron Barney • Ms Starlene Sharma, Climate and Cleantech Investor • Mr Deepak Gokhale, General Manager, Aditya Birla Management Corporation • Mr Ajay Kumar Kapur, Former- Deputy Managing Director, SIDBI • Mr Jayant Prasad, Executive Director, cKers Finance • Mr Ayaz Kamil, Head - Energy & Performance Services, Siemens	Industry experts discussed policy prescriptions and pathways for good businesses. The panellists agreed that oftentimes energy efficiency is not a priority for CEOs - it is seen as a 'good-to-have' solution rather than a 'must-have' solution. It is important to understand CEOs' motivations and priorities e.g. the healthcare and hospitality sectors have a larger demand for energy efficiency services. Dr Fawkes suggested that ESCOs should explore new business models rather than just focusing on EPC as the only way of contracting. It was concluded that a balance of standardized solutions and customized solutions would be necessary to address all sectors and subsectors of energy use.

Executive Panel Discussion: Pathways to Achieve Energy Savings through Successful Implementation of EE Policies in States **Moderator:** Mr R.K Rai, Secretary, Bureau of Energy Efficiency **Panellists:** • Mr N. Janaiah, VC & Managing Director, TSREDCO, Hyderabad • Mr Vineet Taneja, Deputy General Manager (Tech), EESL • Dr R. Harikumar, Joint Director, Energy Management Centre – Kerala • Mr Kiran Ananth, Principal Counsellor, Confederation of Indian Industry • Mr Piyush Sharma, Technical Expert, Indo-German Energy Programme – GIZ	State action was identified as a key gap in India's energy efficiency landscape and emerged as a recurrent theme of the conference that warrants immediate redressal. The panel recommended capacity building for strategic data collection and dissemination to help benchmark each sector at the state level. It was also mentioned that whilst the residential sector has been tapped into, energy efficiency interventions are limited in industries and commercial buildings. There is a gap between SDAs and industries - AEEE can play an important role to build bridges and close this gap. The panellists also suggested that having an independent SDA and inter-departmental working groups (SDA and state departments) will help in driving energy efficiency implementation.
Executive Panel Discussion: Changing Behaviour for an Energy Efficient Future **Moderator:** Ms Sneha Sachar, Strategic Advisor, AEEE and Consultant, Rocky Mountain Institute **Panellists:** • Dr Ken Haig, Senior Director, Market Development & Regulatory Affairs, Oracle Utilities • Mr Steve Nadel, Executive Director, ACEEE • Mr Bharath Jairaj, Director, Energy Program, WRI India • Ms Sumathy Krishnan, Executive Director, TIDE • Mr Abhishek Ranjan, Additional Vice President and Head Renewable, DSM & EE and Energy Analytics Head Power Scheduling, BSES Rajdhani	Ms Sachar helped set the context by invoking Richar Thaler's Nudge Theory; she also reiterated Mr Raju's message on the power of changing behaviours from early on in the conference. Mr Nadel gave examples of behavioural energy efficiency from the US and mentioned that a meta-analysis of programs in the US has shown that 2%-20% energy saving is possible from behaviour change programs. Ms Krishnan introduced the Vidyut Rakshaka (VR) Programme in Bangalore, wherein 17% of households and 41% of participants have saved energy as a result of VR intervention, which links household energy consumption and feedback. Mr Jairaj stressed on the importance of breaking down the complexities in the energy sector and using the right messaging to a broader audience; this will scale-up the efforts and positive impacts. Mr Haig opined that peer pressure ("what do my neighbours think of me?") can be a stronger motivation for changing behaviour than just monetary savings. Mr Ranjan described the next steps in the BSES Rajdhani-Oracle partnership. He suggested that the data collected during the pilot will have multiple applications such as, for giving the government evidence on how to provide subsidies to only those that really require them, and for bottom-up load forecasting for system and network planning.
Solar Decathlon India – A collegiate competition with real-world impact **Moderator:** Mr Prasad Vaidya, Senior Advisor, AEEE & IIHS, Director, Solar Decathlon India **Panellists:** • Dr Satish Kumar – President & Executive Director, AEEE • Professor Namrata Dhamankar, BNCA Pune • Dr Ashok B Lall, Principal, Ashok B Lall Architects • Dr Sunita Purushottam, Head of Sustainability, Mahindra LifeSpace Developers Ltd. • Ms Yashima Jain, Team Leader - Team KillBill 2018, US. Solar Decathlon	The first Solar Decathlon India (SDI) collegiate competition for net-zero buildings will be held in 2020-2021. This session provided a brief introduction to the competition and the panellists gave insights on the promise such a competition in transitioning India to a low-carbon economy. SDI may not show tangible outputs initially, however, it can play a key role in the long term to transition from the ECBC regime to the net-zero regime.

13 Feb 2020 (Day 3)	
Special Address by Mr Uttam Kumar Nalamada Reddy, Hon'ble Member of Lok Sabha and Standing Committees (Energy)	In this special address, Mr Singh reaffirmed the Government of India's support to scaling-up energy efficiency. He said that both energy production and energy efficiency are important to meet the rising demand for electricity in India. In response to a question by Dr Bhaskar Natarajan, he expressed that replacing free electricity to the agriculture sector with Direct Benefit Transfer (DBT) can help significantly save electricity - however, given the strong political connotations attached to the agriculture sector, such reforms become difficult to implement. In response to Prof. Malcolm Cook's question, Mr Singh said that India would be happy to partner with the UK on futuristic technologies such as hydrogen fuel cells, energy storage, and small wind energy.
Plenary Session: Role of Partnerships to Accelerate Sustainable Development **Moderator:** Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE **Panellists:** • Dr Priya Sreedharan, Senior Clean Energy Technical Advisor, USAID • Professor Rajat Gupta, Oxford Brookes University, UK • Mr Arijit Sengupta, Director, Bureau of Energy Efficiency • Ms Ekta Mehra, Senior Sector Specialist Finance, KfW • Dr Koshy Cherail, Principal Advisor, AEEE	MBOs and foundations contribute significantly to the research and analysis to inform policy frameworks and implementation. This session discussed strengthening collaboration with national and international partners for achieving sustainable development goals. MBOs are already working with the Government of India to make energy secure, clean and reliable. BEE has partnered with the US (USAID), Germany (GIZ, KfW), Switzerland (Indo-Swiss BEEP), and Japan, to strengthen the case for energy efficiency in residential and commercial buildings and in industries. Through audience interactions, it came out that a strong peer review of outcomes of MBO-funded projects, harmonization of methods, public sharing of data/results, and more coordination between donors can help minimize duplicity and associated complexities.
RESIDE Round Table: Measuring And Monitoring Residential Energy Use In India: Challenges And Opportunities **Moderators:** • Prof Jyotirmay Mathur, MNIT Jaipur • Prof Vishal Garg, IIIT Hyderabad • Prof Rajat Gupta, Oxford Brookes University, UK	This workshop shared the challenges and opportunities arising from the ongoing Indo-UK RESIDE field study and sought inputs and experiences from peer groups. The round table probed the necessity of harmonizing data collection in thermal comfort studies and if creating open data sets would help in this regard. The roundtable discussed protocols for data collection, analysis, and reporting in field studies on residential energy and thermal comfort. Prof Rajan Rawal, Dr Satish Kumar, Mr Pierre Jaboyedoff, and Mr Prasad Vaidya actively participated from the audience.
Valedictory Session by Ms Sneha Sachar, Strategic Advisor, AEEE and Consultant, Rocky Mountain Institute	Ms Sachar summarised the key takeaways from the three-day-long conference in her valedictory speech. She touched upon the broad themes that emerged recurrently during the conference including the need for re-positioning energy efficiency in the context of the larger energy transition, holistic innovation, the potential of behavioural energy efficiency, and the role of partnerships in delivering results. The gaps and opportunities in energy efficiency in India were also highlighted: leadership at the state and city levels, right messaging to drive consumer change and the availability of data across the board. Ms Sachar briefly laid out the vision for Energise going forward i.e. Energise will emerge as a platform to foster collaboration between the public sector, the private sector, and the civil society & academia. It will continue to offer an accepting platform to new researchers to share their work and receive guidance from the peer community. Going forward, Energise will increase the emphasis on rigorous technical research and analysis and have a mix of new researchers and seasoned researchers.

3.2 SUMMARY

Presented below is a summary of the most essential takeaways from the conference proceedings.

Broad themes that emerged recurrently during Energise 2020:

- **The decade of climate action:** The previous decade (2010-2020) was the decade of innovation whereas the decade ahead of us (2020-2030) will be the decade of climate action. Energy efficiency can help reap significant climate action benefits and other Sustainable Development Goals.
- **Re-positioning energy efficiency:** There is a need to re-position energy efficiency within the larger context of the energy transition. The dialogue needs to broaden to include aspects such as business productivity (reducing system-wide inefficiencies), cost competitiveness, job creation, and energy equity.
- **Holistic innovation:** R&D and innovation today needs to be guided by considerations of sustainability and not technical merit alone. We have to move from a technology-centric approach to a more holistic approach where lifecycle implications, scalability and overall environmental impact are taken into due consideration. We also need to think of how we progress from innovation to invention to affordable invention.
- **Behavioural energy efficiency:** The conversation about energy transition fundamentally boils down to changing behaviours – at the level of corporations, government and individuals. Changing behaviours, i.e. the choices we make around energy, can bring about a paradigm shift in our energy transition journey.
- **The importance of partnerships:** The role of partnerships is becoming increasingly important - there is ample opportunity for businesses, the government, and the R&D community to draw synergies for cohesive action – actions that avoid duplication and thus minimize complexity.

Gaps and opportunities in India's energy efficiency landscape:

- **Right messaging:** It is important to break down the complexities in the energy sector and use the right messaging to a broader audience – beyond the professional community. This will make energy stewardship relevant and important to non-experts and really scale-up energy efficiency and its positive impacts.
- **Closing data gaps:** Availability of data is a key gap across the board. There is an opportunity for strategic data collection and for finding ways to leverage data in a cross-functional way to arrive at integrative (and not siloed) solutions.
- **Integrative solutions rather than the current siloed solutions:** As EE becomes more and more embedded in the larger context of CC, the solutions will have take an integrative approach
- **The need for effective business models:** Demand-side opportunities although cost-effective are risky; a transformative approach to overcoming first-cost barriers, and perceived risks through innovative business models can help drive new investment in energy efficiency.
- **State and local action:** There is a need to reinforce leadership at the state and city-level to percolate government policies and the socio-economic benefits associated with them to a larger consumer base.

Drawing upon these dominant themes and the gaps discussed, AEEE has committed to action items (presented on page 6 of this report) that will guide, and be integral to, our near-term work as well as the planning of the next Energise event.

4 CONFERENCE HIGHLIGHTS

4.1 PARTICIPATION

Energise 2020 brought together 250+ Indian and international participants from diverse stakeholder groups representing the triple sector i.e. the public sector, the private sector, and the civil society. The participants included policymakers and members of government agencies, technology and energy service providers, business and finance professionals, equipment manufacturers and other industry leaders, academics and researchers, thought-leaders from the civil society, energy efficiency professionals, and students. Additional participants included members of the press, conference sponsors, and in-house conference organisers. The full participant list has been made available in the Appendix.

- 116 speakers, 46 authors, 96 delegates (Figure 3)
- International participants form 8 countries added a global perspective to the dialogue and presented opportunities and challenges from their native experiences that India can learn from

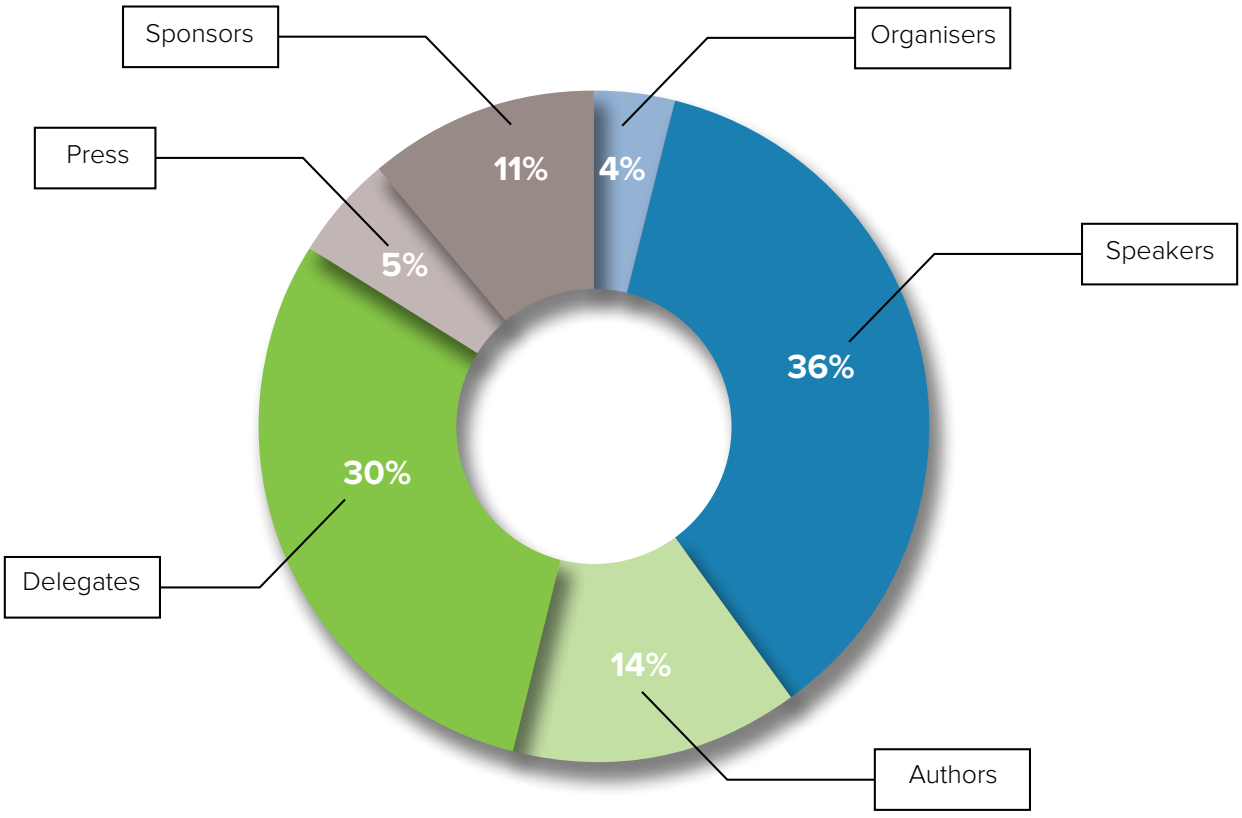
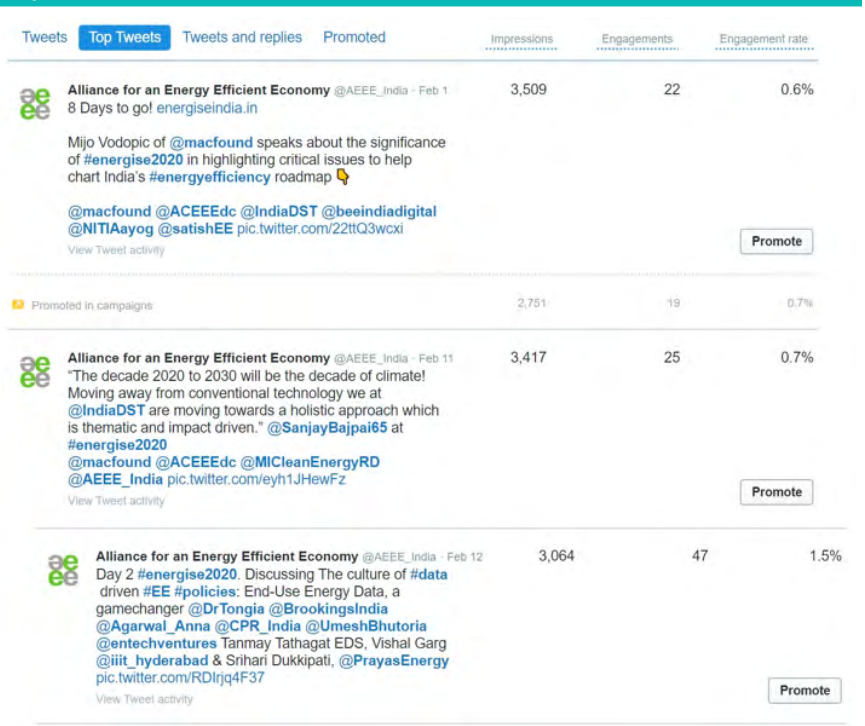


Figure 3: Distribution of Participants by Function (Total: 325)

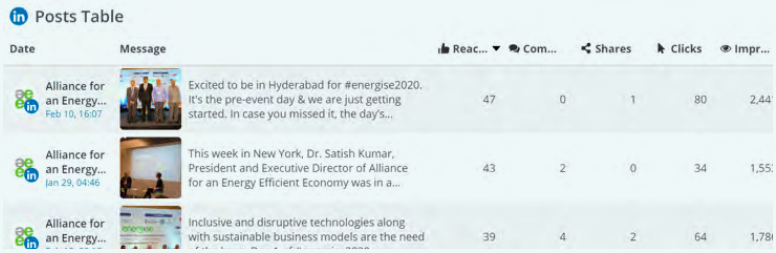
4.2 MEDIA COVERAGE

The communications team ran a month-long social media campaign from 13 Jan 2020 to 14 Feb 2020, which focused on the conference teasers, the program, plenary topics, Technobuzz, video testimonials and endorsements, countdown posts, green initiatives at the conference and much more. The social media campaign received a good response - this caused better event promotion and increased following on LinkedIn and Twitter. The key analytics of the campaign are below:

Platform	Engagement	Top Posts
Twitter	• 104.5k impressions • 105 new followers • 1.4% engagement rate • 79 link clicks • 200 retweets • 569 likes • 6k video views • 3.5k minutes viewed	

Top Media Tweet (earned 3,394 impressions):

"The decade 2020 to 2030 will be the decade of climate! Moving away from conventional technology we at @IndiaDST are moving towards a holistic approach which is thematic and impact driven." @SanjayBajpai65 at #energise2020 @macfound @ACEEEdc @MICleanEnergyRD @AEEE_India pic.twitter.com/eyh1JHewFz

LinkedIn	• 24 posts • 696 engagements • 1.5k page clicks • 612 reactions • 60 shares • 24 comments • 454 new followers	

Posts Table

Date	Message	Reac...	Com...	Shares	Clicks	Impr...
Alliance for an Energy... Feb 10, 16:07	Excited to be in Hyderabad for #energise2020. It's the pre-event day & we are just getting started. In case you missed it, the day's...	47	0	1	80	2,44
Alliance for an Energy... Jan 29, 04:46	This week in New York, Dr. Satish Kumar, President and Executive Director of Alliance for an Energy Efficient Economy was in a...	43	2	0	34	1,55
Alliance for an Energy...	Inclusive and disruptive technologies along with sustainable business models are the need	39	4	2	64	1,78

To amplify the reach of the conference, the communications team also prepared a pre-event media invitation followed by two post-event media releases that were widely circulated to various media houses to ensure coverage. Energise 2020 has been covered by at least 10 publications including both print (national and state) and online media. The details have been provided below.

Date	Publication	URL
11 Feb 2020	The Hindu (Readership- 62,26,000 IRS 2019 Q1)	Conclave on energy efficiency begins
11 Feb 2020	The Economic Times (Readership- 3.7 million)	Coal India will exceed last year's production figures: Official
11 Feb 2020	Financial Express (Circulation- 25,000)	Coal India will exceed last year's production figures: Official
11 Feb 2020	Riaan TV	India's energy demand to be doubled by 2030
11 Feb 2020	News Heads	Coal India to exceed production figures: Official
11 Feb 2020	Devdiscourse	Coal India to exceed production figures: Official
11 Feb 2020	Small News	Conclave on energy efficiency begins
12 Feb 2020	ET Energyworld	Coal India will exceed last year's production figures: Official
12 Feb 2020	Mere Sarkar	Energy efficiency Conclave begins in Hyderabad
12 Feb 2020	EENADU (Telugu daily newspaper Readership- 15.84 million)	
12 Feb 2020	Velugu (Readership-2.95 lakh)	

బొగ్గు ఉత్పత్తి ఆశాజనకం

బొగ్గు శాఖ కార్యదర్శి అనిల్‌కుమార్ జైన్ వెల్లడి

ఈనాడు - హైదరాబాద్

దేశంలో బొగ్గు ఉత్పత్తి ప్రస్తుత ఆర్థిక సంవత్సరంలో ఆశాజనకంగా ఉందని, కేంద్ర బొగ్గు శాఖ కార్యదర్శి అనిల్‌కుమార్ జైన్ వెల్లడించారు. మంగళవారం హైదరాబాద్‌లో ఏర్పాటైన (అలియన్స్ ఫర్ ఎనర్జీ ఎఫిషియెన్సీ ఎకానమీ) ఆధ్వర్యంలో నిర్వహించిన 'ఎనర్జైస్ -2020' సదస్సులో పాల్గొనేందుకు వచ్చిన సందర్భంగా ఆయన మీడియాతో మాట్లాడారు. 2018-19లో 606.89 మిలియన్ టన్నులు(ఎంటీ) బొగ్గు ఉత్పత్తయింది. గత ఆక్టోబరు నాటికి క్రితం ఆర్థిక సంవత్సరంతో పోలిస్తే 8 శాతం తక్కువగా ఉత్పత్తి ఉందని, కానీ ఆ ఆక్టోబరు తర్వాత ఇది అధికమయ్యిందని వివరించారు. గతేడాదికన్నా ఎక్కువగా బొగ్గును ఈసారి ఉత్పత్తి చేస్తామన్నారు. ఆర్థిక సంవత్సరాల్లో లిలామర్ నుంచి వరదలు వచ్చి దీనికి ఓపెన్‌కాస్ట్ బొగ్గు గనుల మూసివేయడం వల్ల గత ఆక్టోబరు నాటికి ఉత్పత్తి తగ్గినట్లు ఆయన వివరించారు. ఈ గనులో ఏటా కొనుండేల బొగ్గు ఉత్పత్తి అవుతుంది.

సింగరేణి అభివృద్ధి బాగుంది

సింగరేణి సంస్థ సాధించిన అభివృద్ధి బాగుందని అనిల్‌కుమార్ ప్రశంసించారు. సదస్సు అనంతరం ఆయన సింగరేణి భవన్‌కు వచ్చి బొగ్గు ఉత్పత్తిపై సమీక్ష జరిపారు. బొగ్గు రవాణాకు స్వయంగా రైల్వేలైను నిర్మించుకోవడం మినియాగదారుల విశ్వాసం చూరగొనడం మంచి విధానాలన్నారు. ఈ సంస్థకు ఇతర రాష్ట్రాల్లో బొగ్గు గనులు కేటాయించడానికి కేంద్రం సానుకూలంగా ఉన్నట్లు తెలిపారు.

విద్యుత్తు వినియోగం రెట్టింపు

దేశంలో ఇప్పుడున్న విద్యుత్తు అవసరాలు 2030కి రెట్టింపు అవుతాయని సదస్సులో వక్తలు పేర్కొన్నారు. దీన్ని తట్టుకునేందుకు సమర్థమైన ఇంధన వినియోగంపై దృష్టి పెరిగిందని ఉంది. రవాణా రంగంలో విద్యుత్ వాహనాలు పెరుగుతున్నాయని, దీంతోపాటు ఆర్థిక వ్యవస్థ స్థిరంగా కొనసాగాలంటే ప్రత్యామ్నాయ విద్యుత్తు వనరులను సృష్టించేందుకు వేలు ఆవిష్కరణల అవసరం ఉందని సూచించారు.

సింగరేణి భవన్‌లో జరిగిన సమావేశంలో మాట్లాడుతున్న అనిల్‌కుమార్ జైన్

వర్షాలు దెబ్బకొట్టినా... కోల్ ప్రొడక్షన్ తగ్గలే

హైదరాబాద్, వెలుగు: దీర్ఘకాలంగా కురిసిన వర్షాలు ఆటంకంగా నిలిచినా... కోల్ ఇండియా ప్రొడక్షన్ గతేడాది కంటే మించిపోనుంది. గతేడాది కంటే ఈ ఏడాది ఎక్కువ ప్రొడక్షన్ చేపట్టనున్నట్లు కోల్ మంత్రిత్వ శాఖ సెక్రటరీ అనిల్ కుమార్ జైన్ చెప్పారు. నగరంలో జరిగిన ఎనర్జీస్ 2020 కాంక్లేవ్‌లో ఆయన పాల్గొన్నారు. వర్షాలతో దీనికి మైన్స్‌కు ఆటంకం కలిగిందని, అయినా ఉత్పత్తి ఎక్కడా తగ్గకుండా చూస్తున్నామని అనిల్ కుమార్ తెలిపారు. 2018-19 ఆర్థిక సంవత్సరంలో 606.89 మిలియన్ టన్నుల ప్రొడక్షన్ చేపట్టినట్లు చెప్పారు. ఆక్టోబర్ వరకు కోల్ ఇండియా ప్రొడక్షన్ మైనస్ 8 శాతంగా ఉంది. ఆ తర్వాత కోల్ ప్రొడక్షన్ పెరిగినట్లు తెలిపారు. ఇది ప్రస్తుతం మైనస్ 3.5 శాతంగా ఉందని తెలిపారు. కోల్ ఇండియా 80 శాతానికి పైగా ప్రొడక్షన్ దేశంలోనే చేపడుతోంది. ఏప్రిల్-సెప్టెంబర్ మధ్య కాలంలో వర్షాల దెబ్బకు కోల్ అవుట్‌పుట్ 6 శాతం పడిపోయి 241 మిలియన్ టన్నులుగా ఉంది. ఈ ప్రొడక్షన్‌ను వచ్చే నెలల్లో భర్తీ చేయనున్నామని చెప్పారు. కోల్ ఇండియా లిమిటెడ్‌కు చెందిన సబ్సిడరీలను చేరుచేసి, ఐదు సంస్థలుగా ఏర్పాటు చేయడాలున్నారా..? అనే ప్రశ్నకు..ప్రస్తుతం దీనిపై ఎలాంటి తాజా డెవలప్‌మెంట్ లేదన్నారు. అయితే ఈ విషయంపై కొంత చర్చలు జరిగినట్లు తెలిపారు. 'లాస్ట్ ఇయర్ ప్రొడక్షన్ లెక్కలను మించిపోతాం. దేశంలో అతిపెద్ద మైన్స్‌లో ఒకటైన ఆసియా దీపికాలో వరదలు కారణంగా ఆటంకం ఏర్పడింది. ఇది ప్రొడక్షన్‌పై ప్రభావం చూపింది.

4.3 PICTURE GALLERY

The conference was extensively photographed and even video-recorded. Presented below is an assortment of pictures from the conference:

Figure 4: Panel Discussion on Catalysing the Implementation of ICAP. This session provided an opportunity to hear a diversity of perspectives from the industry, the civil society, and multilateral entities on how on-the-ground implementation of the ICAP can be fast-tracked.

Figure 5: Inaugural Session. The conference was inaugurated by the ceremonial lighting of the lamp, followed by an array of thought-provoking and interesting speeches by eminent speakers.

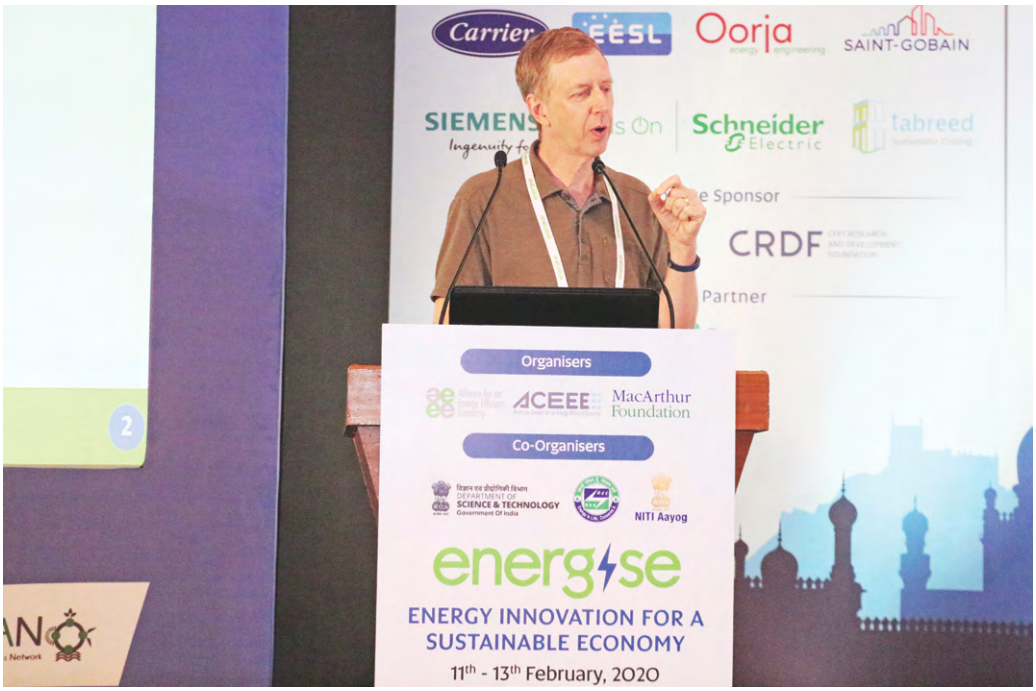


Figure 6: Paper Presentation. The papers cover the depth and breadth of the energy efficiency landscape – space cooling, electric mobility, energy performance measurement, and data analytics to name a few.

Figure 7: Special address by Mr Rajiv Kumar, Managing Director, Microsoft IDC and Corporate Vice President, E+D India. Mr Kumar said that ambitious climate action goal-setting at the level of corporations and even countries can help step-up and strengthen energy efficiency interventions.

Figure 8: Special Address by Mr Uttam Kumar Nalamada Reddy, Hon'ble Member of Lok Sabha and Standing Committees (Energy). He said that both energy production and energy efficiency are important to meet the rising demand for electricity in India.

Figure 9: TechnoBuzz. It was an opportunity for technology providers to present to the conference delegates, innovative and high-efficiency products and services that they were excited about.

Figure 10: Panel Discussion on Changing Behaviour for an Energy-Efficient Future. The importance of using the right messaging to a broader audience (beyond the professional community) was discussed.

Figure 11: Plenary Session on Creating a Culture of Data-driven Energy Efficiency Policies: How End-Use Energy Data can be a Game Changer. The panel highlighted that there is an opportunity for strategic data collection and for finding ways to leverage data in a cross-functional way to arrive at integrative (and not siloed) solutions.

Figure 12: The sessions were interspersed with many tea and coffee breaks, which provided an excellent opportunity to take discussions/questions offline, meet peers, and build networks

APPENDIX

AGENDA

10 Feb 2020 - Pre-conference Event on Advancing the Intent of the India Cooling Action Plan

12:30 pm – 1:30 pm	**Registration and Welcome Lunch**
2:00 pm – 2:45 pm	**Inaugural Session** • Welcome Address by Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE • Special Address by Dr Ashok Sarkar, Senior Energy Specialist & Team Leader - Energy Efficiency Projects, World Bank • Special Address by Mr Ajay Misra IAS, Special Chief Secretary (Energy), Telangana Government • Special Address on Dr S K Pattanayak IAS (Retd), Director General, Administrative Staff College of India, Hyderabad • Vote of thanks
2:45 pm – 4:15 pm	**Executive Session: Catalysing the implementation of ICAP** **Description:** India Cooling Action Plan (ICAP) seeks to provide an integrated vision towards cooling across sectors encompassing inter alia reduction of cooling demand, refrigerant transition, enhancing energy efficiency and better technology options with a 20-year time horizon. The ICAP provides short, medium- and long-term recommendations across different sectors while providing linkages with various programmes of the Government. The session will provide an opportunity to hear a diversity of perspectives- industry, civil society and multi-lateral entities - on how the national cooling action plans can accelerate the development and adoption of ambitious policies and breakthrough technology solutions, which in turn, will catalyse on-the-ground implementation of the ICAP. **Moderator: Dr Amit Love, Scientist 'D' / Joint Director, Ozone Cell, MOEFCC** **Panellists:** • Mr Markus Wypior, Deputy Director, GIZ – India • Mr Chirag Baijal, Managing Director, Carrier Air-Con • Dr Archana Walia, Director – India Programs, CLASP • Mr Sudheer Perla, Country Manager India – Business Development, TABREED • Dr Ashok Sarkar, Senior Energy Specialist & Team Leader - Energy Efficiency Projects, World Bank • Prof Pawanexh Kohli, Former CEO NCCD & Chief Advisor DAC&FW
4:15 pm – 4:30 pm	**Tea and Networking Break**

4:30 pm – 5:30 pm	**Panel Discussion: Exploring partnerships across borders: Synergies between the global cooling initiatives and India's Cooling Coalition** **Description:** Cooling, given its many dimensional, and cross-sectoral aspects, can be most effectively addressed through multi-disciplinary collaboration to achieve integrative solutions and benefits. The global context of cooling also necessitates collaborations across national borders, and international partnerships are becoming increasingly important to leverage the globally dispersed centers of excellence. In 2017, India's Cooling Coalition was established under the leadership of Shakti Sustainable Energy Foundation (SSEF) and Alliance for an Energy Efficient Economy (AEEE), with the mission to lead the nation's transition to responsible and sustainable cooling. Recently, a global coalition- the Cool Coalition led by UN Environment, the Climate and Clean Air Coalition, K-CEP, and SEforALL - was launched in April of 2019 with the objective to accelerate progress on the transition to clean and efficient cooling. Given the aligned objectives, this session seeks to explore synergies and partnership opportunities between the national and global coalitions, to share learnings and broaden the positive impacts. **Moderator: Dr Satish Kumar, President & Executive Director, AEEE** **Panellists:** • Mr Benjamin Hickman, Regional Technical Advisor, Asia & Europe, UNEP • Ms Anjali Jaiswal, Director, NRDC India Program • Ms Shikha Bhasin, Programme Lead, CEEW • Ms Clotilde Rossi di Schio, Specialist: Energy and Transport and Cooling for All initiatives, SEforALL • Mr Shubhashis Dey, Associate Director - Energy Efficiency Program, Shakti Sustainable Energy Foundation
7:00 pm onwards	**Executive Networking Dinner**

11 Feb 2020 (Day 1)

8:30 am – 9:30 am	**Registration and Welcome Tea & Coffee**

9:30 am – 10:30 am	**Inaugural Session**
	• Welcome Address by Mr Upendra Bhatt, Managing Director – cKinetics and Chairperson, AEEE
	• Opening Address by Mr Jarnail Singh, Deputy Director (India), MacArthur Foundation
	• Special Address of Mr Andrew Fleming, British Deputy High Commissioner to Andhra Pradesh and Telangana
	• Inaugural Address by Dr Sanjay Bajpai, Head - Technology Missions Division (Energy, Water & all Other), Department of Science & Technology
	• Special Address by Mr Steve Nadel, Executive Director, ACEEE
	• Reports launch:
	  • CEPT: 'Launch of DESIGN GUIDE FOR PRACTITIONERS' for design of Low Energy Residences
	  • SEforALL: Switching gears: Enabling Access to Sustainable Urban Mobility
	  • Ms Clotilde Rossi di Schio, Specialist: Energy and Transport and Cooling for All initiatives, SEforALL
	  • Shakti Sustainable Energy Foundation and Vasudha Foundation: India Power Outlook Series- Volume 1-
	  • Mr Srinivas Krishnaswamy, Chief Executive officer, Vasudha Foundation
	  • AEEE: Increasing Energy Access by Using Super-Efficient Appliances in Rural Homes and Productive Businesses: India Stakeholders Mapping Report
	  • Dr Satish Kumar, President & Executive Director
	• Vote of Thanks by Dr Satish Kumar, President & Executive Director, AEEE & Convener - ENERGISE

10:30 am – 11:00 am	**Keynote Address by Mr Srinivasa Raju Chintalapati, Founder and Investment Advisor, iLabs Group**
11:00 am – 11:30 am	**TechnoBuzz Inaugural & Networking Tea - Coffee** Inaugural to be done by: • Dr Satish Kumar, President & Executive Director; • Dr Sanjay Bajpai, Head - Technology Missions Division (Energy, Water & all Other), Department of Science & Technology; Ministry of Science and Technology • Mr Upendra Bhatt, Managing Director – cKinetics and Chairperson, AEEE; • Mr Steve Nadel, Executive Director, ACEEE; • Mr Jarnail Singh, Deputy Director (India), MacArthur Foundation; • Ms Sudha Setty, Director, AEEE
11:30 am - 1:00 pm	**#1 Plenary Session: Role of Energy Efficiency in Energy Transition Roadmaps** **Description:** Coal investments used to run on average at 90 GW per year, but have fallen to 30 GW per year while wind and solar capacity soars globally, with 49.1 GW of wind and 95.5 GW of solar capacity installed in 2018. In the backdrop of the seismic shift happening on the energy supply side, what role energy efficiency can play in a sustainable and smooth energy transition. Electrification of transport and heating, decarbonisation of hard to abate industrial sectors such as steel and cement, building and retrofitting buildings to achieve a net zero energy, water and waste habitat, financing at scale, DSM & DR based distribution systems are some of in the bag of tricks that need to be unleashed to achieve this energy transition successfully. This plenary brings together a galaxy of speakers to deliberate and speak on this all-important topic.

	Moderator: Mr Anil Kumar Jain IAS, Secretary, Ministry of Coal, Government of India **Panellists:** • Dr Arunabha Ghosh, Founder & CEO, CEEW • Mr Steve Nadel, Executive Director, ACEEE • Mr Chinmaya Acharya, Interim CEO, Shakti Sustainable Energy Foundation • Ms Jennifer Layke, Global Director - Energy Program, World Resources Institute • Dr Ashok Sarkar, Senior Energy Specialist & Team Leader - Energy Efficiency Projects, World Bank	
1:00 pm – 1:45 pm	**Lunch (TechnoBuzz in side-lines)**	
1:45 pm – 3:15 pm	**Paper Presentations #1** **Track – Building & Communities** **Moderator: Mr Pierre Jaboyedoff, Swiss BEEP, SDC Consultant leader** **1139**: Development of simulation data visualization framework for high-performance buildings **Presenter: Yashima Jain** **1121**- Bridging the gap between Simulated and Measured daylighting performance of an office space **Presenter: Jeevan Mohan** **1148**- Joule Recipes: A Novel Concept to Eliminate Energy Waste in Buildings **Presenter: Listin Abey Mathew** **1147**- Energy efficiency in HVAC system: Case study of a hospital building comparing predicted and actual performance and showing improvements through performance monitoring **Presenter: Prashant Kumar Bhanware** Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**	**Paper Presentations #2** **Track – Energy Efficiency & Business Competitiveness** **Moderator: Mr Aalok Deshmukh, Director: Energy Efficiency, India, Schneider Electric** **1257**: Factors influencing energy demand and GHG emissions from Indian manufacturing – An LMDI decomposition study **Presenter: Deepa Janakiraman** **1256**: Market transformation for energy efficiency in Indian MSMEs through innovative Business Model **Presenter: Mrinal Saurabh Bhaskar** **1244**: The role of industry associations and local service providers in catalysing energy efficiency in MSMEs **Presenter: Koshy Cherail** **1221**: M&V in ESPC: The U.S. Federal Experience - Recorded Message **Presenter: Shankar Earni** Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**
3:15 pm - 4:45 pm	**Paper Presentations #3** **Track – Building & Communities** **Moderator:** Mr Prasad Vaidya, Senior Advisor, AEEE & IIHS, Director, Solar Decathlon India	**Paper Presentations #4** **Track – Urban Infrastructure and Utilities** **Moderator:** Dr Usha Ramachandra, Professor & Chairperson- Energy Area, Dean of Training Programs

	1160: Assessing consumers' behaviours, perceptions and challenges to enhance AC's energy efficiency **Presenter: Apurupa Gorthi**	**1130**: Leveraging Advanced Metering Infrastructure to Save Energy **Presenter: Rachel Gold**
	1236- Understanding the relationship between indoor environment, electricity use and household socio-demographics: insights from an empirical study in Hyderabad **Presenter: Gupta, Rajat**	**1173**: Review of the existing Tariff Framework for Electric Vehicle Charging in India **Presenter: Bhawna Tyagi**
	1124: Thermal comfort in affordable housing of Mumbai, India **Presenter: Jeetika Malik**	**1170**: Effectiveness and Balance: a Canadian regulator's approach to review of energy efficiency funding proposals.- **Jackie Ashley - Recorded Message**
	1177: Understanding trends in appliance ownership and electricity consumption across two cities of South India **Presenter: Ravichandran K**	**1179**: Empirical assessment of the appliance-level load shape and demand response potential in India- **Recorded Message**
	Introduction of session – 10 mins	Introduction of session – 10 mins
	Presentation Duration – 15 mins each	Presentation Duration – 15 mins each
	Q & A – 15-20 mins	**Q & A – 15-20 mins**
4:45 pm – 5:15 pm	**Tea and Networking Break (TechnoBuzz in side-lines)**	
5:15 pm- 6:30 pm	**#2 Plenary Session: Coupling Innovation & Technology with effective Business Models** **Description:** During the last two decades, there has been a lot of innovations in the energy sector. Innovations in energy efficiency technology are spurring cost savings for businesses and consumers while leading the way in decreasing global energy consumption. However, higher upfront cost has still been the major factor which is not allowing substantial market for these technologies. The session will highlight various innovations and disruptive technologies along with success stories and relevant business models which need to be in place from across the globe and in India. **Moderators: Mr Ranganath Nuggehallli Krishna, Managing Director, Grundfos** **Panellists:** • Dr Sanjay Bajpai, Head - Technology Missions Division (Energy, Water & all Other), Department of Science & Technology • Mr Madhusudhan Rao, Managing Director, Oorja Energy • Mr Chirag Baijal, Managing Director, Carrier Air-Con • Mr Ravichandran Purushothaman, President Danfoss - India • Mr Venkat Garimella, Vice President, Schneider Electric • Mr Venkatesh Dwivedi, Director, Energy Efficiency Services Limited **Special address by Mr Rajiv Kumar, Managing Director, Microsoft IDC and Corporate Vice President, E+D India**	
6:30 pm – 7:00 pm	**Networking Break (TechnoBuzz in side-lines)**	

7:00 pm – 7:10 pm	**#3 Presentation from SEforALL: Switching gears: Enabling Access to Sustainable Urban Mobility by Ms. Clotilde Rossi di Schio, Specialist: Energy and Transport and Cooling for All initiatives, SEforALL** **Description:** Fossil-fuel based transport is contributing to the ongoing climate crisis and to the poor air quality observed in approximately 90 percent of cities worldwide. This report assesses the status of the energy-mobility nexus, and how to scale sustainable urban mobility access as rapidly as possible. It identifies 19 countries around the world –13 in Sub-Saharan Africa, and Bolivia, Honduras, India, Indonesia, Nepal, and Philippines – and an accompanying set of 260 fast-growing small-to-medium-sized cities where the highest impact might be anticipated.
7:10 pm – 7:30 pm	**#3 Panel Discussion on "Low Energy Cooling Residential Design Guide for Practitioners"** **Description:** Low Energy Cooling and Ventilation in Indian Residences (LECaVIR) a research project carried out by Loughborough University, UK, and CEPT University in India explored the prospects for reducing energy demand in Indian residences through the avoidance or reduction of refrigerant-based air-conditioning whilst maintaining acceptable indoor air quality and thermal comfort. The project focuses on methods to enhance natural ventilation strategies for residences. Project outputs include the development of intelligent controls algorithms for optimizing the harmonization between natural and mechanical systems and a design guide. **Panellists:** • Introduction of LECaVIR project by Professor Rajan Rawal, Executive Director, CEPT University • Presentation on content & methodology followed to prepare the guide and direction for 'How to Use Guide' by Professor Malcolm Cook, School of Architecture, Building and Civil Engineering, Loughborough University and Dr Yash kumar Shukla, Technical Director Building Systems and BEPL, CEPT University **Q&A and reflections**
8:00 pm onwards	**CEO Executive Dinner & General Dinner**

12 Feb 2020 (Day 2)

8:30 am – 9:30 am	**Registration and Welcome Tea & Coffee**	
9:30 am – 10:30 am	**#4 Plenary Session: Creating a Culture of Data-driven Energy Efficiency Policies: How End-Use Energy Data can be a game changer** **Description:** Having the right data is very crucial for formulating EE policies. This is required by both the government and the research community and other key stakeholders. Much of this data is collected by various government agencies but not available in public domain. Dynamic and real-time energy use displays in appliances can transform consumers' purchasing behaviour and well-designed dashboards using data from low-cost sensors and meters which can act as a real time proof to observe the impacts of energy savings measures implemented. The session will focus on improving the culture of Energy Data Management and Benchmarking across sectors in India. **Moderator: Dr Rahul Tongia, Fellow, Brookings India** **Panellists:** • Dr Bhaskar Natarajan, Advisor, AEEE • Dr Anna Agarwal, Fellow, Centre for Policy Research • Mr Umesh Bhutoria, CEO, EnergyTech Ventures • Mr Tanmay Tathagat, Director, Environmental Design Solutions • Professor Vishal Garg, IIIT Hyderabad • Mr Srihari Dukkipati, Fellow, Prayas Group	
10:30 am – 11:00 am	**Keynote Address on** "*How an effective Philanthropic commitment can help in transitioning towards an energy-efficient economy*" by Ms Shloka Nath, Head - Sustainability and Special Projects at Tata Trusts & Executive Director, India Climate Collaborative.	
11:00 am – 11:30 am	**Panel Discussion on BHAVAN Fellowship Programme** **Description:** The Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships are envisaged to create a sustainable and vibrant the linkage between the two nations, as well as build long term Indo-American science and technology relationships. This session will provide a brief introduction to the BHAVAN program and the panelists will give insights on their overall experience gained in terms of Research highlights, Tangible outcomes, and Experiences. **Moderator: Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE** **Panellists:** • Dr JBV Reddy, Scientist E, Technology Missions Division (Energy, Water & all Other), Department of Science and Technology	**Tea and Coffee Break (in parallel)**

	• Ms Saranya Anbarasu, Research Associate, CARBSE • Ms Subhashree Basu, Associate Program Officer , Indo-US Science and Technology Forum (IUSSTF) • Dr Chaitali Basu, Assistant Professor, SPA, Delhi	
11:30 pm – 12:00 noon	**Networking Break (TechnoBuzz in side-lines)**	
12 noon – 1:30 pm	**Paper Presentations #5** **Track – Building & Communities** **Moderator: Mr Tanmay Tathagat, Director, EDS** **1178**: A Case Study on Design of Thermally Comfortable Affordable Housing in Composite Climate: Simulation Results & Monitored performance **Presenter: Saswati Chetia** **1128**: City Specific Dynamics of Energy, Environment and Comfort for Room Air Conditioner Performance **Presenter: Nidhi Rai Jain** **1208**: Technical potential of integrating evaporative cooling system with mechanical cooling system in Hot & Dry climate for day use office building in India **Presenter: Bipinchandra Patel** **1180**: Assessing the Benefits of Changeover Control Algorithms in Mixed-mode Residential Buildings in India **Presenter: Saranya Anbarasu** Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**	**Paper Presentations #6** **Track – Energy Efficiency & Business Competitiveness** **Moderator: Dr Steven Fawkes, Managing Partner at EnergyPro Ltd & Partner at Cameron Barney** **1220**: Energy Efficiency in post-harvest management in India **Presenter: Tarun Garg** **1183**: PCM based Hybrid Devices for Refrigeration **Presenter: Shreyas Srivastava** **1226**: Role of Industrial Internet of Things in creating Smart Factories **Presenter: Rohit Chashta** **1122**: Energy optimization and operational transformation in the Quick Service Restaurant segment through IoT-enabled big data analytics **Presenter: Amiya Ranjan Behera** **1119**: Fouling control technology in crude distillation unit at NRL **Presenter: Ms Geetali Kalita** **1199**: Energy Efficient Cascade Control Operation for Variable Speed PMSM based Pumps **Presenter: Arun Shankar V.K.** Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**
1:30 pm – 2:00 pm	**Lunch (TechnoBuzz in side-lines)**	

2:00 pm – 3:30 pm	**Paper Presentations #7** **Track – Building & Communities** **Moderator: Ms Sneha Sachar, Strategic Advisor, AEEE; Consultant, Rocky Mountain Institute** **1231**: Quantitative and qualitative comparison of the energy section in the prevalent green building rating systems in India **Presenter: Akshaye Pahade** **1218**: Integrated Design & Construction Approach for a Small Commercial Office: AEEE Office Case Study **Presenter: Deepak Tewari** **1145**: Estimating air leakage for star rated hotels in Ahmedabad using blower door method **Presenter: Ankit Debnath** **1156**: Assessing Thermal Performance of Building Envelope of New Residential Buildings Using RETV **Presenter: Vasudha Sunger** **1108**: Climate change resilience of passive energy efficient solution packages recommended by BEEP for residential buildings **Presenter: Naga Venkata Sai Kumar Manapragada** Introduction of session – 10 mins Presentation Duration – 12 mins each **Q & A – 15-20 mins**	
3:30 pm - 3:45 pm	**Tea and Networking Break (TechnoBuzz in side-lines)**	
3:45 pm - 4:45 pm	**#5 Executive Panel Discussion: Roadmap for deployment of public charging infrastructure for electric vehicles in India** **Description:** Deployment of public charging infrastructure is the sine qua non for adoption of EVs and has been the most contentious issue. Although some action is seen in certain cities in India to set up public charging stations, there is a need to fast-track the charging infrastructure deployment. An enabling ecosystem that makes the EV charging service a viable business option may be the need of the hour. Development of standards for EV charging and vehicle-grid integration are considered to be critical for the successful roll-out of charging facilities. This session focuses on identifying the key elements of a possible roadmap for EV charging infrastructure in India.	**#5 Executive Panel Discussion: India Focus Sector Specific Energy Transition Strategies.** **Description:** Industry and Sector-specific experts will discuss approaches and strategies at the macro level for contributing to India's domestic choices for policy prescriptions and pathways for good businesses. Discussion in this session will focus on need for financing, necessary structural changes for managing India's large-scale decarbonisation.

	Moderator: Mr Jagabanta Ningthoujam, Senior Associate, Rocky Mountain Institute **Panellists:** • Ms Srujana Raghupatruni Patnaik, Founder, Cellerite Systems • Mr Karthik Gogula, Assistant Manager, Bounce • Ms Aanchal Kumar, Environment Economist, EESL • Mr Abhishek Ranjan, Additional Vice President and Head Renewable, DSM & EE and Energy Analytics Head Power Scheduling, BSES Rajdhani	**Moderator: Mr Upendra Bhatt, Managing Director – cKinetics and Chairperson, AEEE** **Panellists:** • Dr Steven Fawkes, Managing Partner at EnergyPro Ltd & Partner at Cameron Barney • Ms Starlene Sharma, Climate and Cleantech Investor • Mr Deepak Gokhale, General Manager, Aditya Birla Management Corporation • Mr Ajay Kumar Kapur, Former- Deputy Managing Director, SIDBI • Mr Jayant Prasad, Executive Director, cKers Finance • Mr Ayaz Kamil, Head - Energy & Performance Services, Siemens
4:45 pm – 5:00 pm	**Tea and Networking Break (TechnoBuzz in side-lines)**	
5:00 pm- 6:00 pm	**#6 Executive Panel Discussion: Pathways to Achieve Energy Savings through Successful Implementation of EE Policies in States** **Description:** States have a vital role in India's energy efficiency policy implementation. To date, most initiatives taken by states are related to Policies and Regulations. States must now exercise powers under the EC Act to shift the focus from "policies in place" to "policies successfully implemented". This panel will discuss pathways to realize energy savings through the successful implementation of EE policies in states.	**#6 Executive Panel Discussion: Changing Behaviour for an Energy Efficient Future** **Description:** As India aims at long-haul economic growth — accompanied by rapid and large- scale urbanization and the resulting concentration of energy consumption in the urban centres — should the policymakers and other stakeholders revisit their energy strategies today to prepare for the future, paying greater attention to cost- effective non-wired alternatives like behavioural energy efficiency, instead of focusing solely on augmenting energy supply capacity? However, there could be certain implementation and M&E challenges in this regard. Considering that there are trialled and tested cases of such measures in other geographies, India can potentially benefit from these international experiences.

	Moderator: Mr R.K Rai, Secretary, Bureau of Energy Efficiency **Panellists:** • Mr N. Janaiah, VC & Managing Director, TSREDCO, Hyderabad • Mr Vineet Taneja, Deputy General Manager (Tech), EESL • Dr R. Harikumar, Joint Director, Energy Management Centre – Kerala • Mr Kiran Ananth, Principal Counsellor, Confederation of Indian Industry • Mr Piyush Sharma, Technical Expert, Indo-German Energy Programme – GIZ	**Moderator: Ms Sneha Sachar, Strategic Advisor, AEEE; Consultant, Rocky Mountain Institute** **Panellists:** • Dr Ken Haig, Senior Director, Market Development & Regulatory Affairs, Oracle Utilities • Mr Steve Nadel, Executive Director, ACEEE • Mr Bharath Jairaj, Director, Energy Program, WRI India • Ms Sumathy Krishnan, Executive Director, TIDE • Mr Abhishek Ranjan, Additional Vice President and Head Renewable, DSM & EE and Energy Analytics Head Power Scheduling, BSES Rajdhani
6:00 pm – 6:30pm	**Networking Break (TechnoBuzz in side-lines)**	
6:30 pm – 7:30 pm	**Solar Decathlon India – A collegiate competition with real-world impact** **Description:** The first Solar Decathlon India collegiate competition for Net Zero buildings will be held in 2020-2021. This session will provide a brief introduction to the competition the Panellists will give insights on the promise such a competition in transitioning India to a low-carbon economy. **Moderator: Mr Prasad Vaidya, Senior Advisor, AEEE & IIHS, Director, Solar Decathlon India** **Panellists:** • Dr Satish Kumar – President & Executive Director, AEEE • Professor Namrata Dhamankar, BNCA Pune • Dr Ashok B Lall, Principal, Ashok B Lall Architects • Dr Sunita Purushottam, Head of Sustainability, Mahindra LifeSpace Developers Ltd. • Ms Yashima Jain, Team Leader - Team KillBill 2018, US. Solar Decathlon	
7:30 pm onwards	**Executive Dinner**	

13 Feb 2020 (Day 3)

8:30 am – 9:30 am	**Registration and Welcome Tea & Coffee**	
9:30 am – 11:00 am	**Paper Presentations #9** **Track – Building & Communities**	**Paper Presentations #10** **Track – Energy Efficiency & Business Competitiveness**
	Moderator: Prof. Rajan Rawal, Executive Director, Centre for Advanced Research in Building Science and Energy	**Moderator: Dr Peter DuPont, Managing Partner, Asia Clean Energy Partners**
	1167: A comprehensive overview of DST's Clean Energy Research Initiative **Presenter: Dr. J B V Reddy**	**1232**: Energy Efficiency as a Service: Indian ESCO market assessment - recent trends, market size and potential, drivers and barriers **Presenter: Shravani Itkelwar**
	1140: Pre-design performance paraphernalia: Impact of using pre-design energy modelling to guide design decisions. **Presenter: Shruti Shiva**	**1225**: Energy Efficiency in MSMEs – Opportunity, Challenges & Possible Solutions **Presenter: Rohit Chashta**
	1175: Characterising Common Area Energy Use to Assess Clean Energy Opportunities in Apartment Complexes of Bengaluru **Presenter: Sumedha Malaviya**	**1153**: The End of Dumb HVAC Assets **Presenter: Saksham Goel**
	1166: Optimized Building Controls and Grid Integration **Presenter: Paul Ehrlich**	**1193**: eProject Builder: promoting wider adoption of energy savings performance contracts through standardization and transparency-recorded **Presenter: Shankar Earni**
	Introduction of session – 10 mins	Introduction of session – 10 mins
	Presentation Duration – 15 mins each	Presentation Duration – 15 mins each
	Q & A – 15-20 mins	**Q & A – 15-20 mins**
11:00 am – 11:30 am	**Tea and Coffee Break**	
11:30 am – 1:00 pm	**Paper Presentations #11** **Track – Urban Infrastructure and Utilities**	**Paper Presentations #12** **Track – Energy Efficiency & Business Competitiveness**
	Moderator: Dr Priya Sreedharan, Senior Clean Energy Technical Advisor, USAID	**Moderator: Dr Bhaskar Natarajan, Advisor, AEEE**
	1174: Selection of Charging Technology for Electric Four-wheeler Commercial Fleets in the Indian cities **Presenter: Chandana Sasidharan**	**1196**: A systematic Methodology for Reducing Compressor Consumption in Manufacturing Industry Cluster **Presenter: Kajol**
	1216: Evaluating the Challenges Faced by SHS and DRE Practitioners in Supplying Energy Efficient Appliances in Rural India **Presenter: Srishti Sharma**	**1149**: Continuous Condenser Circuit Optimization in Water-Cooled Chiller Plants **Presenter: Ananthapadmanabhan G S**
	1133: Prospects for PV recyclability & it's associated end-of-life management; Indian perspective **Presenter: Jaideep Saraswat**	**1246**: Managed energy efficiency services for manufacturing plants **Presenter: Thanakarthik Kumar Karuppasamy**

		1242: Case Study - Electricity savings from setback control strategy using occupancy-based thermostat in a hotel. **Soorianan Narsiah-Recorded Message**
	Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**	Introduction of session – 10 mins Presentation Duration – 15 mins each **Q & A – 15-20 mins**
1:00 pm – 2:00 pm	**Lunch**	
2:00 pm – 2:15 pm	**Special Address by Mr Uttam Kumar Nalamada Reddy, Hon'ble Member of Lok Sabha and Standing Committees -Energy**	
2:15 pm – 3:15 pm	**#7 Plenary Session: Role of Partnerships to accelerate sustainable development** **Description:** The International partners (bi-laterals and multi-laterals and Foundations) contribute significantly to the research and analysis being conducted to inform policy framework and implementation. This session intends to draw a roadmap for enhancing collaboration with National and international partners for achieving sustainable developmental goals. **Moderator:** Dr Satish Kumar, President & Executive Director, AEEE & Convener – ENERGISE **Panellists-** • Dr Priya Sreedharan, Senior Clean Energy Technical Advisor, USAID • Professor Rajat Gupta, Oxford Brookes University, UK • Mr Arijit Sengupta, Director, Bureau of Energy Efficiency • Ms Ekta Mehra Senior Sector Specialist Finance, KfW • Dr Koshy Cherail, Principal Advisor, AEEE	
3:15 pm – 4:45 pm	**RESIDE Round table: Measuring and monitoring residential energy use in India: challenges and opportunities** **Description:** This workshop will share the challenges and opportunities arising from the ongoing Indo-UK RESIDE field study and seek inputs and experiences of other organisations who have undertaken such studies. Building a common understanding of issues and potential solutions to measuring residential energy use will help to advance solutions for managing and reducing residential energy in India. **Moderator: Professor Jyotirmay Mathur, MNIT Jaipur** **Welcome, purpose of the roundtable and introductions:** Professor Vishal Garg, IIIT Hyderabad **RESIDE approach for Measuring and monitoring residential energy use:** Professor Rajat Gupta, Oxford Brookes University, UK • Large-scale field studies on residential energy and comfort • Challenges in data collection • Analysis of time-series data	
4:45 pm – 5:00 pm	**Valedictory Session by Ms Sneha Sachar, Strategic Advisor, AEEE; Consultant, Rocky Mountain Institute**	

End of Energise with Tea and Coffee

LIST OF PARTICIPANTS

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4	AMIYA	BEHERA	ECOENERGY INSIGHTS
5	PRASHANT	BHANWARE	GREENTECH KNOWLEDGE SOLUTIONS ...
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7	DIBIN	CHANDRAN	KHATIB AND ALAMI
8	KOSHY	CHERAIL	AEEE
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13	HAPS	DHILLON	ECOENERGY INSIGHTS
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15	ANANTHAPADMANABHAN	G S	SMART JOULES PVT. LTD
16	TARUN	GARG	AEEE
17	GERRY	GEORGE	AEEE
18	SAKSHAM	GOEL	SMART JOULES PVT. LTD
19	APURUPA	GORTHI	COUNCIL ON ENERGY ENVIRONMENT ...
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21	NIDHI RAI	JAIN	CEPT
22	YASHIMA	JAIN	TEAM KILLBILL 2019, US. SOLAR DECATHLON
23	DEEPA	JANAKIRAMAN	COUNCIL ON ENERGY, ENVIRONMENT...
24	RAVICHANDRAN	K	TECHNOLOGY INFORMATICS DESIGN ...
25	SANDEEP	KACHHAWA	AEEE
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27	THANAKARTHIK	KARUPPASAMY	ECOENERGY INSIGHTS
28	DIVYA	KRITIKA	SMART JOULES PVT. LTD
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31	LISTIN ABEY	MATHEW	SMART JOULES PVT. LTD
32	JEEVAN	MOHAN	TERRA VIRIDIS CONSULTANTS LLP
33	BHASKAR	NATARAJAN	AEEE
34	BIBHU KALYAN	NAYAK	MANIPAL UNIVERSITY JAIPUR
35	AKSHAY	PAHADE	GRATTITUDE SYNERGY LLP
36	BIPINCHANDRA	PATEL	NEEV ENERGY AND SUSTAINABLE SO...
37	BABURAJ	PRABHKARAN	ECOENERGY INSIGHTS
38	SWATI	PUCHALAPALLI	TERRAVIRIDIS CONSULTANTS

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39	SURABHI	SARAN	TERRA VIRIDIS
40	JAIDEEP	SARASWAT	UNIVERSITY OF PETROLEUM AND EN...
41	SAKET	SARRAF	PS COLLECTIVE
42	CHANDANA	SASIDHARAN	AEEE
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44	VASUDHA	SUNGER	GREENTECH KNOWLEDGE SOLUTIONS ...
45	DEEPAK	TEWARI	AEEE
46	HEMACHANDRAN	VENKATESAN	ECOENERGY INSIGHTS
47	SARAN		
48	D JANARDHANA	ACHARI	OSMANIA UNIVERSITY
49	FARIS	AHMED	SSN COLLEGE OF ENGINEERING
50	ARVINDER	BAKSHI	CENTRAL ELECTRICITY REGULATORY...
51	V	BASKARAN	VB INFRASTRUCTURE (PROPOSED UN...
52	MRINAL SAURABH	BHASKAR	ENERGY EFFICIENCY SERVICES LIM...
53	TANVI	BOBHATE	CARBSE
54	LUCIANO	CARUGGI-DE-FARIA	LOUGHBOROUGH UNIVERSITY
55	ASPARI	CHANDRA SEKHARA REDDY	AP STATE ENERGY CONSERVATION M...
56	KAUSHAL	CHAUDHARY	BUREAU OF INDIAN STANDARDS
57	PAUL	EHRLICH	BUILDING INTELLIGENCE GROUP LL...
58	SHUBODAY	GANTA	EY
59	MADHUR	GARG	INTERNATIONAL INSTITUTE OF INF...
60	CORINNA	GEIGER	PASSIVE HOUSE INSTITUTE
61	AVIJIT	GHOSH	CSIR-CENTRAL GLASS & CERAM...
62	PRABHAT KUMAR	GOEL	EUROVENT CERTITA CERTIFICATION
63	DEEPAK	GOKHALE	ADITYA BIRLA MANAGEMENT CORPOR...
64	RACHEL	GOLD	ACEEE
65	GAUTAM	GOSWAMI	TIFAC, DST
66	PRADEEP	GUPTA	ENERGY EFFICIENCY AND RENEWABL...
67	VRINDA	GUPTA	VASUDHA FOUNDATION
68	MANOJ	JAIN	RENEWABLE ENERGY DEPT / HAREDA...
69	RITIKA	JAIN	SHAKTI FOUNDATION
70	SAMIT	JAIN	PLUSS ADVANCED TECHNOLOGIES PV...
71	KATY	JANDA	ENERGY INSTITUTE, UNIVERSITY COLLEGE LONDON
72	AHAMMED	KABEER	SMART CITY THIRUVANANTHAPURAM ...
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75	HITESH	KATARIA	MAHINDRA

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79	SRINIVAS	KRISHNASWAMY	VASUDHA FOUNDATION
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81	CHANDRA	KUMAR	SIDBI
82	RAVI	KUMAR	VIJETHA STUDY CIRCLE
83	BASANTH	KUMAR	ARMSTRONG
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86	JEETIKA	MALIK	INDIAN INSTITUTE OF TECHNOLOGY...
87	RAJANI	MALL	ADMINISTRATIVE STAFF COLLEGE O...
88	KALYAN	MANGALAPALLI	BRIDGETHINGS IOT PVT LTD.
89	RAMAN	MEHTA	VASUDHA FOUNDATION
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91	VIKASH	MISHRA	LITHIUM URBAN TECHNOLOGIES
92	PAWAN	MULUKUTLA	BOSCH INDIA
93	SATHYA	MUNISH	ARMSTRONG FLUID TECHNOLOGY
94	HARISH	MYSORE	GLOBAL IEEE INSTITUTE FOR ENGI...
95	KARTHIK D	NAVEEN	MINISTRY OF IRRIGATION (WRD), ...
96	SABYASACHI	PATTANAIK	ORACLE UTILITES
97	DHAVAL	PRAJAPATI	SYMBIOSIS INSTITUTE OF INTERNA...
98	SHYAM NANDAN	PRASAD	SEVAT (SPECIALIST IN ENERGY-N-...
99	NARASIMHAM	PVSL	NIRDPR. MORD.
100	RAMESH	RAJ	ARMSTRONG FLUID TECHNOLOGY
101	P R LAKSHMANA	RAO	KAKATIYA ENERGY SYSTEMS
102	ANIL KUMAR	RATHORE	TOWN AND COUNTRY PLANNING ORGA...
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106	VENUGOPAL	SAMPATHKUMAR	ENERGYHIVE RENEWABLES LLP
107	KEDAR	SAWANT	FRENCH DEVELOPMENT AGENCY (AFD...
108	SHWETAL	SHAH	CLIMATE CHANGE DEPARTMENT GOVE...
109	SUNIL KUMAR	SHARMA	ARMSTRONG
110	SHRUTI	SHIVA	TERRAVIRIDIS ENVIRONMENTAL CON...
111	BALKAR	SINGH	PUNJAB ENERGY DEVELOPMENT AGEN...
112	RAJAGOPAL	SIVAKUMAR	EUROVENT CERTITA CERTIFICATION
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115	RUPESH	UMTOL	QI SQUARE PTE LTD

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117	SMITA	CHANDIWALA	ENERGE-SE
118	AKASH	GOENKA	AEEE
119	NIKITA	GUPTA	AEEE
120	ISHAN	JAIN	AEEE
121	SANGEETA	MATHEW	AEEE
122	VARUN	RAJAH	AEEE
123	SUDHA	SETTY	AEEE
124	BHAIRAV	SHARMA	AEEE
125	SRISHTI	SHARMA	AEEE
126	J P	SINHA	AEEE
127	SHRUTI	VAIDYANATHAN	ACEEE
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129	CHINMAYA KUMAR	ACHARYA	SHAKTI SUSTAINABLE ENERGY FOUN...
130	ANNA	AGARWAL	CPR
131	KIRAN	ANANTH	CII
132	ASHOK	B LALL	ASHOK B LALL ARCHITECTS
133	CHIRAG	BAIJAL	CARRIER AIR-CON
134	SANJAY	BAJPAI	DEPARTMENT OF SCIENCE & TE...
135	ABHAY	BAKRE	BEE
136	SIDDARTHAN	BALASUBRAMANIA	CLIMATEWORKS FOUNDATION
137	CHAITALI	BASU	SCHOOL OF PLANNING AND ARCHITE...
138	SUBHASHREE	BASU	INDO-US SCIENCE AND TECHNOLOGY...
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140	UPENDRA	BHATT	AEEE
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142	NISHRITHA	BOPANA	IUSSTF
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144	SAHBA	CHAUHAN	OAK FOUNDATION
145	SRINIVASA RAJU	CHINTALAPATI	ILABS GROUP
146	ADITYA	CHUNEKAR	PRAYAS PUNE
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149	AALOK	DESHMUKH	SCHNEIDER ELECTRIC
150	SHUBHASHIS	DEY	SHAKTI SUSTAINABLE ENERGY FOUN...
151	NAMRATA	DHAMANKAR	DR.B.N.COLLEGE OF ARCHITECTURE
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154	SRIHARI	DUKKIPATI	PRAYAS GROUP

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156	STEVEN	FAWKES	ENERGYPRO ASSET MANAGEMENT LTD
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158	VISHAL	GARG	IIIT HYDERABAD
159	AMIT	GARG	IIM AHMEDABAD
160	VENKAT	GARIMELLA	SCHNEIDER ELECTRIC
161	ARUNABHA	GHOSH	CEEW
162	KARTHIK	GOGULA	BOUNCE
163	RAJAT	GUPTA	OXFORD BROOKES UNIVERSITY
164	KEN	HAIG	ORACLE UTILITIES
165	R	HARIKUMAR	EMC KERALA
166	BENJAMIN	HICKMAN	UNEP
167	PIERRE	JABOYEDOFF	BEEP SDC
168	NITIN	JAIN	GIZ
169	ANIL KUMAR	JAIN, IAS	MINISTRY OF COAL
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173	SUMATHY	K	TECHNOLOGY INFORMATICS DESIGN ...
174	AYAZ	KAMIL	SIEMENS
175	AJAYKUMAR	KAPUR	FORMER SIDBI
176	PAWANEXH	KOHLI	NATIONAL CENTRE FOR COLD-CHAIN DEVELOPMENT
177	SIVARAM	KRISHNAMOORTHY	INTERNATIONAL FINANCE CORPORATION
178	DEVIDAS	KULKARNI	SIEMENS INDIA
179	SHWETA	KULKARNI	PRAYAS GROUP
180	AANCHAL	KUMAR	ENERGY EFFICIENCY SERVICES LIM...
181	RAJIV	KUMAR	MICROSOFT
182	SATISH	KUMAR	AEEE
183	SOMESH	KUMAR, IAS	TELANGANA GOVT.
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185	AMIT	LOVE	OZONE CELL, MOEFCC
186	SATISH	MANDHANA	EVERSOURCE CAPITAL P LTD
187	JYOTIRMAY	MATHUR	MALAVIYA NATIONAL INSTITUTE OF...
188	EKTA	MEHRA	KFW INDIA
189	AJAY	MISHRA, IAS	SPECIAL CHIEF SECRETARY (ENERGY)
190	N	MOHAN	EESL
191	STEVE	NADEL	AMERICAN COUNCIL FOR AN ENERGY...
192	SRIKANT	NAGULAPALLI, IAS	PRINCIPAL SECRETARY (ENERGY)
193	ALLABAKSH	NAIKODI	MAHINDRA REVA EV

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196	JAGABANTA	NINGTHOUJAM	ROCKY MOUNTAIN INSITUTE
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198	S K	PATTANAYAK, IAS (RETD)	ADMINISTRATIVE STAFF COLLEGE OF INDIA, HYDERABAD
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200	JAYANT	PRASAD	CKERS FINANCE
201	RAVI SHANKER	PRASAD, IAS	MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE
202	RAVICHANDRAN	PURUSHOTHAMAN	DANFOSS - INDIA
203	SUNITA	PURUSHOTTAM	MAHINDRA LIFESPACES
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205	R K	RAI	BUREAU OF ENERGY EFFICIENCY
206	RAJNATH	RAM	NITI AAYOG, GOVERNMENT OF INDIA
207	USHA	RAMACHANDRA	ASCI
208	ABHISHEK	RANJAN	BSES
209	K NARAYAN	RAO	ACC CEMENTS
210	MADHUSUDHAN	RAPOLE	OORJA ENERGY ENGG SERVICES PVT...
211	RAJAN	RAWAL	CEPT
212	J B V	REDDY	DEPARTMENT OF SCIENCE AND TECHNOLOGY
213	UTTAM KUMAR NALAMADA	REDDY	HON'BLE MEMBER OF LOK SABHA AND STANDING COMMITTEES -ENERGY
214	CLOTILDE	ROSSI DI SCHIO	SEFORALL
215	SNEHA	SACHAR	AEEE
216	ASHOK	SARKAR	THE WORLD BANK
217	ARIJIT	SENGUPTA	BUREAU OF ENERGY EFFICIENCY
218	PIYUSH	SHARMA	GIZ
219	STARLENE	SHARMA	GREEN ARTH
220	YASH	SHUKLA	CEPT
221	YASHKUMAR	SHUKLA	CEPT UNIVERSITY
222	BHAWANJEET	SINGH	ENERGY EFFICIENCY SERVICES LIM...
223	JARNAIL	SINGH	CLIMATE SOLUTIONS, MACARTHUR FOUNDATION
224	PAWAN	SINGH	PTC FINANCIAL SERVICES
225	MAHENDRA	SINGHI	DALMIA CEMENT
226	SANDRA	SOARES	KFW
227	SHISHIR	SOTI	SSHAKTI FOUNDATION
228	PRIYA	SREEDHARAN	USAID
229	ENUGURTHI	SRINIVASA CHARY	ENERGY CONSERVATION MISSION,IE...
230	VIVEK	SUBRAMANIAN	FOURTH PARTNER ENERGY

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237	K S	VENKATAGIRI	CII- SOHRABJI GODREJ GREEN BUS...
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239	VANDANA	VERMA	IKEA FOUNDATION
240	ARCHANA	WALIA	CLASP
241	MARKUS	WYPIOR	GIZ
242	RAJEEV	YSR	AVAAN INDIA
243	ROHIT	CHASHTA	SCHNEIDER ELECTRIC
244	DEEPALI	CHAUHAN	DANFOSS INDIA
245	PALLAV	GOGOI	SIEMENS
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247	ADHIRAJ	JAMBEKAR	SIEMENS
248	MAHESH	KAUKUNTLA	SIEMENS
249	K N HEMANTH	KUMAR	EESL
250	NAGRAJA	MADHYA	CARRIER AIRCON
251	SRILEKHA	MARALA	CEPT UNIVERSITY
252	ANIL	MEDICHERLA	CARRIER AIRCON
253	SUBODH	MULAY	SIEMENS
254	KANAKA RAGHA SUDHA	MYLAVARAPU	SIEMENS
255	KARTHIKEYAN	N	OORJA ENERGY ENGINEERING SERVICES
256	KARTHEEK	NGR	OORJA ENERGY ENGINEERING SERVICES
257	RITESH KUMAR	PARKHI	EESL
258	SATISH KUMAR	RAMOLLA	OORJA ENERGY ENGINEERING SERVICES
259	ALAGAM SRINIVASA	RAO	EESL
260	A V UDAY KUMAR	REDDY	EESL
261	ABHIJEET	SARKAR	EESL
262	VAMSIKRISHNA	T	OORJA ENERGY ENGINEERING SERVICES
263	ANAND	THOOPAL	OORJA ENERGY ENGINEERING SERVICES
264	JAGAN	VADTHYA	EESL
265	ANUJ	GUPTA	ISHRAE
266	SANDEEP	GALHOTHRA	RADICAL GROOMING INNOVATION
267	FRANCOIS XAVIER	BOUL	TABREED SUSTAINABLE COOLING
268	PRIMA	MADAN	NRDC
269	ANINDYA	BHATTACHARYA	THE CELESTIAL EARTH
270	K NARESH	GOUD	PRAJAPAKSHAM TELUGU DAILY

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271	PRAVEEN	KUMAR	PROJECTS TODAY
272	KARTHIKA	S	SELCO FOUNDATION
273	NAGAHARI	KRISHNA	DANFOSS
274	PRAMOD	PRABHAKAR	
275	NISHA	JAYARAM	
276	CHARU	LATA	NRDC
277	INDRANI	SARKAR	RIAAN TV
278	RAMYA	REDDY	GRUNDFOS
279	JAVAID	MALLA	BRITISH DEPUTY HIGH COMMISSION HYD
280	G	SRINIVAS	NCSTC ECM-IEI
281	SHAKEEB	SHUWEB	GRUNDFOS
282	MOUNIKA	PRIYA	
283	SOOKRIT	MALIK	ENERGEIA
284	DHAN	RAJ	
285	VIVEK	SEN	SHAKTI SUSTAINABLE ENERGY FOUNDATION
286	K SANTHOSH	KUMAR	GRUNDFOS
287	RAJESH	BAPATLA	SCHNEIDER ELECTRIC
288	S	DHANANJAYAN	SCHNEIDER ELECTRIC
289	SEETHAMMA	PRIYA	SCHNEIDER ELECTRIC
290	PRAMEET	GUPTA	TABREED SUSTAINABLE COOLING
291	DINAKAR		PTI
292	RALNA	CHOLRANI	
293	ANTRIKSH	JAIN	SAINT COBAIN
294	AVINASH	G	SAINT COBAIN
295	RIA	MADAAN	SAINT COBAIN
296	KAMESHWARAO		GRUNDFOS
297	N	BHUSAN	S.COL.CO.CH
298	CH	PRABHAKAR	SCCL
299	C	CHANDRASEKHAR	MEGRAJ TECHNOLOGIES(BHEL)
300	AMLAN	PANDA	ENERGIA
301	BHAWNA	TYAGI	AEEE
302	SHASHIKANTH		SOURCE FORUM.MET
303	ANWEN	JESINTH A	GRUNDFOS
304	MURESH		
305	RAMESH	RAVULA	TELAWNE POWER
306	SATYANARAYANA		KANAKADURGA POWER
307	JAYDEEP	BHADRA	
308	PALLAV	PARSOIYA	
309	JAMES		
310	R	THIRUMUYAN	

SL. NO.	FIRST NAME	LAST NAME	ORGANISATION
311	G	MOHANREDDY	
312	SAI	KUMAR	
313	JANARDHAN		
314	KIRAN		CVR
315	VIJAY		V5 NEWS
316	ZAKIR		SNEHA NEWS
317	POMCHAND		TV11
318	YONUS		10TV
319	VENU	GOPAL	NOVA TELANGANA
320	KRISHNA	SASTRY	VISUAL COMFORT INDIA PVT.LTD
321	SASAWAT	DAS	SUNMEISTER ENERGY PVT LTD
322	HRIDAY		W/S
323	S N B	CHAVY	GHMC
324	R	SRINIVASULU	GHMC
325	CH RAM	REDDY	

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