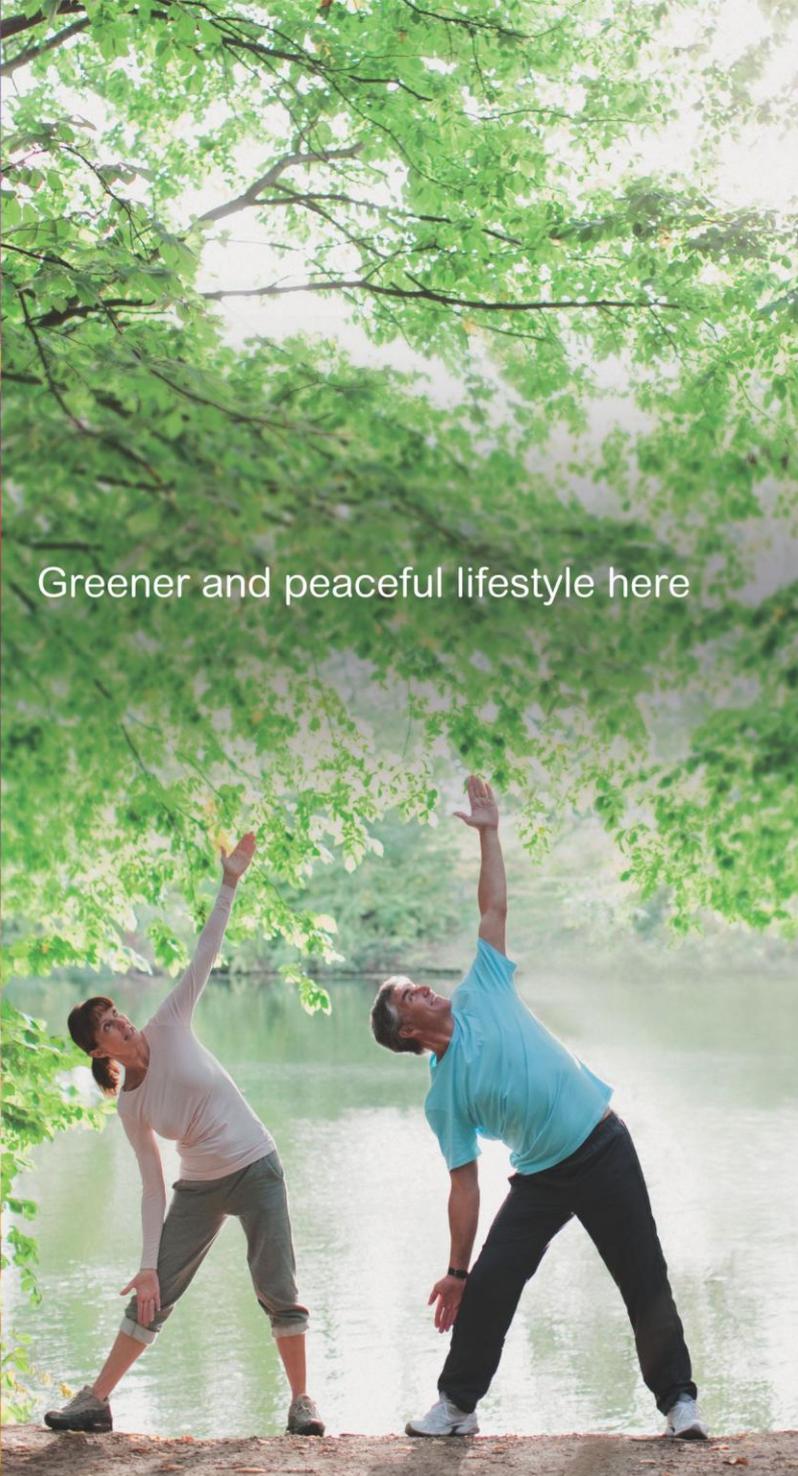






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# Alliance for an Energy Efficient Economy (AEEE)



## INDIAN ENERGY EFFICIENCY COMPENDIUM *and* MEMBERS DIRECTORY 2016

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## DISCLAIMER

AEEE has compiled this Energy Efficiency Resource Publication and Member Directory to provide a quick reference to companies active in the energy efficiency and clean energy business. While AEEE has made every effort to include accurate, reliable and useful information in this publication, the organisation cannot be held liable for any omissions, inaccuracies or out of date information that may have inadvertently been included in the publication. Any reference to companies or investment activities is for illustrative purposes only and does not constitute an endorsement of those companies or any investment activity. AEEE does not accept any liability for loss arising from reliance on the contents of this work. AEEE shall not be held liable or responsible to any person or entity with respect to any loss or incidental or consequential damages caused, or alleged to have been caused, directly or indirectly, by the information or programmes contained herein.

# FOREWORD



सत्यमेव जयते

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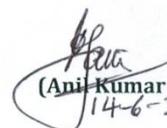
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## FOREWORD

Niti Aayog developed the IESS, 2047 as an energy scenario building tool with the guiding ambition to develop energy pathways leading up to the year 2047, comprising of likely energy demand and supply scenarios. Niti Aayog has also observed the range of challenges that Indian states are facing in the execution of energy efficiency policy and regulations as these efforts require technology, guidance and fund commitment, in some cases. Against this backdrop, Niti Aayog has entered into an understanding with the Alliance for an Energy Efficient Economy to strengthen demand side modeling in IESS 2047 and scale up energy efficiency implementation activities in Building sector by focusing on the states.

I am delighted that AEEE has published the "Indian Energy Efficiency Compendium and Members Directory" as it demonstrates its unique positioning and ability to work with government institutions, both at the central and state government level, as well as with the private sector that has to take the leadership role in implementing the government policies that are being developed to enable the creation of the energy efficiency market.

Energy efficiency remains a no-regrets option as it is the cleanest, fastest and cheapest option to tackle India's twin challenges of sustainable development and energy security. Niti Aayog looks forward to closely collaborating with the Alliance for an Energy Efficient Economy to create an energy-efficient India.

  
(Anil Kumar Jain)  
14-6-2016



एक कदम स्वच्छता की ओर

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## ACKNOWLEDGEMENTS

Alliance for an Energy Efficient Economy (AEEE) is excited to bring out this publication in appreciation of the support that we have received from our members and our partners and to compile an Energy Efficiency Resource Directory that will be useful and relevant for the entire Energy Efficiency community in India. We have made significant improvements this year from previous versions by adding the following sections:

1. Energy efficiency programmes of the Government of India ministries and public sector organisations;
2. Energy efficiency programmes of multi- and bi-lateral organisations currently active in India;
3. List of and contact information for all Designated State Agencies in various states of India;
4. List and contact information for all accredited ESCOs in India;
5. Energy Efficiency Financing programmes or schemes launched by government, multilateral, international or private sector financial institutions.

Alliance for an Energy Efficient Economy wishes to acknowledge the support provided by Shakti Sustainable Energy Foundation (SSEF) towards development of the Energy Efficiency Resource Publication and Member Directory 2016.

The AEEE team expresses its gratitude to AEEE's Executive Council, Premium Members and other members for their support and encouragement in bringing out this publication and all other endeavours. We also gratefully acknowledge the support and guidance provided by Bureau of Energy Efficiency, Energy Efficiency Services Limited and Niti Aayog for the various programmes and projects.

Finally, AEEE team wants to acknowledge the contributions of all organisations who have responded to our request to provide new information or check and validate the information that the team was compiling for this publication.

While AEEE has made every effort to include accurate, reliable and useful information in this publication, the organisation cannot be held liable for any omissions, inaccuracies or out of date information that may have inadvertently been included in the publication.

Signed by

Koshy Cherail  
President, AEEE

## CHAIRPERSON'S NOTE

These are exciting times for the Alliance for an Energy Efficient Economy and I am thrilled to share some of the recent developments with our members, partners and supporters across public, private and academic/non-profit sectors.

I would like to welcome all new members who join AEEE's existing member companies who have supported AEEE's exciting journey for more than seven years. AEEE has also signed a Memorandum of Understanding with the Energy Efficiency Services Limited and a Statement of Intent with Niti Aayog to collaborate on making India an energy-efficient nation by working at the central, state and city government levels.

The rising awareness about climate change at the global level and the importance that energy efficiency can play in mitigating its dangerous and deadly impacts is captured in India's Nationally Determined Contributions (NDC). Government of India's energy efficiency policies and regulations in the buildings, appliances, and industrial sector combined with the market transformation efforts led by Energy Efficiency Services Limited forms the bedrock for NDC and gives us the confidence that a significant scale up to fully tap the potential of energy efficiency is not only possible but is also urgently needed.

AEEE believes that energy efficiency must be the first fuel for India, as the International Energy Agency so aptly characterizes it. Energy efficiency is the gift that keeps on giving once it is embedded in the daily lives of people – the way we consume energy in our homes, offices, cities, commutes, agricultural practices and factories – and which starts to show in the energy intensity of our economy. As India grapples with rapid urbanisation, burgeoning cooling demand, massive housing and commercial building requirements and increasing air pollution, it is time to take on this challenge and turn it into a massive opportunity by weaving the energy efficiency thread through our infrastructure and developmental aspirations in ambitious government schemes such as Make in India, Housing for All, Digital India, Smart City and Smart Grid Mission, it is time to take on this challenge and turn it into a massive opportunity by weaving the energy efficiency thread through our infrastructure and developmental aspirations.

AEEE believes that energy efficiency can offset electricity demand of 50 GW by 2022 and 100 GW by 2030 by mandating a national energy reduction target. This is not only possible, but eminently achievable if the government leads by example, the private sector follows through by deploying proven and most efficient technologies and the financial sector comes up with innovative financing products to create a dynamic and thriving energy services sector and be a catalyst to create millions of green jobs. This would allow India to meet its sustainable development goals and be seen as a leader in tackling the air quality, climate change and energy security related challenges in the most pragmatic and cost-effective fashion.



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# ABOUT AEEE

AEEE is a policy advocacy and energy efficiency market enabler with a not-for-profit motive. It is the only organisation in India which works on creating awareness about energy efficiency as a resource (energy efficiency is the cheapest, cleanest and fastest resource and must be the first fuel in India, before thinking about power generation from any fuel, including renewables) advocates for data driven and evidence-based energy efficiency policies that will unleash the innovation and entrepreneurship within the country to create an energy-efficient economy.

AEEE supports BEE's Energy Efficiency Policies, EESL's Implementation Efforts, Niti Aayog's National Energy Policy initiative and advocates for 10-50x increase in energy efficiency budget, capacity at BEE and State Designated Agencies and deepening and strengthening of existing programmes. AEEE has deep expertise and understanding of the energy services market (e.g. ESPC contracts, measurement and verification, energy efficiency financing including risk sharing and mitigation methods, etc.) and organises both grassroots activities such as awareness and training workshops and works on strategic issues such as standard ESPC contracts, M&V guidelines, investigate ESPC transaction related failures and make recommendations to overcome the barriers and challenges.

AEEE works closely with private sector companies and invites companies and organisations to become members of AEEE to strengthen its hands and scale up the energy efficiency market for their energy-efficient products and services by becoming active partners in the development and implementation of government's energy efficiency policies in the buildings, industry and appliances and equipment sector.

AEEE works closely with national and international institutions, governmental and non-governmental (e.g. Bureau of Energy Efficiency, Energy Efficiency Services Limited, Niti Aayog, SIDBI, FICCI, The World Bank, Shakti Sustainable Energy Foundation, American Council for an Energy Efficiency Economy, Lawrence Berkeley National Laboratory, etc.), private sector companies (SME ESCOs, Equipment manufacturers, to big real estate developers, etc.) to provide a convening platform for government and industry to engage in a constructive dialogue to design and implement more effective and impactful policies.

# EXECUTIVE COUNCIL



**DR. SATISH KUMAR**  
EXECUTIVE CHAIRMAN, AEEE

Dr. Satish Kumar is the Executive Chairman at the Alliance for an Energy Efficient Economy (AEEE) and serves as Senior Advisor to Berkeley Labs. Prior to this, he was Senior Advisor and Energy Efficiency Ambassador at Schneider Electric India Pvt. Ltd. where he also led the Energy Management business and developed the company's influence and energy efficiency strategy in India.

His career has focused on making a business case for energy efficiency and renewable energy, sustainability and climate change through business leadership, development of energy efficiency standards and protocols, fostering innovative and collaborative partnerships and policy advocacy by playing the role of a global energy efficiency/management and sustainability professional, corporate and policy influencer, thought leader, institution builder and enabler, and a tai-sector professional (government, non-profit, business).

In his close to 25 years of professional career, he has led energy efficiency business and influence bilateral technical assistance programmes, co-founded, led and served on the boards of many non-profit organisations (e.g. Efficiency Valuation Organization, Global Building Performance Network, and Alliance for an Energy Efficient Economy) in the USA, Europe, and India. He has acted as technical advisor to Indian and US governments, California Utilities, Developmental organizations, industry associations, and global think tanks.



**MR. UPENDRA BHATT**  
VICE CHAIRMAN, AEEE

Mr. Upendra Bhatt leads cKinetics, a fast growing Sustainability Insight, Innovation & Capital Advisory Firm. Upendra is a 'Go-to-market' and techno-commercial specialist in the energy and energy-water domains. He has been closely associated with developing utility scale infrastructure as also decentralized renewable energy projects and has worked on shaping innovative market driven models for mainstreaming of technology and service interventions in the developing markets.

Outside of his commitments at cKinetics, Upendra chairs the Sustainable Business Leadership Forum, an Industry practitioners group focused on resource sustainability and ESG issues through multi-stakeholder working groups. He also serves as the Vice Chair of Alliance for Energy Efficient Economy (AEEE) and is a member of several task forces constituted by industry bodies.

Mr. Ashish Rakheja is the Managing Partner of AEON Integrated Building Design Consultants based out of India (New Delhi) with twenty five years of work experience. He is a seasoned Consulting Engineer who has designed over 2000 projects including Hotels, Airports, Hospitals, Retail, Residential, Commercial, High rises and Industrial projects. Mr Rakheja specializes in high-performance buildings and has been actively involved in leading design activities of electro-mechanical services for three Net Zero Energy Buildings and over forty Platinum rated



**MR. ASHISH RAKHEJA**  
TREASURER, AEEE

green projects in India. He is spearheading the green building movement in India in capacity of role as Chairman, Technical Committee of Indian Green Building Council (IGBC) and certified Trainer.

Mr Rakheja has won many awards and delivered over 500 talks on various facets of building design across the world. His projects are a blend of technology and passive design features wherein the building performance is enhanced by covering aspects like Thermal Comfort, Indoor Environment Quality, Heat islands, Micro-climate generation, CFD study, Day-lighting, enhanced ventilation etc. He is an active member of over 20 Technical societies and regularly contributes his time on writing Standards, codes & position papers for Government bodies & Technical societies.

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**MR. RANGANATH N K**

Mr. Ranganath N K is the Managing Director of Grundfos Pumps India Pvt. Ltd. since its inception in 1998. He has 36 years of experience in Marketing, Sales, Design, Project Management, Finance, HR and General Management.

For the last eighteen years, his focus in Grundfos has not only been on setting up the company and its production facilities, but also to build the brand and propagate the concept of life cycle costs, energy efficiency and water conservation. He has been part of CII committees on Energy Efficiency, Skill Development, Water, Manufacturing Council, CSR, and the Past Chairman of Tamil Nadu State Council.

He is also the Past President of Madras Management Association (MMA), Past Chairman of AEEE (Alliance for an Energy Efficient Economy).

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**MS. HEMA HATTANGADY**

Ms. Hema Hattangady was the Vice Chairman and CEO of Conzerv Systems Pvt Ltd until it was sold to Schneider Electric in June 2009.

After selling her business to Schneider Electric India, Hema has become an angel investor in the social enterprise space with investments in Swasth India ([www.swasthindia.in](http://www.swasthindia.in)) and Hippocampus Learning Centers ([www.hlc.org.in](http://www.hlc.org.in)). Hema has now set up a venture called Consul Energy Pvt Ltd.

She is on the Board of SKF ([www.skf.com](http://www.skf.com)), NELCO ([www.nelco.in](http://www.nelco.in)) and Tatanet Services Ltd (a TATA enterprise) and Ace Designers ([www.acemicromatic.net](http://www.acemicromatic.net)). Hema has played a leading role in the concept and creation of Alliance for an Energy Efficient Economy (AEEE). Hema was selected as one of the 10 women who have contributed meaningfully to the Power Sector. The nomination was by Powerline, a premier Indian magazine for the Power Sector.



**MR. DEVIDAS KULKARNI**

Mr. Devidas Kulkarni is the Head of Building Technologies division of Siemens Ltd. He has been with Siemens for the past 21 years, and had held several senior management positions in Energy and Infrastructure & Cities sectors. Prior to his current role, he was the head of Medium Voltage business unit. He had garnered rich and varied managerial experience, having worked in diverse functions ranging from Manufacturing to Corporate Strategy, to Quality, to Industrial Engineering, to Project Management. He has several achievements and awards to his credit. He was conferred with the coveted Siemens TOP+ award in three consecutive years from 1999 to 2001 for Product Innovation, Benchmarking Practices and Quality.

He graduated in Mechanical Engineering from Sardar Patel College of Engineering, Mumbai. He also completed Post-Graduation in Industrial Engineering from NITIE, Mumbai and Post-Graduate Programme in Management Studies from Mumbai University. Before joining Siemens, he worked with Mahindra & Mahindra for nine years.

He is a founding member of Indian Green Building Congress (IGBC). He is also on the executive council of AEEE (Alliance for an Energy Efficient Economy).

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**DR. MAHESH PATANKAR**

Dr. Mahesh has over 20 years extensive experience in the energy and environmental fields and is the Founder and Managing Director at MP Ensystems Advisory Private Limited. He is a Member of Energy Committee of Indian Merchant Chambers, Executive Council Member of Alliance for Energy Efficient Economy, and participating member of the DSM Consultation Committee of MERC. He is an international energy policy expert with direct experience with several donor and financing entities.

Mahesh has worked extensively with Indian regulators and utilities in India and outside India with specific clean energy related experience with the private sector companies.

---



**MR. MILIND CHITTAWAR**

Mr. Milind Chittawar, in his entrepreneurial journey, apart from regular business he has conceptualized knowledge based software solutions See-UtiliSave & See-ThermiSave, which are being used to identify and implement energy conservation projects. He has received Prime Minister's MSME special recognition award for Outstanding Entrepreneurship. His present focus is to deliver 20% energy cost savings in commercial Building Sector (Hotels, Data Centre, IT/BPO, Hospitals & Offices). His present focus is on making positive cash flow for clients from first month of contract and to scale this business further.

He has received training in Japan, USA & Germany. He has been part of Indian Team to World Bank's 3 Country Energy Efficiency project to China & recently to Saudi Arabia. He has been an invited speaker for multiple national and international conferences.

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**MR. RANGARAJ RAJMOHAN**

Mr. Rangaraj Rajmohan, CEO, DESL started his career in energy management in 1980's and has so far been involved in the several energy efficiency studies in India and abroad. He has extensive experience (over 32 years) in implementing and leading energy management projects, productivity improvement studies, energy audit studies, project evaluation & implementation of various energy efficiency projects, process modernization & upgradation projects from concept to commissioning. He has led in successfully carrying out over 1,500 energy efficiency, water efficiency, renewable energy, waste minimization, shared savings and guaranteed savings performance contract assignments in industrial, commercial and municipal sectors. He has also been involved in providing on-job training in many projects.

As a member of senior management, he has supported in building the largest and most successful Energy Service Company in India with penetration into international market. Widely travelled, Mr. Rajmohan has provided consulting services for a number of energy efficiency and ESCO projects in several countries including Algeria, Kenya, Singapore, Malaysia, South Africa, South Korea, Philippines, Vietnam, Indonesia, Saudi Arabia, Oman, Malawi, Pakistan, Bangladesh, etc. Mr. Rajmohan has to his credit several technical publications in journals including one 'patent'.

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**DR. RAHUL WALAWALKAR**

Dr. Rahul is President and Managing Director of Customized Energy Solutions India Pvt. Ltd. Rahul leads the Emerging Technologies practice for Customized Energy Solutions globally with focus on energy storage, renewables, demand response and smart grid technologies as well as international markets. Rahul has been involved in evaluating economics of emerging technologies in deregulated electricity markets since 2004. His activities have covered complete range of smart grid, demand response, microgrid and energy storage technologies.

Rahul is founder and Executive Director for India Energy Storage Alliance (IESA). He served as member of the Board of Directors of Energy Storage Association (ESA) in US during 2009-15 and was elected as Secretary in 2013. He was elected as Vice Chair for Global Energy Storage Alliance (GESA) in 2014. Rahul is involved in providing inputs for demand response, energy storage & smart grid policy to government agencies in US and India as well as has provided inputs to multilateral agencies such as IRENA, IEA & ADB. Rahul has delivered presentations in 100+ international conferences during last decade and has also authored 5 book chapters on topics covering energy efficiency, demand response and energy storage.



**MR. RAVI MEGHANI**

For the last 8 years, Mr. Ravi Meghani has been heading the Energy Management Solutions at Wipro EcoEnergy, focusing mainly on Retail, Telecom and Water sectors. He had been leading the propositions for Energy Efficiency and innovations in managing non-IT devices for Wipro. These initiatives have delivered unprecedented results for clients across thousands of sites across the globe.

With extensive expertise in M2M, Managed Services and IT Infrastructure, he is also skilled in solution architecting, analytics, delivery, and product development. With over 22 years of experience, which includes working with various organizations in consultancy, retail, infrastructure, financial institutions and the telecom segment, he has brought depth into the strategies and faster realization of benefits for clients.

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**MR. SANJAY DUBE**

Mr. Sanjay Dube is Vice President – South Asia for International Institute for Energy Conservation (IIEC). Mr. Dube is a lead clean energy and climate change expert with more than 28 years of experience in planning, management and implementation of strategic programmes in South Asian and South East Asian countries. Prior to joining IIEC, Mr. Dube has worked as Chief of Party for Partnership to Advance Clean Energy – Deployment (PACE-D) Project ([www.pace-d.com](http://www.pace-d.com)) of USAID in India. Mr. Dube established the PACE-D programme in India and developed the strategies for effective implementation of project.

In the past Mr. Dube worked as Vice President with Emergent Ventures India ([www.emergent-ventures.com](http://www.emergent-ventures.com)) and lead the international business for Sustainability and Climate Value Advisory (SCVA) Services. Mr. Dube led the SCVA team for the implementation of energy efficiency, renewable energy, climate change and environment management programmes in South Asian and South East Asian countries. During his tenure at Emergent Ventures, he worked with various national and international government and private sector clients to deliver the projects on clean energy, sustainability and climate change related subjects.

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**MR. SHISHIR JOSHIPURA**

Mr. Shishir Joshipura is Managing Director of SKF India Ltd. He is also the Country Head for SKF group's subsidiaries in India. Shishir worked in various capacities with Thermax Limited for first 26 years of his career prior to joining SKF in December 2009.

In 2013 BusinessWorld and Business Today listed Shishir amongst India's most valuable CEOs and top 100 CEOs in India respectively. He is currently the elected Chairman of Confederation of Indian Industries (CII) Pune chapter and serves as an independent member of board for SBI Funds Pvt Ltd (SBI

Mutual Fund). He is President of Ball and Rolling Bearing Manufacturer's Association (BRBMA) and has served as Chairman of Process Plant and Machinery Association of India (PPMAI) from 2007 to 2009. Shishir is also a founding director for Alliance for Energy Efficient Economy (AEEE).

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**MR. S PADMANABAN**

Mr. Padu S. Padmanaban is the former Programme Director of the South Asia Regional Initiative for Energy Integration (SARI/EI) and Senior Energy Advisor for USAID/India's bilateral economic assistance programme. Prior to that he served with the World Bank in Washington DC in advancing alternative energy programmes, specifically energy efficiency in South and East Asia. Currently he is a visiting researcher with KAPSARC, Riyadh, Saudi Arabia working on energy productivity issues in the GCC countries. Mr. Padmanaban also has significant experience in the design and implementation of power sector reforms, regional energy integration, energy-water nexus, clean energy and rural energy access projects including the planning and establishment of national and regional centers of excellence in energy management and efficiency.

He is the recipient of the Hall of Fame Award by the Indian Green Building Council in October 2013, the All India Power award in December 2010, the Energy Professional Development award, 2008 by the Association of Energy Engineers, USA in recognition of advancing capacity development programmes in energy efficiency and power distribution management in India and the World Clean Energy Award, 2007 by an international jury constituted by the Swiss based Transatlantic 21 in global recognition of his achievements in advancing energy efficiency and renewable energy. Mr. Padmanaban taught at the School for Advanced International Studies (SAIS), Johns Hopkins University, Washington DC.

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**DR. KOSHY CHERAIL**  
SECRETARY TO EC

Dr Koshy Cherail is the President, and one of the core team members who founded AEEE in 2008. Koshy has over 25 years of experience in policy research and consulting with various bilateral and multi-lateral agencies, including World Bank, USAID and GTZ (now GIZ).

Koshy was a facilitator and key contact in India, for the Three-Country (Brazil, China and India) EE Financing Project of UNF/UNEP and World Bank based at IREDA, New Delhi) during 2002-06. Prior to that Koshy has worked with Winrock International, the Society of Indian Automobile Manufacturers, Centre for Science & Environment, and the Energy Management Centre (Govt of India). He has been associated with various efforts to organise the ESCOs and EE businesses in India, which has culminated in the formation of the AEEE. Koshy has represented Indian ESCO and EE business sector at various international fora. He has a PhD in Economics from University of Madras (1990), and has several publications on energy efficiency, environment and climate change to his credit.

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Switch to LED bulbs! Make India more energy efficient by joining a nationwide movement that has already resulted in the installation of over 12 crore LED bulbs. Take advantage of the UJALA scheme by Government of India for a special offer for your home. Tell others you have switched to a smarter lighting solution and say I led the way!



Buy 2-10 LED bulbs  
at lower than CFL rates



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3,123 MW  
Avoided Peak Demand



34,622 tonnes CO<sub>2</sub>  
Reduction per day



17.09 crore  
Cost saving per day

Source: UJALA scheme. Programme monitored by the Ministry of Power, Government of India.

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The fuel of tomorrow is everything we can save today. Our new brand promise reflects our sharper focus in delivering technologies today that help save energy in farm-to-fork models and smart cities of tomorrow. Danfoss engineers technologies that enable the world of tomorrow to do more with less. Danfoss helps meet the growing need for infrastructure, food supply, energy efficiency and climate-friendly solutions.

We help build the infrastructure for the world's growing cities – and we do it in a sustainable way. We help construct the roads and buildings and optimize the energy and water supplies as well as plants and buildings. Our engineering ensures cleaner air and increased comfort for people as well as higher efficiency and productivity – moving the growing cities in a green direction and raising the standard of living. We support progress for people, communities and businesses around the world. An effective infrastructure is the vehicle for transforming low- and middle-income countries. Our solutions are making a difference for the cities of tomorrow.

We help meet the need for more and better food by improving farming productivity and keeping food fresh all the way to consumers in the most efficient and safe way with minimum waste. In the field, we provide hydraulic products for machinery such as intelligent tractors and harvesters that help optimize the harvest on the farms. When food is harvested or fished from the sea, our innovative technology controls the temperature and monitors the refrigeration in transportation, plants, distribution centres and supermarkets. This saves energy and CO<sub>2</sub>, keeps costs down, minimizes food waste and improves food quality.

**Danfoss Drives:** Danfoss is the world leader in dedicated drives. Danfoss drives are independent of motor manufacturers and adapt to any technology. Dedicated, reliable and user-friendly, these drives fit specific application requirements and reduce total cost of ownership. Providing optimum process control and energy efficiency for a wide variety of electric-motor-driven applications in a diverse range of industries, Danfoss drives play a crucial role in optimising productivity for various industries like Food & Beverage, Chemical, Mining, Marine and HVAC industries.

**Danfoss Smart Cities:** Energy Efficiency to be considered as the first fuel in running India's smart cities in a sustainable manner. Smart city implies smart consumption of energy. Buildings consume a lot of energy and smart technologies that Danfoss has to offer help in reducing energy consumed in HVAC Systems. Accelerating energy efficiency while India experiences skyrocketing growth in its buildings market provides a huge opportunity to generate energy savings that can translate directly to financial savings.

Danfoss India believes that technologies are available to improve the Energy to GDP ratio of cities and thereby the country and is focusing on five specific areas within India's 100 Smart Cities dream: Key focus areas for Danfoss include Efficient Buildings (New and Retrofit), District Cooling, Efficient Water and Waste Water management, Efficient Industries, Efficient Food (Cold Chain) Infrastructure including Smart Stores.

## Grundfos Pumps India Pvt. Ltd.

118, Old Mahabalipuram Road,  
Thoraipakkam, Chennai 600097  
Tel: +91 44 2496 6800  
www.grundfos.in  
salesindia@grundfos.com



Grundfos Pumps India Pvt. Ltd. (Grundfos India) is a 100% subsidiary of Grundfos – Denmark. Grundfos is a global leader in advanced pump solutions and a trendsetter in water technology. The company contributes to global sustainability by pioneering technologies that improve quality of life for people and care for the planet. Grundfos is also one of the world's leading pump manufacturers with an annual production of more than 16 million pump units. Grundfos India started its Indian operations in the year 1998.

The company's main products include circulator pumps for heating and air-conditioning as well as other centrifugal pumps for the industry, water supply, sewage and dosing.

### Sectors of Operation

- Domestic Buildings
- Chemical & Process
- Commercial Buildings
- Pharmaceutical
- Water Treatment & Boiler feed
- Food & Beverage
- Water Supply / Service
- Cement
- Waste Water
- Steel
- Agriculture
- Mining
- Transportation
- Textiles
- Energy
- Heating, Ventilation & Air Conditioning

### Business Activities

- Energy Efficient pumping solutions
- Energy Audit Service for Pumping systems
- EE Equipment Manufacturer
- Building Services (Commercial / Residential / Domestic)
- Water and Wastewater Management (Large metro cities/ medium / small municipalities)
- Industrial Solutions
- Water Treatment solutions
- Solar Pumps (pumps that run on renewable energy)
- Remote management systems for pumps

Grundfos strongly believes in enhancing its sustainability profile by offering cutting-edge green solutions, which will contribute to meet a number of global challenges in terms of climate change and water stress. Aligning to its global sustainability focus, Grundfos India is committed towards helping its customers and the nation to conserve water and energy.

The company also contributes towards energy and water conservation by reducing its own impact on the environment. Its headquarters in Chennai is India's first gold-rated green building (LEED certification by USGBC in 2005) and is energy efficient with 100% recycling of the sewage, rain water harvesting and with solar collectors and photovoltaics. Grundfos India's factory also received the gold certification in 2011 from the Indian Green Building Council (IGBC). In August 2013, the Grundfos office building was elevated to a LEED EB Platinum certification.

## Infosys

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Bangalore 560 100  
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Guruprakash\_Sastry@infosys.com



Infosys is a \$9.5 billion Information Technology company with 194,000 employees. Infosys is a global leader in consulting, technology, outsourcing and next-generation services. Infosys enables clients in more than 50 countries to outperform the competition and stay ahead of the innovation curve.

Apart from being a global Information Technology powerhouse, it is one of the global leaders when it comes to energy efficiency, renewable energy, water efficiency and is widely recognized as a pioneer in sustainability in India/globally. Infosys is one of the very few companies to have made voluntary commitments at the UN, to reduce energy intensity and to become carbon neutral by 2018.

This year, Infosys became the first Indian company to join the global RE100 campaign. About 30% of Infosys' energy requirements in FY2015 was met through renewable sources and the company will meet 100% of its energy requirements through renewable sources by 2018.

Infosys has 15 LEED Platinum rated buildings and four buildings with the Green Rating for Integrated Habitat Assessment (GRIHA) 5 star rating. With 5.65 million sq. ft. of highest rated green buildings, the company is setting new benchmarks for building energy efficiency.

The number of employees at Infosys doubled from 2008 to 2015, but the energy consumption increased by just 13% avoiding nearly 900 million kWh. By the end of fiscal 2015, the company reduced its per capita consumption of electricity by 46%, and per capita water consumption by 30% over a period of seven years.

Infosys monitors all its buildings (45 million sft) through its central command center and believes in a data-driven enterprise management approach to energy efficiency. The new buildings of Infosys are among the most efficient buildings in the world and they consume just 1/3rd the energy compared to a regular office building in India.

## Saint-Gobain India Pvt. Ltd.

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<http://in.saint-gobain-glass.com>  
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Saint-Gobain, the world leader in Habitat, designs, manufactures and distributes materials and solutions that can be found everywhere in our living places and our daily life: in buildings, transportation, and infrastructure and in many industrial applications. These materials and solutions provide comfort, performance and safety while addressing the challenges of sustainable construction, resource efficiency and climate change. With over €39.6 billion sales in 2015, and operations in 66 countries, they globally employ more than 170000 employees.

### Saint-Gobain Glass in India

Saint-Gobain's Glass business in India manufactures a wide variety of flat glass products and offers solutions that continue to shape the Indian construction industry. With over 16 years of presence in India, and a unique pan-India manufacturing footprint, Saint-Gobain today is considered a strong Technology and Market Leader. Their sustainable products range include:

#### Exterior Applications: Advanced Solar Control and Thermal Insulation Glass Solutions

- Solar Control Glass for Homes : *SGG Sun Ban*
- Solar Control Glass: *SGG Antelio Plus*
- Advanced Solar Control Glass: *SGG Cool-Lite*
- Solar Control and Thermal Insulation Glass for Homes: *SGG Evo / SGG Evolite*
- Solar Control and Thermal Insulation Glass: *SGG Nano / SGG Nano Silver*
- Next generation double silvered Solar and Thermal insulation Glass: *SGG Envision*

#### Interior Applications: Contemporary Glass Solutions

- Durable Lacquered Glass : *SGG Planilaque Evolution, SGG Planisafe*
- High end Mirrors : *SGG Miralite Evolution*
- Extra Clear Glass : *SGG Diamant*
- Electrically Operable Switch On/Switch Off Glass : *SGG Priva-Lite*
- Dynamically operable Electrochromic glass: *Sage Glass*

#### Fire Safety Solutions: 60 mins to 120 mins protection

- *SGG Pyroswiss*
- *SGG Contraflam*

#### Contemporary Solutions on offer:

- Comprehensive Design Analysis (by competent IGBC/LEED/Griha accredited professionals) including Sustainable Design Analysis, Structural Analysis, Acoustic Analysis and Daylighting Analysis
- Certification program and Audit for Glass Processing industry: SGC Consortium

As a Founding Member of Indian Green Building Council, Saint-Gobain has been involved with over 90% of Green Buildings today in India, providing sustainable glass products and solutions. Notwithstanding the Sustainability initiatives in product offerings, Saint-Gobain is strongly committed to Green logistics and practices Lean and Green manufacturing philosophy thereby shaping a Sustainable Tomorrow.

## Schneider Electric India Pvt. Ltd.

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DLF Cyber City, Phase II, Gurgaon - 122002 Haryana, India  
Tel: +91 124 3940 400  
[www.schneider-electric.co.in](http://www.schneider-electric.co.in)  
debashish.chakraborty@schneider-electric.com



*“As the Global Specialist in Energy Management™, the Schneider Electric Group enables people to experience and transform efficiency where they live and work; from home to enterprise, across the grid and the city. Our mission is to bring energy everywhere, for everyone, at every moment, while keeping a cool planet.”*

Schneider Electric India Pvt. Ltd (SEI), a 100% subsidiary of Schneider Electric Industries SAS, is one of the top three energy management companies in India and offers integrated solutions across multiple market segments. With a workforce of over 21,000 employees in India, and a significant manufacturing presence of 29 factories out of which 8 are export units, the company is well known for its unique vision, progressive management and above all, its exemplary quality. It is a moment of immense pride for all of us, as we look back on the journey of Schneider Electric in India over the past five decades.

### Sectors of Operation

- Utilities & Infrastructure
- Industries & Machines  
Manufacturers
- Non-residential Buildings
- Data Centres & Networks
- Residential Segments

### Business Activities

- Energy Management
- Energy Consulting Services
- EE products and solutions
- Industrial, Building and Energy  
Automation
- Electrical Switchgear and Control  
Gear
- Green Building Solutions
- Smart Buildings

India is one of the most important markets for Schneider Electric globally and we have had an increasingly active presence in the country both in terms of contributing to infrastructure growth as well as strong CSR (Corporate Social Responsibility) initiatives. Despite the significant social and economic initiatives that make India a global powerhouse today, the demand and supply gap for energy is a cause for serious concern.

The need for automation, reliability, security and energy efficiency will continue to grow exponentially in the coming years. As the leading energy management experts, Schneider Electric India, as India's infrastructure partner in this exciting time of nation building; delivers efficient solutions that optimize energy performance while conserving resources across our electricity supply chain.

A responsible corporate citizen, Schneider Electric has been ranked by Corporate Knights in the top 10 of 2015 and 2014 Global Most Sustainable Corporations out of a total of more than 4,600 listed companies with market capitalization of at least USD 2 billion. In India, we've been recognized for three consecutive years now by Parivartan Sustainability Awards for our efforts with sustainability and energy management.

## Siemens Limited

Building Technologies Division, 5th Floor, South Wing,  
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www.siemens.com/buildingtechnologies  
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*Siemens Building Technologies - We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure.*

Siemens Building Technologies is the world market leader for safe, energy efficient and environmentally friendly buildings and infrastructure. As a technology partner, consultant, service provider, system integrator and product supplier, Building Technologies offers fire safety, security, building automation, heating, ventilation and air conditioning (HVAC) as well as energy management products and services.

The Division has a broad customer base that includes owners, operators and tenants of public and commercial buildings as well as general contractors, system houses and original equipment manufacturers (OEM).

### Sectors of Operation

- Commercial
- Industrial
- Public buildings
- Infrastructure

### Business Activities

- A comprehensive portfolio of components, products and systems for demand-based, efficient control of heating, ventilation and air conditioning (HVAC) plants, with all components optimally matched and covering all technical applications in the HVAC sector.
- Consulting and services as well as products and technologies aimed at optimizing the performance, comfort and energy efficiency of buildings and infrastructures across their entire lifecycle.
- Comprehensive monitoring, maintenance, modernization and efficiency optimization services for buildings and infrastructures.
- Comprehensive consulting services for energy management, energy procurement and consumption analysis, and implementation of efficiency measures.
- Innovative, high-quality fire safety products, systems and solutions for early and reliable detection, quick and deception-proof alarming and evacuation processes as well as intelligent extinguishing based on current room conditions.
- Planning, design, setup, maintenance, monitoring, financing and operation of integrated security solutions, including command and control systems, security management systems, and intelligent video analysis systems.
- Integrated systems and solutions for specific markets and industries such as data centers, utility companies, airports, hospitals and hotels.
- Consulting, planning, development and financing of turnkey integrated automation, security and fire safety solutions for buildings and infrastructures (Total Building Solutions, TBS).

## SKF India Limited

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www.skfindia.com  
shrikant.savangikar@skf.com



SKF Group started its operations in India, Kolkata in 1923 with its trading arm and in 1961 expanded its footprint by incorporating SKF India Limited as a listed entity. SKF in India today provides industry leading automotive and industrial engineered solutions through its five technology driven platforms - bearings and units, seals, mechatronics, lubrication and services. Over the years the company has evolved from being a pioneer in self-aligning ball bearing manufacturing company to a knowledge driven engineering company helping customers achieve sustainable and competitive business excellence.

At present, SKF in India has consolidated its operations in three different companies, namely SKF India Limited, SKF Technologies (India) Pvt. Ltd and Lincoln Helios India Ltd SKF's industry leading solutions provide integrated, sustainable solutions that offer breakthroughs in friction reduction, energy efficiency, increased equipment life and reliability to several industry segments.

With strong commitment to knowledge engineering and continuous effort dedicated towards research in building innovative solutions, SKF India today offers customized value added solutions based on the “power of knowledge engineering” principle that integrates all the five technology platforms. SKF in India has a pan India footprint comprising of six manufacturing facilities, six offices, over 300 distributors and an employee base of over 2400 dedicated professionals.

### Sectors of Operation

- Automotive
- Electrical
- Industrial
- Services

### Business Activities

- Bearings and Seals for various applications in all kind of rotating equipment's
- Specialty products - liner motion bearings, mechatronics products
- Plant and life cycle management
- Reliability and maintenance products and services
- Training and development of customers and partners

The SKF Group is globally certified to ISO 14001, the international standard for environmental management, and also OHSAS 18001, the health and safety management standard. Individual divisions have been approved for quality certification in accordance with ISO 9001 and other customer specific requirements.

With over 100 manufacturing sites worldwide and sales companies in 70 countries, SKF is a truly international corporation. In addition, our global distribution system with distributors and dealers in over 15,000 locations around the world and an e-business marketplace puts SKF close to customers for the supply of both products and services. In essence, SKF solutions are available wherever and whenever customers need them.

## United Technologies Corporation India Pvt. Ltd.

Carrier Airconditioning & Refrigeration Limited  
Narsingpur, Kherki Daula Post,  
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Tel: +91 9910 096 068  
www.utc.com  
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United Technologies (UTC) is a diversified company that provides a broad range of high-technology products and services to the global aerospace and building systems industries. UTC companies employ more than 196,000 people around the world, including more than 6,500 in India. Our commercial businesses are Otis elevators and escalators and UTC Climate, Controls & Security, which includes Carrier heating, ventilation, air-conditioning and refrigeration systems, as well as fire safety and security solutions from brands such as Kidde and Chubb. Our aerospace businesses are Pratt & Whitney aircraft engines and UTC Aerospace Systems, which includes aircraft, power, controls and sensing systems. Everywhere we do business, we apply the highest standards of corporate responsibility ethics and business conduct and is the foundation of our performance culture.

Governance at UTC begins with our Code of Ethics that does not merely require compliance with laws, it embodies a commitment to positive behaviors that build trust, promote respect and demonstrate integrity. We honor our commitments, communicate openly, and hold ourselves accountable. Operating within the framework of the Code, UTC creates and sustains value for its stakeholders. UTC's ethics and compliance programme includes regular communications, mandatory ethics training, a process for risk management, annual ethics objectives and channels for reporting issues or raising questions through the Ombudsman/DIALOG programme, a confidential communication channel that allows employees alternative means of asking questions, making suggestions, registering complaints and reporting suspected wrongdoings. We are committed to minimizing the environmental impact of our products, our operations and our supply chain. To learn more, visit [utc.com](http://utc.com).

### Sectors of Operation

United Technologies (UTC) is a diversified company that provides a broad range of high-technology products and services to the Indian aerospace and building systems industries. UTC's key brands include:

- Carrier – Heating, air-conditioning and refrigeration systems
- Otis – Elevators & escalators
- Pratt & Whitney – Commercial and military air craft engines
- UTC Aerospace Systems – Aerospace systems and components

UTC is present in over 80 cities in India and has 4 manufacturing facilities and 5 engineering and research center. Key among these are a large manufacturing facility for Carrier in Gurgaon, a manufacturing unit for Otis elevators in Bengaluru and a 2000 people strong design and manufacturing facility of UTC Aerospace Systems in Bengaluru. UTC employs more than 6500 employees across the country directly. It also has over 3,000 indirectly working for it through its different partners/suppliers.

# THE KEY TO WELL-BEING



Saint-Gobain is the world leader in sustainable habitats. We believe in enhancing living places with innovative products and solutions. Whether it's a glass window that saves energy or a colored wall that unleashes a child's imagination, everything we do is designed to improve daily life and ensure your well-being. We strive hard so you can open your doors to a better world, in a better future.

[www.in.saint-gobain-glass.com](http://www.in.saint-gobain-glass.com)

Scan below to explore well-being in sustainable habitats



Saint-Gobain



GlassisGreen



GlassPro



Interior Design



Glass Wizard



# MEMBERS

## AEON Integrated Building Design Consultants LLP

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Tel: 011-46031500  
www.aeongroup.asia  
ashish.rakheja@aeonconsultants.in /  
info@aeonconsultants.in



AEON Integrated Building Design Consultants is a multi-disciplinary consulting services company offering high-end specialized engineering services using alternate design approach. It focuses on achieving a balance between optimum performance, occupant comfort and project budget. AEON is committed to continual improvement in understanding of the relationship between human activities and the environment. We specialize in providing practical cost-effective solutions to support the capital cost constraints of Clients in a growing economy. We strongly believe in climate responsive design solutions based on the principles of sustainable use of Earth's resources which help achieve the objective of a healthy and comfortable environment both indoor & outdoor.

AEON draws its strength from collective experience of its team members who excel in their respective areas. It comprises of dedicated HVAC, Electrical & Plumbing/Fire and Sustainability leaders who have worked together for last several years to deliver several landmark projects across the country and enjoy working relationships with leading corporates, developers, architects, hoteliers etc. With in-depth knowledge of Building Physics & MEP systems, AEON assures innovative design solution with excellence through well conceptualized delivery mechanism bringing client's vision into reality. Our young and energetic team's expertise revolves around unconventional ideas and designs with focus to every basic detail.

Our service offerings include Sustainability, Climatic Studies, CFD Modeling, Fire Engineering, Mechanical, Electrical, Public Health and Low Voltage Systems.

## Amplebit Energy Solutions Pvt. Ltd.

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AE offers comprehensive, IOT data-driven, cloud-based energy management solution (EMS) named enABEL. enABEL leverages IOT & the power of cloud-computing to deliver savings, big data analytics, real time actionable insights thru' web & mobile Apps based services. enABEL maximizes energy savings, improves operational efficiency of HVAC systems, capital utilization and delivers sustainability benefits by making buildings progressively rational in their use of Green resources

AE's integrated portfolio of asset-level sub-metering and monitoring, hardware devices (sensors, energy controllers & data aggregators), energy management software and professional services can deliver savings up to 20% saving with a 18-24 month payback for faster ROI.

- Accredited by Bureau of Energy Efficiency (BEE) & CRISIL of India – Grade 3 in April 2014

- First Real Time HVAC Optimization & AC Health & Diagnostic Tool in India
- Over 50 customer sites; 6000 data points, 700 GB of data controlling over 30,000 Tons of HVAC systems across India
- Energy Regulator Endorsed Solution for Networked Real Time Chiller and AC Controllers
- Growing list of variety of Channel Partners – HVAC OEM's, ESCO Companies & VAR Resellers

### Alien Energy Pvt. Ltd.

A 16/6 Omsai Complex Site 4 Industrial Area Site 4,  
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Tel: +91 120 2895501, 2895502, 2895503, 2895504  
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akashjain@alienenergy.in



Alien Group of Companies was established in 1994 and has been manufacturing energy efficient systems catering to more than 5000 customers in the public and private sectors. It has been operating with an energy saving potential up to 70% across a wide spectrum of services including energy efficiency, energy audit, Solar- LED luminaries, lighting electronics, etc. Alien Energy offers Solar LED Luminaries to its clients without any Upfront Payment through ESCO Route, and recovers CAPEX & OPEX of the products from Energy Savings achieved.

We have been awarded by SEEM (Society of Energy Engineers and Managers) in the category of BEST ENERGY AUDIT Company. We have also been awarded by BEE/Ministry of Power/EESL for THREE awards Viz “Best Business Model for Energy Efficiency Enhancement” for three sectors – Industry, Buildings & Street Lighting for the year 2015.

Alien Energy is a group company of Pranat Engineers which is a BEE-certified Grade -1 Energy Service Company. The firm generated a revenue of INR 10 Crore in 2014-15. Headquartered Delhi- NCR , its regional offices are spread in India; and one each in Panchkula, Jaipur, Dehradun, Lucknow, Patna, Pune, Nasik and Mumbai.

With a team of 50 professionals, Alien Energy is one of the rapidly growing energy and environmental conservation companies offering a custom engineered approach for energy conservation and facility-wide energy management.

### Centre for Advanced Research in Building Science and Energy

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Centre for Advanced Research in Building Science and Energy (CARBSE) at CEPT University, Ahmedabad aims at providing an impetus for advancement in building energy and resource management at large. Its objective is to carry out in depth research in the fields of energy efficient buildings design, energy efficient building construction process, environment friendly construction materials and resource audit & management. CARBSE has established a building energy performance characterization laboratory which help characterise thermo physical and optical properties of building materials and components. CARBSE has expertise in buildings and city level energy models, its calibration, thermal comfort and HVAC studies and building controls and management.

CARBSE is leading US-India Centre for Building Energy Research and Development under US-India joint collaboration. It has received status of Energy Efficiency Centre by USAID ECOIII programme and Centre for Excellence by Ministry of New and Renewable Energy, Government of India and Centre of Excellence by Government of Gujarat. In recent past, this centre has worked with Bureau of Energy Efficiency, India, U.S. Department of Energy, National Fenestration Rating Council of USA, Shakti Sustainable Energy Foundation, Alliance to Save Energy on Asia Pacific Partnership on Clean Development and Climate, Gujarat Energy Development Agency, India Green Building Council, and The Energy Research Institute and Glazing Society of India.

### **Coolflo Engineers Private Limited**

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Tel: 022 2876 8411  
www.coolfloengineers.in  
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“Coolflo Engineers Private Limited” have been designing, manufacturing, supplying and exporting a wide range of Cooling Fans with Hollow FRP blades for cooling towers, air-fin coolers, Air Cooled Condensers, humidifiers and ventilation systems. The products offered are manufactured using high-grade raw material, which is sourced from reliable vendors in the market. These axial flow fans have well proven to have low power consumption, durability, high performance and longer functional life, and are widely demanded and appreciated by the clients. We offer these products in various specifications to meet the diverse requirements like high flow, low-noise, low power consumption and high tip speeds for our clients. Our products are tested for important characteristic parameters by our expert quality controllers so as to ensure their adherence to the International Standards and guidelines. This helps us in achieving the complete satisfaction of our customers. Our Business activities include:

- Modern state –of– the art technology
- Energy conservation/de-bottle-necking
- Custom designs for client’s specifications
- Field supervision and performance tests
- Energy optimizing upgrades
- Inspections for optimizing profits
- Seminars
- Spare parts
- Energy audits

### **Covestro (India) Private Limited**

Covestro (India) Private Limited (Formerly Bayer MaterialScience (Pvt) Ltd)  
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www.covestro.com  
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With 2015 sales of EUR 12.1 billion, Covestro is among the world’s largest polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative solutions for products used in many areas of daily life. Several of these products support tackling the challenges of climate changes and the environment. The

main segments served are the automotive, electrical and electronics, construction and the sports and leisure industries. Covestro, formerly Bayer MaterialScience, has 30 production sites around the globe and at the end of 2015 employed approximately 15,800 people (full-time equivalents).

First of its kind in India, our eco commercial building at Noida operates majorly on clean renewable energy, consuming 70% less energy compared to conventional buildings. It has been rated Platinum by LEED, receiving a total of 64 points.

Not only does Covestro offer polyurethanes and polycarbonates which reduce energy consumption in buildings very effectively, Covestro has defined ambitious targets in its manufacturing processes: from 2005 to 2020 it aims at reducing its specific emissions by up to 40 percent. A number of innovative production technologies will help to achieve this.

### **cKinetics Consulting Services Private Limited**

708, Hemkunt Chambers, 89 Nehru Place, New Delhi 110019

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pbhandari@ckinetics.com



cKinetics is a specialized Sustainability Innovation & Capital Advisory Firm that works with businesses, investors, industry associations as well as thought leaders to continually generate market insight and catalyze change. We provide end to end solutions in the areas of a) Capturing market data to provide actionable insight, information and analytics; b) Creating and implementing a resource blueprint and improving process efficiency; c) Providing access to capital for innovation and sustainability. We work across a multitude of focus areas such as energy (conservation, renewable and industrial efficiency), water, alternative materials and waste management with a focus on resource intensive industries.

cKinetics is a specialized Sustainability Innovation & Capital Advisory Firm. It provides end to end sustainability solutions with a focus on:

- a) Insight - Capturing market data to provide actionable insight, information and analytics
- b) Innovation - Providing specialized operational consulting and strategic services with a focus on Resource Efficiency and Conservation (Energy, Water, Carbon, Waste), and Renewable Energy and Smart Infrastructure
- c) Capital - Providing access to capital for innovation and sustainability

cKinetics' initiatives include: Sustainability Outlook - a market intelligence platform, Sustainable Business Leadership Forum and Parivartan Sustainability Leadership Awards.

## Customized Energy Solutions Pvt. Ltd.

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netra@ces-ltd.com



Customized Energy Solutions Pvt. Ltd. (CES) is one of the fastest growing energy consulting & services companies operating throughout the United States for the past 18 years. CES is working with over 500 clients in USA, Canada, India and Japan.

CES provides comprehensive energy management solutions for clients including real time monitoring, peak load management, demand response and energy cost reductions through optimizing energy purchase options including renewable energy. CES is a CERC licensed energy trader & trader member of IEX (India Energy Exchange). Our clients cover electronic manufacturing, plastic manufacturing, IT, Data centers, auto component manufacturing, sugar mills, wind mills, solar plants etc.

CES is also recognized globally as a thought leader in emerging technology area covering demand response, energy storage, microgrids and smart grid. CES launched India's 1st DR programme for Tata Power in Mumbai in 2011, which is recognized by CII with most innovative energy service award for 2012. In April 2016, Energy Storage Association (USA) recognized CES with the Brad Roberts Outstanding Industry Achievement Award. India Energy Storage Alliance (IESA) is an initiative by CES to promote Emerging Energy Storage and Micro Grid technologies and their applications in India.

## Development Environenergy Services Ltd.

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DESL (formerly Dalkia Energy Services Ltd) is a subsidiary of Paris based Veolia Consulting Engineers, the consulting business of Veolia, one of the world's largest environment and energy services business groups. Making a modest start in 1999 as a business division of the Indian manufacturing conglomerate DCM Shriram Consolidated Ltd., DESL became part of Veolia in 2009 and is now recognized globally as a delivery focused premier consulting organization.

AREAS OF SERVICE: Since its inception, DESL has continuously re-invented itself as a differentiated service provider with pioneering introduction of new technology and business processes, and development of sustainable market for energy efficiency, renewable energy and waste-to-energy project development services in India and across the globe. DESL provides consulting & engineering services for development of new energy efficiency and renewable energy projects, as well as assessment and upgrading of existing projects. DESL has already executed projects in over 25 countries under mandate from institutions like World Bank, Asian Development Bank, UNDP, UNOPS, IFC, USAID, GIZ, DfiD; public sector companies in India and overseas as well as private industries & commercial facilities.

Business Activities include Energy Efficiency, Energy & Water, Green buildings, Biomass Energy, Waste-to-Energy, Tri-generation, Lender's Engineering Services, Rural Energy and Regulatory & Policy Studies.

### **E- Cube Energy Trading Private Limited**

Merlin Infinite, Unit 1012, 10th floor,  
DN-51, Sector V, Salt Lake  
Kolkata - 700091, West Bengal, India  
Tel: 9831012510  
www.eetpl.in  
umesh@eetpl.in



E-Cube Energy develops tools and algorithms that make Energy Efficiency Simple, Scale-able and Sustainable! Using E-Cube Energy's products/solutions energy intensive industries/utilities are able to report, assess and manage energy performance in a way that is FASTER, BETTER and CHEAPER!

Having helped over 20 industries get started with their Energy Data Strategy and managed over 300 MWs for Energy Efficiency, E-Cube Energy has set up first of its kind Energy Data Analytics "EDA" centre, with a vision of helping SMEs/MSMEs/ Industries transition from EMS to EIMAS (Energy Information Management and Analytics System).

Business Activities of E-Cube include:

- Design & Development of Platforms/Algorithms to use Data in Industrial Energy Efficiency Applications.
- Energy Information Management & Analytics System (EIMAS) EnView for select sectors.
- Advisory/consulting services to Development agencies/Governments to demonstrate use of Data in designing Industrial Energy Efficiency Policies.

### **Energy Efficiency Services Limited**

4th Floor, IWAI Building, A-13  
Sector - 1, Noida- 201301  
Tel : +91 (120) 4908000  
www.eeslindia.org  
info@eesl.co.in



Energy Efficiency Services Limited (EESL) is a joint venture company formed by four power sectors i.e. National Thermal Power Corporation (NTPC), Power Grid Corporation of India (PGCIL), Power Finance Corporation Ltd. (PFC) and Rural Electrification Corporation (REC). EESL aims to function as an Energy Service Company (ESCO) and facilitate the implementation of energy efficient projects for Demand Side Management (DSM) to reduce energy intensity in various sectors in India. EESL also seeks to explore the potential of the Energy Efficiency market in India.

EESL has implemented 10 energy efficiency projects during the financial year 2014-15 with a total investment of Rs.147 crores. These in total have helped avoid capacity addition of 285 MW in 2014-15 and generated energy savings of 96.36 MU. These efforts translate into a carbon-dioxide emission reduction of 77 million Kilogram annually. The uniqueness of EESL's programmes are paving the roadmap for making energy efficiency more accessible, affordable and safer for cities and dwellings.

# ADMISSIONS 2017

discover passion

realize potential

UPES, Dehradun is Asia's first Energy University. It offers a set of unique undergraduate and post graduate programs across some of the fastest growing sectors of the economy. Academic collaborations with some of the most respected industry leaders lend an advantage to the students, giving them the right blend of theory and practice in areas they wish to excel in.

## B.TECH PROGRAMS

### OIL & GAS

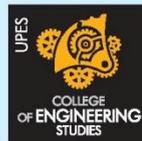
Applied Petroleum Engineering with specialization in Upstream  
Applied Petroleum Engineering with specialization in Gas  
Chemical Engineering with specialization in Refining & Petrochemicals  
Geo Science Engineering  
Geo Informatics Engineering  
Mining Engineering

### MECHANICAL

Automotive Design Engineering  
Mechanical Engineering  
Mechanical with specialization in Thermal Engineering  
Mechanical with specialization in Machine Design  
Mechanical with specialization in Production Engineering  
Mechanical with specialization in Material Science & Nano Technology  
Mechatronics Engineering

### AEROSPACE

Aerospace Engineering  
Aerospace Engineering with specialization in Avionics



College of Engineering Studies (CoES)

### POWER & ELECTRICAL

Electrical Engineering  
Power System Engineering

### ELECTRONICS

Electronics Engineering  
Electronics with specialization in Broadband Communication Technology  
Electronics with specialization in IoT based Instrumentation

### INFRASTRUCTURE

Civil Engineering with specialization in Infrastructure Development

### HEALTH SAFETY & ENVIRONMENT

Fire & Safety Engineering



CISCO Networking Academy Collaboration for B. Tech Electronics Engineering



L&T Academic Collaboration for B. Tech Civil Engineering with specialization in Infrastructure Development



Centre for Information Technology (CIT)



### APPLIED INFORMATION TECHNOLOGY

Computer Science & Engineering (CSE) programs in academic collaboration with IBM offering specializations in

Cloud Computing & Virtualization Technology  
Open Source & Open Standards  
Mainframe Technology  
Oil & Gas Informatics  
Telecom Informatics  
E-Commerce, Retail and Automation  
IT Infrastructure  
Business Analytics and Optimization  
Banking, Financial Services & Insurance  
Cyber Security & Forensics  
Graphics & Gaming  
Healthcare Informatics  
Manufacturing Informatics  
Internet of Things and Smart Cities  
Mobile Computing

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**UPES**  
THE NATION BUILDERS UNIVERSITY

14000+  
STUDENTS

400+  
FACULTY

42ACRE  
CAMPUS

450+  
INDUSTRY LINKAGES

8700+ STUDENTS  
PLACED ACROSS

850+ COMPANIES

70% REPEAT  
RECRUITERS



# UPES

THE NATION BUILDERS UNIVERSITY

## M.TECH PROGRAMS

### OIL & GAS

Pipeline Engineering  
Petroleum Exploration  
Chemical Engineering with specialization in Process Design

### INFRASTRUCTURE

Structural Engineering with specialization in Offshore Structures

### HIGH TECHNOLOGY

Computer Science & Engineering with specialization in Artificial Intelligence  
Robotics Engineering  
Computational Fluid Dynamics

### MULTI-DISCIPLINARY

Rotating Equipment

### POWER AND ENERGY

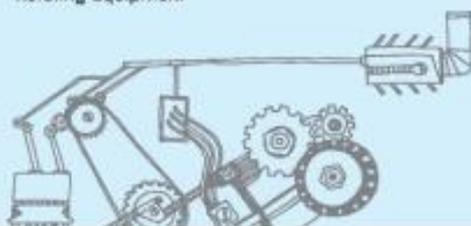
Nuclear Science & Technology  
Energy Systems  
Renewable Energy Engineering

### AVIATION & AEROSPACE

Aerospace Engineering with specialization in Unmanned Aerial Vehicles

### HEALTH, SAFETY & ENVIRONMENT

Health, Safety & Environment Engineering  
Health, Safety & Environment Engineering with specialization in Disaster Management



15% Reservation for Uttarakhand Domiciled Students

## MBA PROGRAMS



College of Management & Economics Studies (CoMES)

MBA Aviation Management  
MBA Business Analytics in academic collaboration with IBM\*  
MBA Energy Trading  
MBA International Business  
MBA Logistics & Supply Chain Management  
MBA Oil & Gas Management  
MBA Port & Shipping Management  
MBA Power Management  
MBA Urban Infrastructure & Development  
MBA with specialization in Human Resources/ Marketing/ Operations/ Financial & Accounting Management\*\*



## M.A. ECONOMICS

(WITH SPECIALIZATION IN ENERGY ECONOMICS)

For Eligibility and Selection Process, please visit [www.upes.ac.in](http://www.upes.ac.in)

\*IBM is a trademark of IBM Corp., registered in many jurisdictions worldwide and is used under license.

\*\*Students will be given a choice to do any one of the mentioned specializations

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[www.upes.ac.in](http://www.upes.ac.in)

UNIVERSITY OF PETROLEUM & ENERGY STUDIES, DEHRADUN

**CORPORATE OFFICE** 210, 2nd Floor, Okhla Industrial Estate Phase 3, New Delhi 110020

**CAMPUS** Knowledge Acres, Kandoli, Dehradun 248007

Energy Acres, PO Bidholi, via Prem Nagar, Dehradun 248007

**ENROLLMENT OFFICES** AHMEDABAD 09974579750, 079-40007933/36 BHOPAL 08889885786 DHANBAD 09471191241

DEHRADUN 09557899090, 08410080040 JAIPUR 09818639147 KOCHI 0484-2307995 KOLKATA 09874721555, 033-40632335/36

LUCKNOW 09839710278 MUMBAI 08652842525, 022-25220308/09 NEW DELHI 09958694881, 011-41730151/52/53

PATNA 08873144753 SHILLONG 08794600250, 0364-2500973/66 VISAKHAPATNAM 09848111551

TOLL FREE 1800 102 8737 8AM-8PM

EESL seeks to unlock energy efficiency market in India, estimated to at US\$ 12 billion that can potentially result in energy savings of up to 20 per cent of current consumption, by way of innovative business and implementation models. It also acts as the resource center for capacity building of State DISCOMs, ERCs, SDAs, upcoming ESCOs, financial institutions, etc.

### **GP Green Energy Systems Pvt. Ltd**

BE 84, Salt Lake City, Kolkata-700064,  
Tel/Fax: +91 33 23210809 / +91 33 23580114  
www.gpenergy.net  
info@gpenergy.net



GP Green Energy Systems Pvt. Ltd. is a renewable and environment Company with its Corporate Office in Kolkata, West Bengal, India and the Engineering & Technology Centre at Pune, Maharashtra, India. GP Green design, engineers and manufacture and installs medium to Large Capacity Gasification Plants. It provides a Technology Solution Provider from Concept-to-Commissioning on Turn-key basis. It has an Equity partnership with Güssing Renewable Energy, Austria (a world leader in the field Biomass/Municipal Solid Waste Electric Power Plant Developer), to work on the State-of-Art breakthrough Technology developed by the Technical University of Vienna under Professor Holzbauer for exclusive commercial use of GRE in India and worldwide. The Technology works on “Dual Fluidized Bed Gasification”.

This technology converts any solid agro or urban or forest waste or any carbonaceous material such as tires, plastics, chicken litter and solid waste, to a gaseous fuel by a series of thermo-chemical processes. The gas thus produced is commonly called as Producer Gas. This Gas then duly cooled and cleaned is introduced into a Generator set to produce Electricity and Thermal application (Heating and Cooling respectively). The System can also produce synthetic oil out of this gas which can be used as vehicle fuel. GP Energy is an approved manufacturer of Biomass Gasification Plant with the Ministry of New and Renewable Energy, New Delhi. GP Energy has more than Hundred Installations of Updraft Gasifiers across India and South Asia.

### **GSH Energy Services Private Limited**

301/A, Aditya Arcade, Choice Restaurant Lane,  
Off: C. G. Road, Navrangpura, Ahmedabad – 380 009  
T +91 9825069185  
www.gshgroup.com  
Prakash.Vankani@gshgroup.com



GSH Energy Services Private Limited (GSH ES) is the Energy-Specialist arm of the GSH India Pvt. Ltd. and as one of its core activities assists its clients to manage their energy usage effectively without compromising on environmental impacts. The expertise of GSH ES's resource base ranges from engineering and general consulting, financial and economic analysis, to identification of energy efficiency and RE projects and implementation including under performance contract in India and abroad. GSH ES is one of the very few organizations globally, which provide end to end service right from audit to implementation including under financed schemes.

In addition to the corporate office in Chennai, the Western Region of India is also served by dedicated full time engineering staff operating from our office in Ahmadabad. Both facilities are fully equipped with wide range of instruments, engineering design and analysis software etc. for meeting energy measurement and analytical needs.

## Business Activities:

- Fee Based Engineering and Project Management
- Feasibility Studies & Design Stage Improvement
- CDM Project development
- Owners/Lenders Engineering Services
- Energy Diagnostic Study (Audit)

## International Institute for Energy Conservation

D-1, First Floor, Shopping Complex, D-Block,  
Paschimi Marg, Vasant Vihar, New Delhi - 110057, INDIA  
Telefax: +91 11 4182 8216-17  
[www.iiec.org](http://www.iiec.org)  
[sdube@iiec.org](mailto:sdube@iiec.org)



IIEC was established in the USA in 1984 as a non-governmental, not-for-profit organization; and has regional offices in Thailand, India and the Philippines. IIEC's mission is to accelerate the global adoption of clean energy policies, technologies and practices to enable economic and environmentally sustainable development. IIEC pursues this mission in developing countries and countries in transition through a variety of projects undertaken by its regional offices.

IIEC currently has 20 full time professionals that are well placed to contribute to programmes in Asia due to their extensive exposure to clean energy activities and market players in the region and their understanding of local economic and cultural issues. IIEC has been the lead consultant on a number of climate change, energy efficiency and renewable energy policy, clean energy financing, technology & market assessments, communication & outreach projects, ESCO market assessment and development projects in Asia, funded by a broad range of international agencies.

During the last 30 years, IIEC's climate change, energy efficiency, renewable energy and clean energy financing projects in Asia have included activities in India (USAID, US EPA, WB, DFID & private utilities), Thailand (ADB, GTZ, IFC, UNDP), Pacific Islands (UNDP, ADB, SPC), Lao PDR (WB), Cambodia (WB), Maldives (UNDP), Mongolia (UNDP), the Philippines (ADB, IFC, WB, UNDP), Vietnam (WB, UNDP), Lebanon (UNDP), and Sri Lanka (WB).

## International Institute of Information Technology, Hyderabad

Center for IT in Building Science,  
Gachibowli, Hyderabad 500 032  
Telangana, INDIA  
Tel: +91-40-6653 1125/1000  
[https:// www.cbs.iit.ac.in](https://www.cbs.iit.ac.in)  
[vishal@iiit.ac.in](mailto:vishal@iiit.ac.in)



The International Institute of Information Technology, Hyderabad (IIIT-H) is an autonomous university founded in 1998. It was set up as a not-for-profit public private partnership (N-PPP) and is the first IIIT to be set up under this model in India. IIIT-H was set up as a research university focused on the core areas of Information Technology, such as Computer Science, Electronics and Communications, and their applications in other domains such as Building Science, Agricultural and Rural Development, Cognitive Science, Earthquake Engineering, eGovernance and many more.

The Centre for IT in Building Science (CBS) focuses on effectively using Information Technology (IT) to increase energy efficiency in buildings through energy simulation and integrated controls. The centre evolved strong research programs in a host of areas, with computation or IT providing the connecting thread, and with an emphasis on the development of technology and applications, which can be transferred for use to industry and society. Institute offers Ph.D., MS by Research, and 5 years integrated Building Science & Engineering (BSE) dual degree programs.

The current research areas in CBS include early stage design optimization tools, integrated sensors and controls, smart power strips, personalized and adaptive task controls, cool roofs, fault detection and diagnostics.

Besides the R&D and academic programs, CBS is actively engaged in supporting policy development in areas of building energy code and green buildings, training and capacity building, and consulting.

### **MP Ensystems Advisory Private Limited**

523-524, Avior, Nirmal Galaxy  
LBS Marg, Mulund (West), Mumbai 400080, INDIA  
Tel: +91.22.2592.5215 / 16 / 17  
www.mpensystems.com  
info@mpensystems.com



MP Ensystems Advisory Pvt Ltd. is a niche energy and environmental sector consultancy and advisory firm established in 2012. We work with private sector clients, donor agencies such as the British High Commission, Department for International Development (DFID, UK), USAID, large multinational companies, electricity regulatory commissions, electricity distribution utilities and academic institutions, on India-specific and international projects. Our experts have direct experience with donor agencies such as The World Bank and the Asian Development Bank, Electricity Regulatory Commissions, Government and private utilities, large multinational companies, US-based foundations and academic institutions.

MP Ensystems provides a bridge between policy-making and clean energy project implementation, by providing solutions at both the product and process levels. We have the capability to work through the entire energy value chain: generation, transmission, distribution and consumption.

The core of our organizational strength, is our team, which consists of a blend of youth and experience having diverse backgrounds including engineering, public policy and renewable energy. With its sound knowledge base and extensive field experience in the industry, the team works with clients to find technical and policy-based solutions for issues in energy and environment.

## Paharpur Business Centre and Software Technology Incubator Park

21, Nehru Place Greens  
New Delhi - 110019, INDIA  
Tel: +91-(0)11-26207171  
www.pbcnet.com  
smruti.sweta@pbcnet.com



Located in one of the largest business districts of South Delhi (Nehru Place), Paharpur Business Centre (PBC) is a green mSME in the services and real estate sector that offers instant, managed & serviced Office & Conference Solutions on “plug & play” basis in mountain fresh air ambience.

Built to compulsory Government Design, it is the first retrofit building in India that is USGBC LEED Platinum EB Certified (under O & M category) in 2010 and a BEE 5star rated building currently operating at <20 Wh/hr/sqm.

### Accreditations:

- PBC and its services are certified to: ISO 9001, 14001, 22000, 50001; OHSAS 18001; SA 8000 and FSSAI approved (under Act 2006)
- First building outside Australia to achieve NABERS certification, for its good Indoor Environment Quality
- First healthy and sustainable operating building in India to have 5 Palm rating from CETEC.
- Signatory to the UN Global Compact (UNGC) and Women’s Empowerment Principles (WEP).

Recently (in November 2015), PBC was awarded by CII and IGBC for being the Green Building that implements Best Indoor Environment Quality (IEQ) Practices. It has also been conferred with 15th National Award for Excellence in Energy Management by CII – Godrej Green Business Centre – 2014. In February 2013, ET Now awarded PBC for being the Best Workplace.

## REC Power Distribution Company Limited

1016-1023,10th Floor, Devika Tower, Nehru Place, New Delhi-110019  
Tel: 44128751  
www.recpdcl.in  
mukundkumar@recl.nic.in



REC Power Distribution Company Limited (REC PDCL) an ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007 Certified Company, a wholly owned subsidiary of REC Ltd., a 'Navratna' CPSE under Ministry of Power, was incorporated with specific focus on developing and investing in electricity distribution and its related activities. REC PDCL facilitates power utilities in the area of their operation relating to power Distribution Sector, Renewable Energy projects, Energy Efficiency programmes etc. through its implementation and consulting services.

RECPDCL has a wide experience of providing Project Management Consultancy for electrical infrastructure projects of over more than Rs.15000Cr. value including Bid Process Management activities for DDUGJY, NEF, IPDS etc. RECPDCL is currently the Implementing Agency for IPDS erstwhile RAPDRP- Part 'A' in Goa, Lead implementing agency for BEE's Partial Risk Guarantee Fund for Energy Efficiency, Monitoring agency of electrification of 18452 UE villages under Hon'ble PM mission and Development of "GARV" mobile App for real-time monitoring of

progress of RE work along with wide experience and expertise in preparation of Detailed Project Reports (DPR), Third Party Inspection (TPI) and other Quality Assurance Services to the Distribution Sector, Solar rooftop and Solar pumps projects etc. RECPDCL has also executed projects such as feeder renovation programme, feeder bifurcation, high voltage distribution and system improvement. The Company has a PAN India presence in 52 DISCOMs and 4 RE Co-operative Societies (Andhra Pradesh) spread in 29 states in the country.

### **Shamar Sustainable Solutions**

House Number: B4, T.C.No.4/496(1), Thirumugham Sreevilas Lane,  
TollJunction, Ambalamukku, Thiruvananthapuram,  
Kerala, India - 695003  
Phone:+91 9526 897 700  
www.shamar.in  
info@shamar.in



Shamar Sustainable Solutions Pvt. Ltd is a new start-up company in INDIA mainly focusing on Project Management Consultancy Services and for promoting sustainability solutions. The team, behind this start-up venture has wide exposure individually in executing energy and other mega infrastructure projects globally. They have an interesting business model for extending PMC to the clients using cloud based PMC software. More over such a cloud based software could be effectively used for mentoring selected bright engineers for taking up responsible positions in project management.

Shamar Sustainable Solutions Pvt. Ltd. is to have an alliance with ProjecTools in promoting this novel concept of providing PMC by engaging highly experienced professionals at convenient locations. Software platform could be used for documents reviews, design briefs, engineering documents reviews, value engineering propositions and design integrity verifications, operability & maintainability exercises including development of O&M manuals. They are of the opinion that there is high market prospects in addressing such a market need in a cost effective manner.

Business activities include Project Management Consultancy, ESCOs, Facility Management Consultancy, Energy Trading, Advisory Services and Financial Modelling / Simulation.

### **SEE-Tech Solutions Pvt. Ltd.**

11/5, MIDC Infotech Park, South Ambazari Road, Nagpur – 440022  
Tel: +91 712 2222177  
www.seetechsolutions.in  
seetech@seetechsolutions.in



SEE-Tech Solutions has emerged as a pioneer ESCO in India in delivering energy cost reduction for commercial buildings & Industrial sector. SEE-Tech founded in 1993 and at present is a Grade -2 ESCO accredited by Bureau of Energy Efficiency, Ministry of Power, GOI. In its journey of 22 years, it has carried out more than 500 assignments all across India. It has its corporate office at the center of country i.e. Nagpur and execute projects all over India including Mumbai, Pune, Delhi, Lucknow, Bangalore, Kochi & Jodhpur.

SEE-Tech is on mission to deliver 20% savings in energy cost through its unique energy performance contracting model for commercial building by implementing 8-10 proven & tested projects which address electricity as well as fuel cost. In building sector major Clientele includes

Telecommunication companies and leading hospitality group. SEE-Tech is technologically independent and do not endorse any product or brand. The main objective is to provide customer holistic model for energy saving.

SEE-Tech is the first ESCO in India to develop the knowledge bases software SEE-UtiSave & SEE-ThermiSave for energy conservation. Understanding the psychology of the SMEs to believe what they see, SEE-Tech has developed Regional Energy Efficiency Center to demonstrate the energy conservation measure actually working with the help of USAID.

## Synurja LLC

C-194, First Floor, Defence Colony, New Delhi -110024 INDIA  
Tel: +91-11-41676714, Mob: +91-98180 75006  
www.synurja.com  
skumar@synurja.com

The logo for Synurja LLC features the word "Synurja" in a stylized, cursive font. The letters are black with a white outline, giving it a three-dimensional appearance. The 'S' is particularly large and ornate, and the 'j' has a long, flowing tail.

Synurja LLC is a boutique energy efficiency consulting and advisory firm that works with international organizations interested in identifying and working on high impact energy efficiency policies that cuts across energy, technology, business and social issues faced by India. The principals of Synurja LLC have deep expertise in the field of building energy efficiency, thermal comfort, indoor health and productivity, enterprise energy management, energy efficient data centers, energy services market development, measurement and verification and geographical information systems.

Synurja LLC has been working on projects that involve setting national energy efficiency standards for data centers, developing a data framework with possible institutional mechanisms to collect and analyze commercial building data for evidence-based policies, ECBC implementation in states, helping Niti Aayog with energy efficiency policy options for National Energy Policy and conducting analysis for development of a Sustainable and Smart Cooling strategy to tackle rising cooling demand in India. Its business activities include:

- Energy Efficient Data Centers
- Energy Services Market Development
- Building Energy Efficiency
- Measurement & Verification
- Enterprise Energy Management

## University of Petroleum and Energy Studies

Energy Acres, P.O. Bidholi via Premnagar, Uttarakhand, India - 248 007  
Tel: 0135 277 6054  
www.upes.ac.in  
pdwivedi@ddn.upes.ac.in

The logo for the University of Petroleum and Energy Studies (UPES) consists of the letters "UPES" in a bold, orange, sans-serif font. Below the letters, the tagline "THE NATION BUILDERS UNIVERSITY" is written in a smaller, black, sans-serif font.

Established in 2003, the University of Petroleum and Energy Studies (UPES) was established through UPES Act, 2003 of the State Legislature of Uttarakhand. Focusing on the requirements of the future, this multi-disciplinary University offers a wide spectrum of globally competitive domain specific graduate, postgraduate and doctorate programmes in the areas of Energy, Infrastructure, Transportation and Applied Information Technology and other growth sectors. Distinguishing Features:

- First Energy & Core Sector University in the Pan Asian region

- First University in the world to offer co-branded B. Tech programmes with industry giant global IT leader IBM
- Only Asian University to receive the prestigious World Oil Award
- Two sprawling campuses situated at Bidholi and Kandoli in Dehradun
- 87 domain specialized courses offered in the growing sectors like Energy, Transportation, Public Policy, Planning and Architecture, Design, Infrastructure, Mechanical, Health, Safety and Environment, High Technology, Business and Legal Studies

## Wipro Ecoenergy

Wipro Limited Electronics City Campus,  
Tower 15, EC-4, #108/6, Shikari Playa, Jigini Main Road, Hulimangala,  
Electronics City, Bangalore, Karnataka, India. 560 100  
+91 810 532 2400  
www.wiproecoenergy.com  
ecoenergy.info@wipro.com.


 The logo for Wipro EcoEnergy is displayed in white text on a black rounded rectangular background. The word 'Wipro' is in a bold sans-serif font, followed by 'Eco' in a smaller font with a green leaf icon, and 'Energy' in the same bold font as 'Wipro'.

Wipro EcoEnergy is the clean-tech business division of Wipro Limited that provides intelligent, sustainable solutions for energy consumption and management. We have built analytical models and correlation logics to deliver energy efficient solutions to our clients that reduce their carbon footprint, energy usage & recover avoidable energy losses.

We focus on helping enterprises analyze their operating processes and consumption patterns, enabling them to achieve their energy saving goals through our services and then accelerate the results.

We manage energy and energy operations in a distributed multi-site environment in sectors such as Retail, Restaurants, Hospitality, Banking, Water and Commercial Buildings. Our Analytics capabilities coupled with our ability to harness the power of IoT, bridges the gap between information and action, to achieve high cost savings. We leverage our in-house developed, scalable and versatile Energy Management Platform along with a robust energy services portfolio delivered through a centralized Energy Operations Center (EOC) to uncover energy saving opportunities 24x7 and plug them immediately. We have created a strong local ecosystem of partners in North America, Europe & APAC and have deployed our Energy Management Services solution to a number of clients around the world. We have saved our clients over 1 billion kWh in energy savings and counting.

# **ASSOCIATES**

## Associates

<b>Name</b>	<b>Organization</b>
Mr. Ashish Rakheja	AEON Integrated Building Design Consultants LLP
Ms. D Suganya	Affluent Green
Ms. R Rajalakshmi	Affluent Green
Mrs. G Dharakeswari	Affluent Green
Mr. Vinay Deodhar	Clean Tech Solutions
Mr. Jaydeep Sarkar	EESL
Mr. Philip K Cherail	Fluor Daniel India Pvt. Ltd.
Mr. Johnson Fernandez	JS Enviro
Mr. K P Ashwin	Promethean Energy
Mr. Attupurathu Luke	Shamar Sustainable Solutions Pvt. Ltd.
Ms. Sharon E Koshy	Triune Energy Services Pvt Ltd.

# **PARTNERS**

## Supporting Partners

### 1. Bureau of Energy Efficiency

4th Floor, Sewa Bhawan, R.K.Puram, New Delhi, Delhi 110066  
Tel: 011 2617 9699  
[www.beeindia.gov.in](http://www.beeindia.gov.in)

The Government of India set up the Bureau of Energy Efficiency on 1st March 2002, under the provision of the Energy Conservation Act 2001. The mission of BEE is to assist in developing policies and strategies with a focus on self-regulation and market principles, within the overall framework of the Energy Conservation Act 2001. Its primary objective is to reduce energy intensity of the Indian economy. BEE has introduced several schemes to promote energy efficiency in the residential, commercial and industrial sectors. The Bureau of Energy Efficiency organized a National Workshop on Waste Heat Recovery in partnership with AEEE. BEE has collaborated with AEEE in conducting stakeholder workshop on Star labeling of hospital, and in requisitioning a survey of Energy Services Companies to assess their readiness and willingness to access the Partial Risk Sharing Fund and Partial Risk Guarantee Fund for energy efficiency.

### 2. Emergent Ventures India

Badshahpur, Sector 66, Gurgaon, Haryana 122018  
Tel: 0124 431 9500  
[www.emergent-ventures.com](http://www.emergent-ventures.com)



Emergent Ventures India (EVI) is an integrated sustainability & clean energy consulting company headquartered in India. The focus areas of its work are Solar, Wind, Sustainable Development and Climate Change. EVI's work encompasses advisory services around Policy & Strategy, Technology and Finance. EVI had supported AEEE in organizing a workshop on Advance Metering Technology Tools for large industry and SMEs and a stakeholder workshop on Low Carbon Growth Path for India. The programme was supported by UK-DFID in partnership with EVI.

### 3. International Institute of Energy Conservation

D-1, First Floor, Shopping Centre, D-Block, Paschimi Marg,  
Vasant Vihar, New Delhi - 110057 INDIA  
Tel: +91 11 4182 8216  
[www.iiec.org](http://www.iiec.org)



International Institute of Energy Conservation (IIEC) was established in the USA in 1984 as a non-governmental, not-for-profit organization; and has regional offices in Thailand, India and the Philippines. IIEC's mission is to accelerate the global adoption of clean energy policies, technologies and practices to enable economic and environmentally sustainable development. IIEC has been the lead consultant on a number of climate change, energy efficiency and renewable energy policy, clean energy financing, technology & market assessments, communication & outreach projects, ESCO market assessment and development projects in Asia, funded by a broad range of international agencies. IIEC is a member of AEEE and also along with EESL had enabled AEEE in developing Street Lighting Application Guide.

#### 4. Shakti Sustainable Energy Foundation

Shakti Sustainable Energy Foundation  
Capital Court, 104 B/2, 4th Floor  
Munirka Phase -III,  
New Delhi 110067  
Tel 011 4747 4000  
www.shaktifoundation.in



Shakti Sustainable Energy Foundation is based in New Delhi, India. It is registered on the 5th of October 2009 as a Section 25 non-profit company to facilitate India's transition to a sustainable energy future by promoting policies that encourage energy efficiency as well as the increased generation of renewable energy. Shakti works collaboratively with national, state and local decision-makers to craft sound energy policies to build India's new energy economy. Shakti Foundation bring together experts from every sector — industry, academia, law, finance, civil society, think tanks, and more — to drive this change. We have a reputation for meticulous research and analysis, and provide policy makers with concrete, specific, and practical policy recommendations for an energy secure future.

Shakti Foundation has been one of principle supporters of AEEE's research and policy activities, in driving its mission of an Energy Efficient India. Shakti Foundation has supported AEEE in compiling a report on Energy Efficiency in India: History and Overview (released in December 2011). AEEE has been supported to work with regulators and utilities to scale up DSM through internationally available, evaluation tools and techniques. Further, Shakti has enabled AEEE to interact with State Designated Agencies of BEE to help prepare a blueprint document on SDA's requirement for implementation of PAT and MTEE schemes. AEEE was supported by Shakti to work with TANGEDCO, the utility in Tamil Nadu, to design a project to distribute CFLs to huts and domestic service connections, in order to phase out incandescent bulbs, to achieve peak load reduction. Shakti has also enabled AEEE to develop Business Plan for Utility affiliated ESCO. Shakti has also supported AEEE in developing ESCO Performance Contracts (EPCs) for Industrial Projects and also enabled AEEE to conduct Roadshows to promote Model EPC Contracts to Scale-up ESCO & Energy Efficiency Business in India. Shakti has also supported AEEE in Evaluating Market Response to the Appliance Standards and Labelling Programme.

#### 5. United Nations Industrial Development Organization (UNIDO)

P.O. Box 3059, 55 Lodi Estate  
New Delhi, 110003  
INDIA  
Tel: +91 1124643484  
www.unido.org



UNIDO is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability.

The Global Cleantech Innovation Programme (GCIP) for SMEs is a far-reaching programme that leverages the power of entrepreneurship to address our most challenging energy, environmental and economic problems. GCIP brings together the world's largest accelerator for cleantech startups with resources in developing countries. UNIDO had supported AEEE in organizing the workshops to promote Clean Technologies, Energy Efficiency, and Innovations under the GCIP in various SME clusters.

## 6. USAID Partnership to Advance Clean Energy (PACE-D)

Nexant, Inc., T – 14 A & B, 3rd Floor  
Vasant Square Complex, Sector B, Pocket 5  
Vasant Kunj, New Delhi, INDIA – 110 070  
Tel:+91 11 4000 0240  
www.pace-d.com

The United States and India have a long and successful strategic partnership in the energy sector. The energy cooperation between the two countries, which is technical, economic, and bilateral, is strengthening year on year. In November 2009, the United States and India launched the Partnership to Advance Clean Energy (PACE), which is working to accelerate inclusive, low carbon growth by supporting research and deployment of clean energy technologies. PACE was designed to be a “whole-of-government” initiative that provides a platform for engagement by a diverse array of governmental bodies from both countries, as well as with the private sector and the research community. PACE activities are aligned to support India’s ambitious clean energy targets.

PACE includes three components: Research (PACE-R), Deployment (PACE-D), and Off-grid Energy Access (PEACE). The PACE-D Technical Assistance Programme serves as the Secretariat to the overall PACE initiative. As part of its secretariat role, the Programme is providing coordination and support to the different U.S. agencies that are implementing clean energy programmes in India. PACE-D along with Bureau of Energy Efficiency had supported the study on Market Assessment for Partial Risk Guarantee Fund for Energy Efficiency & Venture Capital Fund for Energy Efficiency conducted Market Assessment of EE funds.

## 7. World Bank

70 Lodi Estate, New Delhi 110003, India  
Tel: +91-11-41479301 / 49247000  
www.worldbank.org/en/country/india

The World Bank Group’s Partnership Strategy for India (2013-2017) will help India lay the foundations for achieving “faster, sustainable, and more inclusive growth” as outlined in the government’s 12th five year plan. During the World Bank financial year (July 2013-June 2014), funding for India was \$5.2 billion (\$2.0 billion in International Bank for Reconstruction and Development (IBRD), \$3.1 billion in International Development Association and \$0.1 billion in CTF or Clean Technology Fund) across 16 projects. World Bank has also enabled AEEE in ESCO space for Partial Risk Guarantee Fund for Portfolio of Projects (PRGFPP) under Energy Efficiency – Organizing Stakeholder Consultations with ESCOs. World Bank has supported AEEE in developing Street Lighting Application Guide.

## Project Partners

### 1. cKinetics Consulting Services Private Limited

708 Hemkunt Chambers, 89 Nehru Place  
New Delhi-110019, INDIA  
Ph: + 91.11.4050.7277, +91.11.4105.1195  
www.ckinetics.com



cKinetics is a mission driven Sustainability Insight, Innovation & Capital Advisory Firm. The organization work with businesses, investors, industry groups as well as thought leaders to continually generate market insight and catalyze change. cKinetics leverages thought processes for accelerating sustainable business and investing practices that include: (a) Closed loop systems, (b) Decentralized production and consumption, and (c) Resource conservation. AEEE is working with cKinetics on Stakeholder briefing series on Perform-Achieve-Trade (PAT) scheme. The project is supported by Shakti Sustainable Energy Foundation.

AEEE is also a partner to the Sustainable Business Leadership Forum (SBLF). SBLF Instituted by Sustainability Outlook, an initiative incubated by cKinetics, the leading information marketplace on sustainability action, SBLF enables a unique exchange of thought leadership, business know-how and catalytic tools for enabling corporate transition towards sustainable business practices.

### 2. Energy Efficiency Services Limited

4th & 5th Floor, IWAI Building,A-13,  
Sector-1, Noida - 201301, U.P.  
Ph : 0120-4908000  
Fax: 0120-4908099  
www.eeslindia.org



Ministry of Power has set up Energy Efficiency Services Limited (EESL), a Joint Venture of NTPC Limited, PFC, REC and POWERGRID to facilitate implementation of energy efficiency projects. EESL work as ESCO, as Consultancy Organization for CDM, Energy Efficiency, etc.; as a Resource Centre for capacity building of SDAs, Utilities, financial institutions. EESL also leads the market-related actions of the NMEEE. It is registered under the companies Act, 1956 on 10th December 2009 and the commencement of business certificate is obtained on 11th February 2010. EESL is a member company of AEEE and also has enabled AEEE in developing Street Lighting Application Guide.

### 3. Small Industries Development Bank of India (SIDBI)

Ground Floor, Videocon Tower, E-1, Rani Jhansi Road,  
Jhandewalan Extension, New Delhi - 110055, Delhi  
Tel: 011-23682470  
www.sidbi.com



The Small Industries Development Bank of India (SIDBI), set up on April 2, 1990 under an Act of the Indian parliament, is the principal financial institution for the promotion, financing and development of the Micro, Small and Medium Enterprise (MSME) sector and for co-ordination of the functions of the institutions engaged in similar activities. SIDBI had adopted AEEE Energy Performance Contract and was national partner in promoting the adoption of EPC in the Industrial Energy Efficiency.

## MoU Partners

### 1. American Council for an Energy Efficient Economy (ACEEE)

Washington, D.C., United States  
[www.aceee.org](http://www.aceee.org)

The American Council for an Energy-Efficient Economy (ACEEE), a nonprofit, 501(c)(3) organization, acts as a catalyst to advance energy efficiency policies, programmes, technologies, investments, and behaviours. ACEEE was founded in 1980 by leading researchers in the energy field. Since then we have grown to a staff of about 50. Projects are carried out by ACEEE staff and collaborators from government, the private sector, research institutions, and other nonprofit organizations. ACEEE focuses on areas of Energy policy, Research, Outreach. AEEE is an MoU partner of ACEEE to conduct activities like Energy Efficiency Conclave, State Score card and Summer study.

### 2. Alliance to Save Energy

1850 M St NW #600, Washington DC 20036, United States  
**Tel:**+1 202-857-0666  
[www.ase.org](http://www.ase.org)

The Alliance to Save Energy is a non-profit coalition of business, government, environmental and consumer leaders advocating for enhanced energy efficiency across all sectors of the economy. Founded in 1977, the Alliance to Save Energy began in response to a critical period in our nation's energy history following the oil embargo chaos of the 1970's. Decades later, it continues its mission to create an energy-efficient world. AEEE is an MoU partner of ASE and has been promoted Energy Efficiency Global Forum. EE Global forum is the opportunity to join hundreds of executives and policymakers from across sectors, disciplines, and borders in Energy Efficiency space. ASE worked closely with AEEE founders and helped developed the Vision, Mission and Charter of AEEE.

### 3. Centre for Science Technology & Environment Policy (cSTEP)

[www.cstep.in](http://www.cstep.in)



Center for Study of Science, Technology and Policy (CSTEP) is an Indian not-for-profit research organisation incorporated in 2005 u/s 25 of The Companies Act, 1956. As one of the largest Think Tanks in South Asia, CSTEP has grown to become a multi-disciplinary policy research organisation in the areas of Energy, Infrastructure, Security Studies, Materials, Climate Studies and Governance. The MoU between AEEE and cSTEP seeks to conduct and analyse trends in Energy Efficiency and Clean Energy markets, technology and policy to design and conduct survey.

### 4. Centre for Environmental Planning and Technology

CEPT University focuses on understanding, designing, planning, constructing, and managing human habitats. Its teaching programmes build thoughtful professionals and its research programmes deepen understanding of human settlements. CEPT University also undertakes advisory projects to further the goal of making habitats more liveable. CEPT is a member of AEEE. CEPT and AEEE MoU seeks to work together to accelerate building energy performance and smart urban habitat through developing techniques, standards and guidelines for smart and sustainable space cooling.



## 5. Energy Efficiency Services Limited (EESL)

4th & 5th Floor, IWA Building, A-13,  
Sector-1, Noida - 201301, U.P.  
Ph : 0120-4908000  
Fax: 0120-4908099  
www.eeslindia.org



Ministry of Power has set up Energy Efficiency Services Limited (EESL), a Joint Venture of NTPC Limited, PFC, REC and POWERGRID to facilitate implementation of energy efficiency projects. EESL work as ESCO, as Consultancy Organization for CDM, Energy Efficiency, etc.; as a Resource Centre for capacity building of SDAs, Utilities, financial institutions. EESL also leads the market-related actions of the NMEEE. It is registered under the companies Act, 1956 on 10th December 2009 and the commencement of business certificate is obtained on 11th February 2010. EESL and AEEE MoU seeks to support and disseminate sector specific M&V Protocols, Roadmaps, Applications Guides, Case Studies and systems that would be applicable across the country. It also includes designing of suitable training and capacity building programmes on the use and deployment of M&V tools, protocols, application guides, to create awareness in the building, agriculture and industrial sector about the cost-effective application of M&V framework and technology through the development training materials, modules, tip sheet, check list and collaterals that would support implementation of EESL projects, and identify suitable expertise and skills from among EE professional that could support EESL to scale up EE implementation and help achieve its objective by 2017.

## 6. Indian Energy Storage Alliance

A-501, G-O Square, Aundh-Hinjewadi Link Road,  
Wakad, Pune-411057. INDIA  
www.indiaesa.info



The India Energy Storage Alliance (IESA) was launched in 2012 to assess the market potential of Energy Storage Technologies in India, through an active dialogue and subsequent analysis among the various stakeholders to make the Indian industry and power sector aware of the tremendous need for Energy Storage in the very near future. Several drivers like increasing share of renewables, supply-demand mismatch as well as transmission constraints, all add up to the Energy Storage roadmap. AEEE is MoU partner of IESA in promoting the IESA conference and exhibition among members.

## 7. Lawrence Berkeley National Laboratory

1 Cyclotron Rd, Berkeley, CA 94720, United States  
www.lbl.gov

Berkeley Lab is a member of the national laboratory system supported by the U.S. Department of Energy through its Office of Science. It is managed by the University of California (UC) and is charged with conducting unclassified research across a wide range of scientific disciplines. Located on a 202-acre site in the hills above the UC Berkeley campus that offers spectacular views of the San Francisco Bay, Berkeley Lab employs approximately 3,232 scientists, engineers and support staff. AEEE with LBNL has conducted a Stakeholders Consultation on Energy Efficiency: Thematic Inputs to National Energy Policy.

## 8. Lux Veritas- Solicitors & Advocates

C-39, LGF, Nizamuddin East, New Delhi – 110013  
www.luxveritas.in



Lux Veritas is a business law firm. The overall objective of the MoU between AEEE and Lux Veritas is to strengthen the capacity of Energy Efficiency Businesses with an aim to Implement Energy Efficiency and Conservation Projects, make accurate savings measurement through M&V Systems and Protocol, and through Dispute Resolution and Risk Mitigation Measures. Further, AEEE would particularly like to support Small Businesses – Suppliers and Consumers of Energy Efficiency and Clean Energy services & products, to develop partnership and grow their businesses. AEEE has been approached by several clean tech and energy services companies (across India) for advice and links to law firms and companies who have working knowledge technology, corporate finances and legal contractual issues, as well as, guidance on Patent Law, Trade mark, IPRs, Copyright among others. For the various support services such as these AEEE is being mentored and guided by Lux Veritas – Solicitors & Advocates.

## 9. National Institution For Transforming India (NITI) Aayog

Yojana Bhawan, Sansad Marg, New Delhi, Delhi 110001  
Tel :011 2309 6752  
www.niti.gov.in

NITI Aayog is a Government of India policy think-tank established by replacing the Planning Commission. The stated aim for NITI Aayog is to foster involvement and participation in the economic policy-making process by the state governments. NITI Aayog has also been entrusted with the role to co-ordinate ‘Transforming our world: the 2030 Agenda for Sustainable Development’ (called SDGs). Moving ahead from the Millennium Development Goals (MDGs), SDGs have been evolved through a long inclusive process for achievement during 2016-2030. The SDGs cover 17 goals and 169 related targets resolved in the UN Summit meet 25-27 September 2015. NITI Aayog and AEEE are MoU partnership seek to develop National Energy Policy and capacity building of State Designated Agencies.

## 10. University of Petroleum and Energy Studies (UPES)

Bidholi, Via Prem Nagar, Dehradun, Uttarakhand 248007  
Tel: 0135 277 6054,  
www.upes.ac.in



Established in 2003, University of Petroleum and Energy Studies (UPES) was established through UPES Act, 2003 of the State Legislature of Uttarakhand. Focusing on the requirements of the future, this multi-disciplinary University offers a wide spectrum of globally competitive domain specific graduate, postgraduate and doctorate programmes in the areas of Energy, Infrastructure, Transportation and Applied Information Technology and other growth sectors. UPES is a member and an MoU partner of AEEE to collaborate on conduct research projects, workshops, seminars, conferences, education and training programmes and Guest lectures (including summer internships, placements etc.) conducted by UPES/both parties. The MoU has enhanced internship / placement of UPES students with AEEE member companies.

## Training Partner

### 1. Efficiency Valuation Organization (EVO)

1. 1629 K Street NW, Suite 300, Washington, DC 20006, USA  
Tel: (+1 202) 738 4639  
www.evo-world.org



Efficiency Valuation Organization (EVO) is a non-profit organization whose products and services help people engineer and invest in energy efficiency projects worldwide. The CMVP programme has been designed jointly by Efficiency Valuation Organization (EVO®) and the Association of Energy Engineers (AEE). The CMVP programme recognizes the most qualified professionals in the competitive area of energy efficiency. This programme fosters a superior level of professional standards within the measurement and verification field. The Alliance for an Energy Efficient Economy (AEEE) is facilitating the CMVP® certification in India and South Asia. AEEE had conducted 11 CMVP trainings in India since its inception.

### Association of Energy Engineers (AEE)

Atlanta, GA, USA

Through EVO, AEEE is also collaborates with Association of Energy Engineers, USA. AEEE has founded the AEEE India Chapter in New Delhi, in 2013, and hosted its Secretariat in the first year, further AEEE has partnered with AEE India in various outreach activities and programmes. Through the CMVP Certification programme, AEEE facilitates the certified professionals to benefit from accessing EVO website services, as well as its library, training and resource based. AEEE President is a Life Member of AEE, and a founder of AEE India Chapter in New Delhi.



**ENERGY EFFICIENCY INDUSTRY  
RESOURCES**

## Energy Service Companies (ESCOs)

An Energy Service Company (ESCO) is a professional services business providing a broad range of comprehensive energy efficient solutions, including design and implementation of energy savings projects, energy infrastructure outsourcing and risk management. ESCOs perform in-depth analyses of physical properties, design energy efficient solutions, install proper equipment, and maintain the systems to ensure energy savings.

The Bureau of Energy Efficiency (BEE), Ministry of Power (MOP), India, defines ESCOs as an organization engaged in a performance based contract with a client firm to implement measures which reduce energy consumption and costs in a technically and financially viable manner. The Bureau of Energy Efficiency has taken certain necessary steps to encourage the supply of performance-contract based energy-efficiency enhancement services through Energy Service Companies (ESCOs) in India. This list of Bureau of Energy Efficiency (BEE) empanelled ESCOs (128 nos.) provides the grading of ESCOs done by CRISIL and ICRA on the parameters set by BEE. The list also provides the accreditation validity of ESCOs. The list has been sorted by grade and listed alphabetically within each grade.

AEEE strongly believes that the ESCO sector, with its core business being energy conservation & energy efficiency, is a key partner in driving energy efficiency in industry, buildings and municipalities.

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
1	<b>Carrier Air Conditioning &amp; Refrigeration Ltd.</b> Narsingpur Kherki Daula Post, Gurgaon – 122 004, Haryana Mr Keshav Verma Ph: 09958103398 keshav.verma@carrier.utc.com	1	31-01-2018
2	<b>Enzen Global Solutions Pvt. Ltd.</b> #90, Madiwala, Hosur Road, Bangalore 560068, Karnataka Dr Uma Rajarathnam Ph: 080-67123002/09880345888 uma.r@enzen.com	1	30-03-2017
3	<b>Forbes Marshall Pvt. Ltd.</b> A-34/35, MIDC Estate, H-Block, Pimpri, Pune – 411 018, Maharashtra Mr Virendra Gill Ph: 09823104290 vgill@forbesmarshall.com	1	30-03-2017
4	<b>Honeywell Automation India Ltd.</b> Sapphire Second Floor, A Wing 56 & 57, Hadapsar Industrial Estate. Pune- 411013, Maharashtra Mr Tarun Ramrakhiani Ph: 09665025450/020-66780381 tarun.ramrakhiani@hoenywell.com	1	30-03-2017
5	<b>Ingersoll Rand Climate Solutions Pvt. Ltd.</b> Plot No.35, KIADB Industrial Area, Bidadi, Bengaluru – 562 109, Karnataka Mr Gopi Krishna Ph: 09535611688 Gopi.Javvaji@irco.com	1	30-03-2017
6	<b>Johnson Controls(I) Pvt. Ltd.</b> 401-501, 4th & 5th Floor, B-Wing, Business Square, Andheri-Kurla Road, Andheri(East), Mumbai-400093, Maharashtra Mr Nantha Gopalan Ph: 09900766800 nantha.gopalan@jci.com	1	30-03-2017
7	<b>Larsen &amp; Toubro Ltd.</b> E&A, North Wing, Level - 4, Powai campus, Gate No -7, Saki Vihar Road, Mumbai - 400 072, Maharashtra Mr Joydeep Banerjee Ph: 09167006496 Joydeep.Banerjee@Intebg.com	1	30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
8	<b>Mitcon Consultancy and Engineering Services Ltd.</b> Agriculture College Campus, Next to DIC office, Shivaji Nagar, Pune 411015, Maharashtra Mr Deepak Zade Ph: 09822684106/020-25530308 Deepak.zade@mitconindia.com	1	30-03-2017
9	<b>Power Grid Corporation of India</b> Saudamini Plot no 2, Sector-29, Gurgaon – 122 001, Haryana Mr. S Victor Ph: 0124-2571941 Extn: 2608/ 09873549039 victor@powergridindia.com	1	31-01-2018
10	<b>Pranat Engineers Pvt. Ltd.</b> A- 16/6, Om Sai Complex Link Road, Site- IV, Sahibabad Industrial Area, Ghaziabad - 201 010, Uttar Pradesh Mr Akash Jain Ph: 011-22372828/22373565 akashjain@alienenergy.in	1	30-03-2017
11	<b>Rites Ltd.</b> RITES Bhawan 1, Sector 29, Gurgaon 122001, Haryana Mr Mukesh Sinha Ph: 09810522556 mukeshsinha@rites.com	1	30-03-2017
12	<b>Salzer Electronics Ltd.</b> Samichettipalayam (PO), Jothipuram (Via), Coimbatore – 641 047, Tamil Nadu Mr Sathishkumar Ph: 09500922351 sathishkumar@schnellenergy.com	1	30-03-2017
13	<b>Schneider Electric India Pvt. Ltd.</b> 4th Floor, Electra wing A, Exora Business Park, Marathahalli, Sarjapur Outer Ring Road, Bangalore – 560103, Karnataka Ms Bindu Thomas Ph: 09980549982 Bindu.Thomas@schneider-electric.com	1	30-03-2017
14	<b>Secure Meters Ltd.</b> E - Class, Pratapnagar Industrial Area, Udaipur – 313003, Rajasthan Mr Sharad Kumar Ph: 09999970306 sharad.kumar@secureservices.co.in	1	30-03-2017
15	<b>Siemens Ltd.</b> 130, Pandurang Budhkar Marg, Worli, Mumbai – 400 018, Maharashtra Mr Prashant Salvi Ph: 09892143056 prashant.salvi@siemens.com	1	30-03-2017
16	<b>Swelect Energy Systems Ltd.</b> Numeric House, 3rd Floor, Number 5, Sir P S Sivasamy Salai, Mylapore, Chennai – 600 004, Tamil Nadu Ms Preethy Ph: 09944185399 preethy.c@swelectes.com	1	30-03-2017
17	<b>Tata Power Delhi Distribution Ltd.</b> CENCARE, Keshavpura, Lawrence Road, Opp. C-2 Block, Delhi – 110035 Mr Sugata Mukherjee Ph: 9971395275 Sugata.mukherjee@tatapower-ddl.com	1	30-03-2017
18	<b>Voltas Ltd.</b> Voltas House – B, T.B. Kadam Marg, Mumbai - 400 033, Maharashtra Mr Thaliravan G Ph: 09004265009 thaliravan@voltas.com	1	30-03-2017
19	<b>Wipro Eco Energy</b> Wipro Ltd., #108/6, Shikari Playa, Jigni Main Road, Hulimangala, Electronics City, Bangalore, Karnataka Mr Shawn Menezes Head-Knowledge Management Cell Ph: 07795001286 shawn.menezes1@wipro.com	1	30-03-2017
20	<b>Yantra Harvest Energy Pvt. Ltd.</b> Office No: 101-103, Plot No:8, Survey No: 40, Ambedkar Road, Sangamwadi, Near RTO, Pune- 411001, Maharashtra Mr. Pranay Tagare Ph: 096047 64696 pranayktagare@yantraharvest.com	1	31-01-2018
21	<b>Advance Metering Technology Ltd. (AMTL)</b> 207, Modi Tower, Nehru Place, New Delhi – 110 019 Mr Priyangana Borah Ph: 09891341140 priyangana.borah@pkrgroup.in	2	30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
22	<b>APITCO Ltd.</b> 8th Floor, Parisrama Bhavanam, Fateh Maidan Road, Basheerbaugh, Hyderabad - 500 004 Mr Srinivas Rao Ph: 09849398584 srineev@yahoo.com	2	30-03-2017
23	<b>Ascertiva India Pvt Ltd</b> #432, Galleria Complex, DLF Phase IV. Gurgaon-122009, Haryana Mr Harsh Agarwal Ph: 08800514242 harsh.agarwal@ascertiva.in	2	30-03-2017
24	<b>Bhagwat Technologies &amp; Energy Conservation Pvt. Ltd.</b> 5, Millenium Business Centre 34 Corner Market, Malviya Nagar, New- Delhi-110017 Mr Anil Kumar Ph: 011-26680036/64513006 ak@btecon.com	2	30-03-2017
25	<b>Certification Engineers International Ltd.</b> D 101-106, 1st Floor, ITC Tower No.7, CBD Belapur Station Complex, Navi Mumbai – 400 614, Maharashtra Mr R L Bhutani Ph: 09920702097 rlbhutiani@ceil.co.in	2	30-03-2017
26	<b>Crompton Greaves Ltd.</b> Kanjur Marg [E]. Mumbai – 400 042, Maharashtra Mr Rashmin Rathod / Mr Swaroop Bolar Ph: 022-6755 8551/09769353648	2	30-03-2017
27	<b>Darashaw &amp; Co. Pvt. Ltd.</b> A-238, Second Floor, Defence Colony, New Delhi 110024 Mr Naveen Kumar Mishra Ph: 09891372538 naveen-mishra@darashaw.com	2	30-03-2017
28	<b>Development Environergy Services Ltd. (DESL)</b> No 819, 8th floor, Antriksh Bhawan, 22 Kasturba Gandhi Marg, New Delhi – 110 001 Mr Harish Kumar Ph: 09582940372 harishkumar@deslenergy.com	2	30-03-2017
29	<b>DRA Consultants Pvt. Ltd.</b> 6, Taty Tope Nagar, West High Court Road, Nagpur – 440 015, Maharashtra Mr Mehul Ranade Ph: 09763712953 ranade@dineshrathi.com	2	30-03-2017
30	<b>EKI Energy Services Ltd.</b> 325 Block C, Prem Trade Center Maharani Road Indore-452007, Madhya Pradesh Mr Manish Dabkara Ph: 099 075 34900 manish@enkingint.org	2	30-03-2017
31	<b>Elcomponics Technologies India Pvt. Ltd.</b> C-78 A, Alakh Nanda, Gangotri Enclave Pocket E, New Delhi-110019 Ms Namita Choudhary Ph : 08826028834 namita.choudhary@elcomponics.com	2	30-03-2017
32	<b>Elpro Energy Dimensions Pvt. Ltd.</b> #6,7,8 , Rajaji Nagar , IV th N Block, Dr.Rajkumar Road , Bangalore 560010, Karnataka Mr Ramesh Singh Ph: 09845046780 elprochp@gmail.com	2	30-03-2017
33	<b>Energized Solutions India Pvt. Ltd.</b> C-12/14, DLF Phase-I, Gurgaon – 122 002 Mr. Dhruv Dhanda Managing Director Ph: 0124-4257278/ 09810030107 dhruv@energizedsolutions.org	2	31-01-2018
34	<b>Energgo Engineering Projects Ltd.</b> 249-C, Udyog Vihar Phase-IV, Gurgaon, Haryana Mr Priyaranjan Sinha Ph: 09811456950 sinha.priyaranjan@energoindia.com	2	30-03-2017
35	<b>Enfragy Solutions India Pvt. Ltd.</b> T-2 & 8C, Millenium City IT Park, DN – 62, Sector V, Salt Lake City, Kolkata – 91, West Bengal Mr Deb A. Mukherjee Ph: 033-30128485 deb.mukherjee@enfragy.com	2	30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
36	<b>Epic Energy Ltd.</b> 304, A Wing, Winsway Complex, Old Police Lane, Opposite Andheri Railway Station, Andheri (East), Mumbai – 400 069, Maharashtra	Ms Aruna Joshi Ph: 09767376537 aruna.joshi@epicenergy.biz	2 30-03-2017
37	<b>Fugenic Computer Services Pvt. Ltd.</b> # 8-2-268/A/2/S1, Road No 3, Banjara Hills, Hyderabad -500034	Mr V. Jagan Mohan Reddy Ph: 09652828384/04064586656 jvenna@fugenic.com	2 30-03-2017
38	<b>India SME Technology Services Ltd.</b> E-1, 1st Floor, Baluja House, Jhandewalan Extension, New Delhi – 110 055	Mr. Ajay Verma Senior Manager Ph: 0 9953177076	2 31-01-2018
39	<b>Kirloskar Brothers Ltd.</b> Yamuna, Survey No. 98/3 to 7, Banner, Pune- 411045, Maharashtra	Mr Gajanan Sahasrabudhe Ph: 09921844433/020-27214342 Gajanan.Sahasrabudhe@kbl.co.in	2 30-03-2017
40	<b>Lloyd Insulations (India) Ltd.</b> 2, Kalkaji Industrial Area, New Delhi-110019	Mr K K Mitra/ Ashu Sharma Ph: 09313217709 / 09868970770 mkt-ashu@lloydinsulation.com kk.mitra@lloydinsulation.com	2 30-03-2017
41	<b>NAAC Energy Controls Pvt. Ltd.</b> C-135, Phase-II (Extn.)(Hoisery Complex) Noida-201305, Uttar Pradesh	Mr C M Kapoor Ph: 0120-4221631/32/33	2 30-03-2017
42	<b>PricewaterhouseCoopers Pvt. Ltd.</b> Building 10, Tower C, Floor 17th, DLF Cyber City, Gurgaon – 122 002, Haryana	Mr Manoj Kumar Bansal manoj.bansal@in.pwc.com	2 31-01-2018
43	<b>REC Power Distribution Company Ltd.</b> 1016 – 1023, 10th Floor, Devika Tower, Nehru Place, New Delhi – 110 019	Mr CMA Somya Kant Ph: 09968284083 somyak@recl.nic.in	2 31-01-2018
44	<b>Reckon Green Innovations Pvt. Ltd.</b> 120, 1st Floor, Left Wing, Amrita Ville, Opp. Yashoda Hospital, Raj Bhavan Road, Somajiguda, Hyderabad – 500 082, Telangana.	Mr. Krishna Ravi Ph: 040- 40069198/ 09985333559 id-krishna@reckongreen.com	2 31-01-2018
45	<b>Saket Projects Ltd.</b> Saket House, Panchsheel, Usmanpura, Ahmedabad – 380013, Gujarat.	Mr Kaushal Shah Ph: 09974389922 kaushal@saketprojects.com ; energy.kaushal@gmail.co	2 30-03-2017
46	<b>SeeTech Solutions Pvt. Ltd.</b> 11/5, MIDC Infotech Park, South Ambazari Road, Nagpur – 440022 Maharashtra	Ms Sneha Gadre Ph: 07588015842 snehal.gadre@seetechsolutions.in	2 30-03-2017
47	<b>Servotech Power Systems Pvt. Ltd.</b> D – 212, Sector 2, DSIDC, Bawan Industrial Area, Delhi – 110 039	Ms. Sarika Bhatia Ph:098186 80033 sarika78@servotechindia.com	2 31-01-2018
48	<b>SGS India Pvt. Ltd.</b> 226, Udyog Vihar, Phase I, Gurgaon – 122016, Haryana	Mr Sanjeev Kumar Ph: 09871794628 Sanjeev.kumar@sgs.com	2 30-03-2017
49	<b>Steag Energy Services (India) Pvt. Ltd.</b> A-29, Sec-16, Noida-201301, Uttar Pradesh	Mr Boben Anto Head- Plant Services Ph: 0120-4625000/ 09717298313 b.anto@steag.in	2 31-01-2018
50	<b>Tata Projects Ltd. TQ Services (A division of Tata Projects Ltd)</b> 2nd Floor, Varun Towers 1 Begumpet, Hyderabad – 500 016, Telangana	Mr. Narayana Rao KVS Ph: 040-6725 8851/ 07661062060 narayanraokvs@tataprojects.com	2 31-01-2018

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
51	<b>TUV SUD South Asia</b> C-153/1, Okhla Industrial Area Phase-1 New Delhi – 110 020	Mr. Tarun Kushwaha Ph: 011-30889611/ 09560055124 anudeep.hajela@tuv-sud.in	2 31-01-2018
52	<b>Alankit Ltd.</b> 4E/2, Jhandewalan Extension, New Delhi – 110 055	Mr. Ankit Agarwal Managing Director Ph: 09899111661 ankit@alankit.com	3 31-01-2018
53	<b>Alien Energy Pvt. Ltd.</b> 8/105, 1st Floor, Nehru Street, Vishwas Nagar, Shahdara, New Delhi – 110 032	Mr. Vikas Jain accounts@alienenergy.in	3 31-01-2018
54	<b>All Green EcoTech Solutions Pvt. Ltd.</b> Advant-NAVIS Business Park,#7, Sector 142, Expressway, Noida- 201 301, Uttar Pradesh	Mr Mayur Toshniwal Ph: 0120-245 9901 mayur@allgreenecotech.com	3 30-03-2017
55	<b>Amplebit Energy Solutions Pvt. Ltd.</b> 1651, 2nd floor, 10th Main, HAL 3rd Stage, Bangalore - 560 075, Karnataka	Mr Anoop Kulkarni Ph: 080-41510739 info@amplebitenergy.com	3 30-03-2017
56	<b>Asiatic Traders</b> M11-12, New Siyaganj, Indore – 452 007, Madhya Pradesh	Mr Puneet Doshi Ph: 07312534011 pnd@asiatictraders.net	3 30-03-2017
57	<b>A-Z Energy Engineers Pvt. Ltd.</b> 103-104, Krishna House 4805/24, Bharat Ram Road Darya Ganj , New Delhi-110002	Mr P.P Mittal Ph: 09811402040 pp_mittal@yahoo.com	3 30-03-2017
58	<b>BNN Power</b> 6-Satyam Industrial Estate, Station Road,Govandi,Mumbai-400088, Maharashtra	Mr Sudhir Modak Ph: 09323183173 bnnpower@yahoo.in	3 30-03-2017
59	<b>Citelum India Pvt. Ltd.</b> E-2, Defence Colony, Ist. Floor, New Delhi- 110024	Mr Santosh Misra Ph: 011-40762900/ 9811101677 santoshkmisra@hotmail.com	3 30-03-2017
60	<b>Consmoright Consultancy Services Pvt. Ltd.</b> B -212, 2nd Floor, Metro Plaza, Meerut – 250 001, Uttar Pradesh	Mr. Hemant Gupta Technical Consultant Ph: 09358112345 cosmoright@gmail.com	3 31-01-2018
61	<b>Darshan Institute of Engineering &amp; Technology</b> At-Hadala, Rajkot Morbi Highway, Near Water Sump, Rajkot – 363650, Gujarat	Ms Shital Patel Ph: 09428465956 darshan.electrical@gmail.com shital.patel@darshan.com	3 30-03-2017
62	<b>Elconn Energy Systems (I) Pvt. Ltd.</b> 310, Dilkap Chambers, Behind Balaji Telefilms, Near Enercon House, Veera Desai Road, Mumbai – 400 053, Maharashtra	Mr Sujat Faxwala Ph: 09833636464 sujat@elconn.in	3 31-01-2018
63	<b>ENCON (Energy Management Services Pvt. Ltd.)</b> L – 51, JVV, Hiranandani Garden, Powai – 400 076, Mumbai, Maharashtra	Mr Surendra Kumar Ph: 0766363120 cdrskumar@yahoo.co.in	3 30-03-2017
64	<b>Ener vision</b> Flat No.-802, EMP-06, Evershine Millennium Paradise, Takur Village, Kandivali(E), Mumbai- 400101, Maharashtra	Mr Chinmoy Dutta Ph: 09920123966 chinmoy.dutta@enervisiongroup.co m	3 30-03-2017
65	<b>Energetic Consulting Pvt. Ltd.</b> TMA House, 2nd Floor, Plot no. 6, Main Road, Wagle Industrial Estate, Thane (W) 400 604, Maharashtra	Mr Rajesh Deshpande Ph: 9322854470 rajesh@ecpl.co.in	3 30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
66	<b>Energy India</b> 1, British India Street, Main Block, 1st Floor, Room No. 103, Kolkata -700 069, West Bengal	Mr. Tarun Kanti Guha Ph: 09830105553 Energy.india1@gmail.com	3 30-03-2017
67	<b>Energy Solution Company</b> C-938, Tower No-10, River Heights Raj Nagar Extension, Ghaziabad – 201003, Uttar Pradesh	Ms Mala Sharma Ph: 09868984904/ 09868984867 energysolutioncompany@gmail.com	3 30-03-2017
68	<b>Energyca</b> F-110, B-Wing, Hemendra C.H.S, Gokhale Road,Naupada, Thane (W)-400602, Maharashtra	Mr Vishwas Naware Ph: 022-25306149/25393126 naware_vishwas@vsnl.net	3 30-03-2017
69	<b>Enhanced Wapp Systems (India) Pvt. Ltd.</b> 914-B, 9th Floor, Park Central, Sec-30, Gurgaon-122001, Haryana	Mr Abhishek Tripathi Ph: 08527196443 abhishek.tripathi@wappsys.com	3 30-03-2017
70	<b>Excel Project Consultants Pvt. Ltd.</b> CE-126, Sector – 1, Salt Lake City, Kolkata -64, West Bengal	Mr Pradip Sengupta Ph: 09433084854 psengupta@epcpl.co.in	3 30-03-2017
71	<b>Five M Energy Pvt. Ltd.</b> 263, Sukhdev Vihar, New Delhi – 110 025	Mr Surinder Singla Ph: 09810087309 energyfivem@gmail.com	3 30-03-2017
72	<b>G A Infra Pvt. Ltd.</b> 402, 4th floor, Man Upasna Tower, C-Scheme, Jaipur, Rajasthan	Mr. Gajendra Agarwal Ph: 09414152217 gajendra@gainfra.com	3 30-03-2017
73	<b>G K Energy Marketeers Pvt. Ltd.</b> F No 350 , B No 25 ,Lokmanya Nagar, LBS Main Road,Near Dandekar Bridge Circle, Pune -411030, Maharashtra	Mr Gopal Kabra Ph: 09970450000 gopal@energymarketers.in	3 30-03-2017
74	<b>Ganges Consultancy</b> 273/Y-1, Block Kidwai Nagar , Kanpur – 208 011, Uttar Pradesh	Mr. Anoop Kumar Gupta Ph: 09464005209 / 08510810909 gangesconsultancy@gmail.com	3 31-01-2018
75	<b>Ganpati Electricals Pvt. Ltd.</b> U-110, First Floor, Surya Arcade, Main Vikas Marg, Shakar Pur, Delhi – 110092	Mr PN Rustagi Ph: 08860076124 gepl@ganpatielectricals.com	3 30-03-2017
76	<b>GEARS Energy Solutions</b> H-375, Sitapura Industrial Area, Jaipur – 302 022, Rajasthan	Mr Raj Kumar Bhutra Ph: 08696922133 raj.b@gearsenergy.com	3 30-03-2017
77	<b>Glow Green Energy</b> 122, Gagan Vihar Extension, New Delhi – 110 051	Mr. Aditya Malik adityamalik@glowgreen.in	3 31-01-2018
78	<b>G-On Energy Controls</b> Plot no. 1941, Sriram Nagar, Bhubaneswar – 751002, Orissa	Mr Pradipta Kumar Panigrahi Ph: 09040221000 gonenergy2011@gmail.com gonenergy@rediffmail.com	3 30-03-2017
79	<b>Granzör Engineerings Pvt. Ltd.</b> D38/B, Lower Ground Floor, Acharya Niketan, Mayur Vihar Phase I, Delhi – 110 091	Mr Ajay Kumar Ph: 09990671833 ajay@granzor.in	3 30-03-2017
80	<b>Green Stratos Consulting Pvt. Ltd.</b> Plot No: 59, Amar Co-op society, Kavuri Hills, Madapur, Jubilee Hills, Hyderabad- 500033	Mr Vivek Ph: 07893812333 vivek@greenstratos.com	3 30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
81	<b>GreenTree Building Energy Pvt. Ltd.</b> H-19, Sector 63, Noida – 201 301, Uttar Pradesh	Mr. Anurag Bajpai, Director Ph: 0120-4546339/ 09891852358 anurag@greentree-india.com	3 31-01-2018
82	<b>Indona Innovative Solutions</b> 8/W11 Railway Road Opposite Onkar Feed Store, Dinanagar, Distt- Gurdaspur, Punjab – 143 531.	Mrs. Hardeep Kaur Ph: 09999740051 hardeep@indonsols.com	3 31-01-2018
83	<b>IRC Engineering Services India Pvt. Ltd.</b> 612, Chiranjiv Tower 43, Nehru Place New Delhi	Mr A P Chouhan Ph: 08860352791 hr@ircengg.co.in	3 30-03-2017
84	<b>Kalycito Infotech Pvt. Ltd.</b> 6/2 and 6/3, Trichy Road, Pappampatti Pirivu, Kannampalayam, Coimbatore – 641103, Tamilnadu	Mr Muthu Kumar N Ph: 08754029004 accounts@kalycito.com	3 30-03-2017
85	<b>Katyani Energy Solution Pvt. Ltd.</b> B-13, Somdutt Chamber-1, Bhikaji Cama Palace, New Delhi-110066.	Mr Mukesh Kumar Ph: 09868615189 mukesh.kaju@gmail.com	3 30-03-2017
86	<b>Kehems Consultants Pvt. Ltd.</b> Village Umrikheda, 12th K. M., Indore-Khandwa Road, Indore – 452020, Madhya Pradesh	Mr Jitendra Gangrade Ph: 09893605850/ 07314228308 kehems@kehems.com	3 30-03-2017
87	<b>Krishna Engineers &amp; Consultants</b> Plot no. 4723, Laxmi Vihar, Sainik School, Bhubaneswar – 751005, Orissa	Mr Pramod Kumar Hati Ph: 09437256123 krishnaenergy@gmail.com	3 30-03-2017
88	<b>Namdhari Eco Energies Pvt. Ltd.</b> 5th Floor, S.B Tower, Sec-16 A Noida, Uttar Pradesh	Mr Bali Singh Ph: 9711591550 bali@ecoenergies.co.in	3 30-03-2017
89	<b>NanoBright Solar Technologies Pvt. Ltd.</b> Plot Number 98, Huda Heights, Road Number 12, Banjara Hills, Hyderabad – 500 034	Mr Venkat Vedire Ph: 09848099646 venkat@nanobrightsolar.com	3 30-03-2017
90	<b>Ogni Esco</b> I & II Floor, Plot No 245, Sri Sai Square, Phase II, Kamalapuri Colony, Hyderabad	Mr Uma Mahesh Kumar Ph: 09246113277 msuryadevara@ognigroup.net	3 30-03-2017
91	<b>OMNE AGATE SYSTEMS PVT. LTD.</b> 99, Greams Road, Chennai - 600006, Tamilnadu	Mr Balakrishnan S Ph: 07401298244/ 044- 42120700 marketing@omneagate.com	3 30-03-2017
92	<b>Opel Energy Systems Pvt. Ltd.</b> 36, Shastri Market, Indore – 452 007, Madhya Pradesh	Mr Y D Chavan Ph: 09822002047 ganeshchavan@opelenergysystems.com	3 30-03-2017
93	<b>Oxiona Energy Solutions(I) Pvt. Ltd.</b> B-Wing, Room No. 03, DEEP- REKHA Building, Opp. Ambe Medical Store, Mithagar Road, Mulund (E), Mumbai-400081, Maharashtra	Mr Sadanand Manekar Ph: 09821646967 info@oxiona.co.in	3 30-03-2017
94	<b>Padmashtdal Energy Services Pvt. Ltd.</b> 320, Janaki Apartments, Plot No:7, Sec-22, Dwarka, New Delhi-110075	Mr K K Jha Ph: 09810392563 kkjha65@gmail.com	3 30-03-2017

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
95	<b>PGS Energy Services Pvt. Ltd.</b> SCO 409-410, Sector 35-C, Chandigarh – 160 035 Mr. Pradeep Dhingra, Director Ph: 017-24605017 / 09876105017 pd@pgsenergyservices.com	3	31-01-2018
96	<b>RMS Automation Systems Ltd.</b> C-138, Narayana Industrial Area, Phase I, New Delhi – 110 028 Mr Dhananjay Singh Ph: 09811594879 dhananjay@rmsautomation.com	3	30-03-2017
97	<b>Samudra Electronic System Pvt. Ltd.</b> 12, Electronic Sadan II, MIDC Bhosari, Pune – 411026, Maharashtra Ms Yamini Thote Ph: 09422007924 yaminit@samudraled.com	3	30-03-2017
98	<b>Shahi Instrument and Consultants</b> 1C, 20/1 Krishna Nagar, Opp B4/211, Safdarjung Enclave, New Delhi – 110 029 Mr. Prem Shankar, Senior Consultant Ph: 09818397301 prem.shankar1@gmail.com	3	31-01-2018
99	<b>Shakti Prabha</b> C-2233, Indiranagar, Lucknow – 226016, Uttar Pradesh Mr Raj Kumar Singh Ph: 09335248741 shaktiiprabha@gmail.com	3	30-03-2017
100	<b>Shakti Pumps (India) Ltd</b> Plot No. 401, 402 & 413, Industrial Area, Sector-III, Pithampur, Dist.- Dhar, Madhya Pradesh Mr Piyush Patidar Ph: 07024110419 piyush.patidar@shaktipumps.com	3	30-03-2017
101	<b>Shree Electricals &amp; Engineers (India) Pvt. Ltd.</b> Sr. No. 253/1, Plot No.4, Phase II, MIDC, Hinjewadi, Pune – 411 057, Maharashtra Mr. Shrirang Erande shrirang@shreeelectricals.com	3	31-01-2018
102	<b>Siri Exergy and Carbon Advisory Services (P) Ltd.</b> Plon no. 93A, Janaki Enclave Saroornagar, Hyderabad Mr G.Subramanyam Ph: 09866324164 subramanyam@siriexergy.com	3	30-03-2017
103	<b>STENUM Asia Sustainable Development Society</b> SFF 101, Palam Triangle, Palam Vihar, Gurgaon 122 017, Haryana Mr Rajat Batra Ph: 09811051918 rajat.batra@stenum-asia.org	3	30-03-2017
104	<b>Synergy Infra Consultant</b> II-2, Dhruvatarra Apartments, 6-3-652/D/27, Amrutha Estates, Somajiguda, Hyderabad Mr T.Ramakrishna Ph: 09949985840 ramakrishna@synergyinfra.com	3	30-03-2017
105	<b>UNITECH ASSOCIATES Pvt. Ltd.</b> New No.13, Mooparappan Street, First Floor, T.Nagar, Chennai - 600 017, Tamilnadu Mr V RAJAN Ph: 044-42178888/ 9840499815 info@unitech.co.in	3	30-03-2017
106	<b>URS Verification Pvt. Ltd.</b> F-31 Sector -6, Noida – 201 301, Uttar Pradesh Mr Gagan Aggarwal Ph:09718286360 gagan.delhi@urs-climate.com	3	31-01-2018
107	<b>Zenith Energy Systems Pvt. Ltd.</b> 10-5-6/B, My Home Plaza Masabtank, Hyderabad - 500 028 Mr ISRC Murthy Ph: 0849660979 murthy@zenithenergy.com	3	30-03-2017
108	<b>A2Z Infraserivices Ltd.</b> Plot No B - 38, Institutional Area, Sector - 32, Gurgaon – 122 001, Haryana Mr Salamat Khan Ph: 07838621302 salamat.k@a2zemail.com	4	30-03-2017
109	<b>Acro Ventures Pvt. Ltd.</b> K-1/39, LGF Chittaranjan Park, New Delhi – 110 019 Mr. Ankit Agarwal	4	31-01-2018

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
110	<b>ADR Power Infrastructure Pvt. Ltd.</b> 61, Taj Building, GB Road, Delhi-110006 Mr Dinesh Gupta Ph: 09999006538 dineshgupta@adrpower.com	4	30-03-2017
111	<b>Avya Energy Ventures Pvt. Ltd.</b> Flat No 502,NCL Kaveri -1 Apartments, Shanti Nagar,Hyderabad – 5000 028 Mr Praveen Ph: 07032700512 ram@avyagroup.com	4	30-03-2017
112	<b>Deccan Consulting Engineers Pvt. Ltd.</b> B-98/5A (3rd floor), Joshi Colony, IP Extension, Delhi-110092 Mr Hari Prakash Ph: 09810533235 harideccan@gmail.com	4	30-03-2017
113	<b>eSmart Energy Solutions Pvt. Ltd. (formerly known as Shah Investments, Financials, Developments and Consultants Pvt. Ltd.)</b> c/o Dalal Desai and Kumana, 2nd Floor, Union Co-Operative Insurance Building, 23, Sir P M Road, Fort, Mumbai - 400 001, Maharashtra Mr Joseph Maprayil Ph: 09763712953 jmaprayil@gmail.com	4	30-03-2017
114	<b>First Esco India Pvt. Ltd.</b> 16, Prince Apartments, Kirlampudi Layout, Chinna Waltair Visakhapatnam- 530 017, Andhra Pradesh Mr Vijaykumar Kunche Ph: 09985502589 vijay.kunche@gmail.com	4	30-03-2017
115	<b>Greetude Energy Pvt. Ltd.</b> Flat No.93, Deshpande Puram Patliputra SNO. 42/2A, Karve Road, Kothrud, Pune – 411 004, Maharashtra. Mr. Pratik Pradeep Hakay Ph: 09922634567 pratik@greetude.com	4	31-01-2018
116	<b>Intemo Systems Ltd.</b> B23/A, IInd Floor, APIIC Colony, Kushaiguda, Electronic Complex, ECIL (Post), Hyderabad - 500 062 Mr K. Satyanarayana Ph: 09849161339 intemoindia@yahoo.com	4	30-03-2017
117	<b>Marathwada Institute of Technology</b> Beed Bypass Road, Aurangabad – 431 105, Maharashtra Mr K K Jadia Ph: 09422201327 kkjadia1944@gmail.com	4	30-03-2017
118	<b>MSME Technology Development Centre</b> Foundry Nagar, Agra, Maharashtra Mr Pravin Joshi Ph: 09760030043 prj.msmedtc@gmail.com	4	30-03-2017
119	<b>Olive Exports Pvt. Ltd</b> 3870A/ 10, Kanhaiya Nagar, New Delhi – 110 035 Mr. Shyam Jindal, Director Ph: 011-27386560	4	31-01-2018
120	<b>SEK Electricals Pvt. Ltd.</b> Plot 211, Ground Floor, KH.NO- 25/1/1, Block – P, Mohan Garden, Uttam Nagar, New Delhi – 110 059 Mr. Abhinav Chandra Manager Corporate Sales abhniav@ledfy.in	4	31-01-2018
121	<b>Seven Greens Solar Systems Pvt. Ltd.</b> 33-34/1, Shree Ram Co-op Housing Society, Opp. Ram Mandir, Ram Mandir Road, Khernagar, Bandra East, Mumbai – 400 051, Maharashtra Mr. Akshay Borkar Ph: 09820 364573 / 09833 668252 info@7greens.in	4	31-01-2018
122	<b>SGS Industrial Controls &amp; Solutions Pvt. Ltd.</b> SGS House, B-100, Sector-64 Noida – 201 307, Uttar Pradesh Mr Vibhu Wadhwa Ph: 09818173834 vibhu@sgscontrols.com	4	30-03-2017
123	<b>Shri Vaari Electricals Pvt. Ltd.</b> No. C-37, TVK Industrial Estate, Guindy, Chennai – 600 032 , Tamil Nadu Mr. G. Jayaraman Head of Operations srivaari@gmail.com	4	31-01-2018

S. No.	Organization Name and Contact Information	Grade	Accreditation Validity
124	<b>SPML Infra Ltd.</b> SPML House, Plot No: 65, Sec-32, Institutional Area, Gurgaon – 122 001, Haryana	Mr. Deepak Kumar Jain Ph: 0124- 3944555/ 09711308225 deepakjain@spml.com	4 31-01-2018
125	<b>Machine 2 machine Solutions Pvt. Ltd.</b> 202, Plot No. 8-3-961/B, Srinagar Colony, Above SBI Bank, Hyderabad – 500 073, Telangana	Mr. Karunakar Reddy Ph: 09642140141 reddyrjula@gmail.com	5 31-01-2018
126	<b>Procorp Eneritech Pvt. Ltd.</b> Shed No. 109/4, IDA, Phase-2, Cherlapally, Lane 17, Ranga Reddy District, Hyderabad – 500 051, Telangana	Mr. Rama Krishna Ph: 09704282929 ramakrishna@procorpindia.com	5 31-01-2018
127	<b>Sai Solar Technology Pvt. Ltd.</b> J 15, 2nd Floor, BS Complex, Bishanpura, Sector- 58, Noida – 201301, Uttar Pradesh	Mr Rajesh Kumar Ph: 09910940459 info@saisolar.in	5 30-03-2017
128	<b>Wind Stream Energy Technologies Pvt. Ltd.</b> Janapriya Constructions, Flat No.312& 313, Kubera Towers, Narayanguda, Hyderabad-500029	Mr Sridhar Bhamidipati Ph: 09505843019 bsridhar@windstream-inc.com	5 30-03-2017

## **Certified Measurement & Verification Professional (CMVP)**

### Capacity Building of M&V Professionals in India

Measurement & Verification (M&V) is fundamental to any EE project and an indispensable component of Energy performance Contracts (EPCs). Without measuring pre-project and post-project energy use, there is no way of knowing the effect of Energy Conservation Measures (ECMs) and how much energy has been saved.

AEEE is committed to promoting the use of M&V in all Energy Efficiency projects. The CMVP training and certification programme is brought to India by the Alliance for an Energy Efficient Economy as a result of an agreement between AEEE and Efficiency Valuation Organisation (EVO – which develops International Performance Measurement and Verification Protocol (IPMVP) IPMVP and training and certification materials in partnership with Association of Energy Engineers). Certified Measurement and Verification Professionals (CMVP) is an international certification programme covering the fundamental concepts of measurement and verification and is recognized in the US, Canada, China, Australia, South Africa and many European countries. CMVPs can market themselves as Energy Efficiency professionals with an advanced understanding of M&V concepts and energy savings calculations needed in Energy Performance Contracts done by ESCOs, Green building M&V credit validation, DSM programme savings calculations, 3rd party M&V professionals required by many govt. agencies (e.g. BEE's PAT programme), and helping quantify GHG reductions from EE projects and in-house corporate programmes. CMVP programme establishes with the dual purpose of recognizing the most qualified professionals in this growing and critical area of the energy industry, and to raise the overall professional standards within the measurement and verification (M&V) field.

The right to use the CMVP title is granted to those who demonstrate proficiency in the M&V field by passing a four hour written exam and meeting the required academic and professional qualifications. EVO's certification level training must be taken to prepare for the exam and as a review of basic principles for experts. There are 114 CMVPs in India.

## List of CMVPs in India

S. No.	First Name	Organization	Location
1	Aalok Deshmukh	Schneider Electric India Pvt. Ltd.	Mumbai
2	Abhishek Rathi	Power Grid Corporation	Gurgaon
3	Abhishek Vilas Pange	Surmount Energy Solutions Pvt. Ltd.	Mumbai
4	Akash Jain	Alien Energy Pvt. Ltd.	New Delhi
5	Alkesh Solanki	Energy Management Solutions Professional	Mumbai
6	Amit Chadha	Schneider Electric India Pvt. Ltd.	Gurgaon
7	Amit Kumar Singh	Johnson Controls India Pvt. Ltd.	Noida
8	Anandan Mohan	CISCO Systems (India) Private Limited	Bengaluru
9	Anandraj Chinnathambi	Blue Star Limited	Chennai
10	Anil Kumar Kohli	Energy Efficiency & Sustainability Strategic Initiative	Haryana
11	Ankur Thareja	Johnson Controls India	Noida
12	Anup Gopaldas Rathi	Kalpakrit Sustainable Environments Pvt. Ltd.	New Delhi
13	Anurag Bajpai	GreenTree Building Energy Pvt Ltd.	New Delhi
14	Avlokita Agrawal	IIT Roorkee	Roorkee
15	B. Senthil Kumar	SGS India Private Limited	Chennai
16	Baskaran Govindaraasan	Schneider Electric India Pvt Ltd	Bengaluru
17	Benet George V.	Schneider Electric India Pvt Ltd	Bengaluru
18	Bhaskar Mandalam	Consul Energy	Bengaluru
19	Chandra Kant Sahu	Wipro EcoEnergy	Gurgaon
20	Chandraro More	Deloitte India	New Delhi
21	Charu Gupta	Deloitte India	New Delhi
22	Deepak Gokhale	Aditya Birla Management Corporation Pvt. Ltd.	Raigad
23	Deepak Sadashiv Bhise	Tata Power	Mumbai
24	Dharmendra Jamanbhai Davda	Aditya Birla Management Corporation Pvt. Ltd.	Raigad
25	Dipak Kokate	EESL	Mumbai
26	Edgar Almeida	CISCO Systems (India) Private Limited	Bengaluru
27	Gaurav Soni	Indian Renewable Energy Development Agency Ltd.	New Delhi
28	Girja Shankar	Bureau of Energy Efficiency	New Delhi
29	Guruprakash Sastry	Infosys Limited	Bengaluru
30	Harshal Limdi	Aditya Birla Management Corporation Pvt. Ltd.	Vadodara
31	Himanshu Dehra	Leap Sustainability Design Consulting (P) Ltd.	New Delhi
32	Jagrat Mankad	Aditya Birla Management Corporation Pvt. Ltd.	Vadodara
33	Jayakrishnan P Nair	TUV-SUD South Asia	New Delh
34	Jayaraj Dayanithi	Schneider Electric India Pvt. Ltd.	Bangalore
35	Johnny Christo	Intel Technology India Pvt. Ltd.	Bangalore
36	Kamaleashwar Venkatachalam	Tata Consultancy Services	Pune
37	Kanagaraj Ganesan	Integrator Design Solutions	Gurgaon
38	Karthik S Perumal	Schnieder Electric India Pvt. Ltd.	Bengaluru
39	Karthikeyan Nachimuthu Sounderarajan	Wipro Eco Energy	Bangalore

S. No.	First Name	Organization	Location
40	Krishan Heda	Wipro EcoEnergy	Bangalore
41	Kulbhushan Kumar	PricewaterhouseCoopers Pvt Ltd	Gurgaon
42	Kumarasamy Ramamurthy	Schneider Electric India (P) Ltd	Bengaluru
43	Mahesh Patankar	MP Ensystems	Mumbai
44	Mangesh Shankar Mayekar	Schneider Electric India Pvt. Ltd.	Mumbai
45	Manish Kumar	Darashaw & Co. Pvt. Ltd.	Pune
46	Manish Shakdwipee	MSCI Inc	Mumbai
47	Manoj Telrandhe	SGS India	Gurgaon
48	Manoj Kumar Bansal	PricewaterhouseCoopers Pvt. Ltd.	Gurgaon
49	Manoj Kumar Singh	Honeywell Automation India Ltd	Pune
50	Michael R. Hajny	Tetra Tech	Gurgaon
51	Milind Rajendra Chittawar	SEE-Tech Solutions Pvt Ltd	Nagpur
52	Monesh Sharma	Aditya Birla Management Corporation Pvt. Ltd.	Raigad
53	Mrinmoy Kumar Kayal	Schneider Electric India (P) Ltd	Kolkatta
54	Nilesh santosh Walunje	Tata Consultancy Services	Mumbai
55	Nitेश Kumar	Energy Efficiency Services Limited	New Delhi
56	Pankaj Singh	Tata Consultancy Services	Mumbai
57	Pankaj M. Kasture	Blue Star Limited	Mumbai
58	Parag Purushottam Kulkarni	Idam Infra	Pune
59	Pavan Kumar Ryali	National Productivity Council	Hyderabad
60	Peerasut Thirakomen	Goldmark Tech Supply Co	Bangkok
61	Pradeep Kumar	Darashaw & Co. Pvt. Ltd.	Pune
62	Pradeep Kumar	Alliance to Save Energy	Bengaluru
63	Prakash Janakiraman	Johnson Controls India P. Ltd	Bangalore
64	Prathamesh Vijay Ternikar	Deloitte India	Gurgaon
65	Praveen Kumar	EDS Global	New Delhi
66	Prem Anand Adhisiva Arunachalam	Schneider Electric (Dubai)	Dubai
67	Premkumar Krishnan	U V Krishna Mohan Rao Associates	Chennai
68	Priya Rahul Bhargava	MP Ensystems	Mumbai
69	Punit H. Desai	Infosys Limited	Bengaluru
70	Punsa Roengpithya	EcoCool Save Energy	Thailand
71	Raghav Thalabhaktula	CISCO Systems (India) Private Limited	Bengaluru
72	Raj Kumar Khilnani	Energy Tech	New Delhi
73	Rajeev Ralhan	PricewaterhouseCoopers Pvt Ltd	Gurgaon
74	Rajiv Kumar	Small Industries Development Bank of India (SIDBI)	New Delhi
75	Rajivkumar Vikasin Shukla	Idam Infra	Pune
76	Rajmohan Rangaraj	Development Enviroenergy Services Limited	New Delhi
77	Ramesh Bhatia	Alliance for an Energy Efficient Economy (AEEE)	New Delhi
78	Rangarajun E J	Schneider Electric Conzerv India Pvt Ltd	Bengaluru
79	S. Satish Kumar	SGS India Pvt Ltd.	Chennai
80	Sachin Singh Yadav	Darashaw & Co. Pvt. Ltd.	Pune

S. No.	First Name	Organization	Location
81	Sadanand Champakrao Manekar	Indian Navy	Mumbai
82	Saket Sarraf	P S Collective	Ahmedabad
83	Samir D. Gaykar	Honeywell Control & Automation India Ltd	Pune
84	Samit Kumar	Infosys	Bengaluru
85	Sampath Thatikonda	Zenith Energy	Hyderabad
86	Sandeep Dahiya	Consultant	New Delhi
87	Sanyogita Manu	CEPT University	Ahmedabad
88	Satyajit Raosaheb Patil	Accenture	Hyderabad
89	Shailesh Dangwal	Wipro EcoEnergy	Gurgaon
90	Shanmugaselvan Subramanian	Accenture Serices Ltd	Hyderabad
91	Shantanu P. Nadpurohit	CISCO Systems (India) Private Limited	Bengaluru
92	Shekhar Khadilkar	The Tata Power Co. Ltd.	Mumbai
93	Shirish Madhukar Deshpande	ENERGETIC CONSULTING PVT LTD)	Pune
94	Shubham Agarwal	Johnson Controls India	Noida
95	Sibaji Pattanaik	Aditya Birla Management Corporation Pvt. Ltd.	Raigad
96	Sibin Joseph	Max Hypermarkets India PVT LTD	Bangalore
97	Siddhartha S. Pawar	Honeywell Control & Automation India Ltd	Mumbai
98	Someshwar Derashri	Academy for Conservation of Energy	Vadodara
99	Sougata Sarkar	JSW Ispat Steel Ltd.	Raigad
100	Soumya Prasad Garnaik	ICF International	New Delhi
101	Sree Krishna Somayajula	Mahindra Satyam	Mumbai
102	Sudarshan Kumar Goyal	Aditya Birla Management Corporation Pvt. Ltd.	Raigad
103	Sujith Kannan	Intel Technology India Pvt. Ltd.	Bengaluru
104	Sunil Karandikar	MVS M&V Engineers	Mumbai
105	Sunil Mohan Kulkarni	Mahindra Vhicle Manufacturers Ltd.	Pune
106	Surendra Kumar	ENCON	Mumabi
107	Swapana S. Nigalye	Reliance Infrastructure	Mumbai
108	Tarun Garg	TERI	New Delhi
109	Thanakarthik Kumar Karuppasamy	Darashaw & Co. Pvt. Ltd.	Pune
110	Upendra Pratap Singh	Schnieder Electric India Pvt. Ltd.	Gurgaon
111	Vijay Rawat	Wipro EcoEnergy	Gurgaon
112	Vikas Makkar	Infosys Limited	Bengaluru
113	Vikas Bankar	SGS India	Pune
114	Vinoth Kannan Rajasekaran	Honeywell Automation India Ltd	Pune
115	Yashkumar Shukla	CEPT University	Ahmedabad

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# **GOVERNMENT ORGANISATIONS AND PROGRAMMES**

## 1. Bureau of Energy Efficiency (BEE)

The Government of India set up the Bureau of Energy Efficiency on 1st March 2002, under the provision of the Energy Conservation Act 2001. The mission of BEE is to assist in developing policies and strategies with a focus on self-regulation and market principles, within the overall framework of the Energy Conservation Act 2001. Its primary objective is to reduce the energy intensity of the Indian economy.

BEE has introduced several schemes to promote energy efficiency in the residential, commercial and industrial sectors. These schemes together have resulted in 10,836 MW of avoided capacity generation during the Eleventh Plan (2007-2012) against a target of 10,000 MW. The following programme areas represent BEE's key energy efficiency market transformation activities in India:

- **Standards & Labelling Programme:** The objective of this scheme is to provide the consumer with an informed choice about the energy and hence cost saving potential of marketed household and other equipment. This flagship program of BEE has gone through 'widening and deepening' since its inception in 2007 resulting in 7766 MW of avoided capacity generation i.e. 72% of the total achieved avoided capacity generation. At present the program covers energy consumption norms and standards for 19 appliances (4 appliances under mandatory and rest under voluntary program) and fuel efficiency norms for passenger cars.
- **Perform, Achieve and Trade Mechanism (PAT):** In the first cycle of PAT (ending in year 2014-15), 478 industrial units – called Designated Consumers (DCs) – in 8 sectors (Aluminium, Cement, Chlor-Alkali, Fertilizer, Iron & Steel, Paper & Pulp, Thermal Power, Textile) have been mandated to reduce their specific energy consumption (SEC) i.e. energy used per unit of production. The 1<sup>st</sup> cycle of PAT scheme has resulted an annual energy saving of 8.67 million tons of oil equivalent (mtoe) against targeted saving of 6.68 mtoe. PAT Cycle II (2016-17 to 2018-19) has been widened to include 628 DCs in 11 sectors, including the addition of 84 DCs in 3 new sectors (Petroleum Refineries, Railways, Electricity Distribution Companies). The targeted annual energy saving by the end of 2<sup>nd</sup> PAT cycle is 8.87 mtoe from 2014-15 base year.
- **Buildings:** BEE has taken up various policy and regulatory initiatives to enhance energy efficiency of the building sector including the Energy Conservation Building Code (ECBC), support for energy assessment & retrofiting process and voluntary star rating programmes for commercial buildings. BEE has proposed ambitious targets for the 12th plan period, i.e. 75% of all new starts of commercial buildings are ECBC compliant by the end of the 12th plan period and 20% of the existing commercial buildings reduce their energy consumption through retrofits.  
*Energy Conservation Building Code (ECBC): ECBC sets minimum energy standards for commercial buildings having a connected load of 100 kW or contract demand of 120 kVA and above. Presently, the code is currently being mandated by various states.*
- **National Energy Conservation Awards (NECA):** The NECA, instituted by the Bureau of Energy Efficiency, recognises innovation and achievements in energy conservation by the industry, buildings, zonal railways, state designated agencies, manufacturers of BEE star-labelled appliances and municipalities, and raise awareness that energy conservation plays a big part in India's effort to reduce global warming through energy savings. This voluntary program started in 1999 by Ministry of Power has seen

overwhelming and increase in participation by various categories every year. During 11<sup>th</sup> plan period (2007-12), NECA scheme resulted an avoided capacity generation of 1663 MW.

- **State Designated Agencies (SDA):** The implementation and enforcement of the provisions of the Energy Conservation Act in the states is to be carried out by the SDAs under Section 15 of the Act. So far, 32 SDAs have been created. These agencies differ from state to state with the distribution across all states as follows: Renewable Energy Development Agency (44%), Electrical Inspectorate (25%), Distribution Companies (12%), Power Departments (16%) and others (3%). Under the aegis of BEE, various state level initiatives have been taken by SDAs to augment state's climate change action plan and support national programs like PAT and NECA. An avoided generation capacity of 1065 MW was achieved by various SDA related schemes during 11<sup>th</sup> plan period.
- **Demand Side Management Programme (DSM):**
  - **Municipal Demand Side Management programme (Mu-DSM):** The basic objective of the project is to improve the overall energy efficiency of the Urban Local Bodies (ULBs), which could lead to substantial savings in the electricity consumption, thereby resulting in cost reduction/savings for the ULBs. MuDSM Programme was started as a pilot program in the 11<sup>th</sup> plan period covering 175 Urban Local Bodies (ULBs) across the country. The aim of the program include i) Build Infrastructure & Energy Management Skill, ii) Mapping of Systems where electricity is consumed in the municipality, iii) Identification of energy saving potential through Detailed Energy Audit, iv) Development of Implementable Projects, v) Cost Benefit & Financial Analysis and vi) Technical Assistance for Implementation Of Energy Conservation Measure etc. The program was taken up in a phased manner all across the country as per the situational survey report.
  - **Agricultural Demand Side Management programme (Ag-DSM):** The objective of the programme is to create appropriate framework for market based interventions in the agriculture pumping sector and carry out pump set efficiency upgradation projects through Public Private Partnership (PPP) mode. It will be done by widespread replication through regulatory mechanism which will be coupled with the subsidy provided by the GoI for bridging the EEPS pump sets higher cost, capacity building of all stakeholders. BEE will help states to issue notifications for mandatory use of star label EE pump sets in new agriculture connections and enable large scale replacement of agriculture pumps through implementation of 10 pilot projects in 7 agriculturally intensive states with the goal to have about 40% of the agricultural pump sets to be star labelled by 2030.
  - **Capacity building program of Distribution Companies on DSM:** BEE has taken up capacity building program of electrical distribution companies (DISCOMs) on DSM during 12<sup>th</sup> plan period. About 500 senior officials from 34 DISCOMs have been trained as 'Master Trainers' through a structured 5-days residential program. The next level of capacity building program is being implemented by BEE at circle level where around 1000 officials are targeted to be trained on DSM.
  - **Contribution to State Energy Efficiency Fund (SECF) Scheme:** SECF is a statutory requirement under section 16 of the Energy Conservation Act 2001. In this regard, the Ministry of Power has approved the SECF scheme of BEE. The

total financial outlay of the scheme was Rs. 66.00 crores during 11th plan period. The implementing agency for the scheme are the respective State Designated Agencies. The total contribution are made in two instalments of 50% each to those States / U. T. who have constituted their SECF and finalized the rules and regulations to operationalise the same. Many State Governments / U.T. Administration have already established their SECF.

- **Energy Service Companies (ESCOs):** ESCOs provide a business model through which the energy-savings potential in existing buildings can be captured, and the risks faced by building owners can be addressed as well. BEE does an accreditation exercise for ESCOs through a process of rating these applicants in terms of success in implementation of energy efficiency projects based on performance contracting, availability of technically skilled manpower, financial strength, etc. Till date 129 ESCOs have been empanelled by BEE.

**Capacity Building of Energy Efficiency Professionals (Certification Program for Energy Auditor and Energy Manager):** Under the preview of EC Act, BEE is conducting national certification examination for Energy managers and Energy Auditors. A cadre of professionally qualified energy managers and auditors with expertise in policy analysis, project management, financing and implementation of energy efficiency projects is being developed through certification programme. BEE has been designing training modules and regularly conducting a National level examination for certified energy managers and energy auditors. India now has 122287 Certified Energy Managers, out of which 85368 are additionally qualified as Certified Energy Auditors till date. This is further supplemented by the accreditation of energy auditors through recommendations of "Accreditation Advisory Committee". Accredited energy auditors would undertake mandatory energy audits in energy intensive industry as mandated in EC Act.

## 2. Energy Efficiency Services Limited (EESL)

In order to develop and foster a viable Energy Service Company (ESCO) industry, the Ministry of Power has set up Energy Efficiency Services Limited (EESL) (a joint venture of NTPC Limited, PFC, REC and POWERGRID) to facilitate implementation of energy efficiency projects primarily in India. EESL works as an ESCO, as a consultancy organization for Clean Development Mechanism (CDM), and energy efficiency as a resource centre for capacity building of State Designated Agencies (SDAs), utilities, financial institutions, etc. EESL leads the market-related actions of the National Mission for Enhanced Energy Efficiency (NMEEE) in the country. It is registered under the Companies Act, 1956. EESL has ambitions to expand abroad and is the first such company set up exclusively for implementation of energy efficiency in South Asia and elsewhere.

The main programmes of EESL are as under:

- **UJALA (earlier known as Domestic Efficient Lighting Programme or DELP):** The Unnat Jyoti by Affordable LEDs for All (UJALA) scheme was announced on January 5, 2015 by hon'ble Prime Minister of India Sh. Narendra Modi, urging the people to use LED bulbs in place of traditional incandescent bulbs, tube lights and CFL bulbs. This sparked a movement of energy efficient India, which led to LED bulb distribution scheme of UJALA by EESL. Indian houses, workplaces and market areas were a hotbed of

incandescent bulb usage. The main reasons behind LED lights being uncommon were high pricing and lack of public awareness. This traditional means of lighting wasn't only inefficient but insufficient lighting level from each bulb led people to use more bulbs per spot. The increasing number of inefficient bulbs was only adding to soaring electrical consumption of the nation. These new bulbs are far more efficient and long lasting. Due to bulk procurement and market aggregation, price of LED bulbs in India was brought down from about Rs. 310 to Rs. 55. Within 1 year of UJALA's launch, more than 11-crore LED bulbs are sold in the country through EESL's distribution kiosks spanning the entire nation. The government's target is to replace 77 crore incandescent bulbs in India with LEDs by 2019 leading to an anticipated reduction in installed load of about 20,000 MW with an annual estimated savings of over 100 billion kWh and an annual reduction of Rs. 40,000 crores in electricity bills.

- **Streetlight National Programme (SLNP):** Street lights in India were recognised as the second most potential group that'll result in significant energy savings. In India, use of inefficient sodium vapour lights and traditional tube lights to illuminate the streets is still prevalent. The conventional lighting is not only a burden on current energy production but the insufficient lighting levels and bad colour rendering indices have become a public problem. It has been theoretically stated that if illuminated street light structures are visible from the sky, it is nothing more than light pollution in the night sky. Here, the concept of 'dark sky initiative' was imbibed and research was carried out to come up with street lights which consume less energy, illuminate only the pathways, reduce light trespass and have improved colour rendering index. A way forward was planned and EESL began replacing the conventional street lights with new energy efficient ones at its own cost ,i.e., without any investment from Urban Local Bodies (ULBs). The new lights being put in place consume way less energy, have drastic colour rendering index and illuminate only their focused area. The street light contracts that EESL enters into with ULBs or municipalities is typically of a 7-year duration, wherein EESL not only guarantees a minimum energy saving (usually of 50%) but also provides free replacements and maintenance of lights at no additional costs to the municipality. In this scheme, EESL's investment is recovered through the long terms energy savings resulted by the new street lights. As of March, 2016, SLNP scheme has been completed in 47 Urban Local Bodies (ULBs) and is going on 65 cities. More than 7,63,000 energy inefficient street lights have already been replaced with LED lights across the nation and continuous work is going on to change more. The overall annual energy savings estimated from the completed cities is about 10,11,81,263 kWh. The combined reduction of CO2 emissions taken from completed ULBs of different states is about 260 tonnes. EESL's methodology for efficient street lighting benefits municipalities by reductions in energy and maintenance costs.
- **Agriculture Demand Side Management (AgDSM):** India's agricultural sector takes about 18% of the total national electricity consumption. As per the Central Electricity Authority (CEA), there are about 20.27 million pump sets installed in agricultural sector. Here, it was observed that a vicious circle of unreliable power supply and usage of sub-standard pump sets in response were continually burdening the electrical grid. As electricity supply is inconstant in the rural regions, the farmers frequently have to spend money on pump repairs. This results them to react by adopting rugged, locally manufactured pumps, which are highly inefficient but pose a better option than purchasing a new pump set each time. While the electricity tariff remains subsidized or

free in the agricultural sector, the need for farmers to use energy efficient pumps gets further reduced. Thus, this challenge of high energy demand due to organised use of inefficient agricultural pumps further burdens the supply and continues to damage the equipments (pumps). In the only move, which can pull everyone out of this entrapment, EESL stood to the calling and introduced the mega-initiative of Agricultural Demand Side Management (AgDSM) to provide farmers with energy efficient pump sets. Here, EESL enters into an understanding with the farmers and DISCOMs to provide with free BEE star labeled pump set and later recover its investment through received energy savings. The move initiates the change at the point where it all begins and is needed the most. Under AgDSM, about 4,423 pump sets have already been replaced in Andhra Pradesh and Karnataka combined. The AgDSM initiative has resulted in estimated savings of about 229.7 lakh kWh of electricity per annum. It is observed that the energy efficient BEE star labeled pumps provided to the farmers have the potential to improve the efficiency by 25-37% when compared to old energy inefficient pumps. In the above regions of Andhra Pradesh and Karnataka, it was noted that well designed and targeted DSM programmes have proven to set examples and can be replicated at a large scale. This opportunity not only reduces the costs of Government and the farmers, but also holds the potential of transforming into a big business opportunity, where investments can be recovered through monetary energy savings. The above mentioned successful projects of AgDSM have reinforced the thought that investment in agricultural pump sets efficiency can payback in a short time duration. Notably, this programme is reducing the electrical consumption along with minimising the subsidy burden of the Government. In order to accelerate the implementation of BEE's AgDSM scheme, EESL has taken steps for implementation of AgDSM projects all over India. EESL has conducted a survey and study for implementation of AgDSM.

- **EESL's Buildings Efficiency Programme:** The way to sustainable future lies in having smart infrastructure, that consumes less energy yet works better than the existing setup. It has been estimated that on an average a building wastes about 30% of energy and if nothing was ever done to improve its efficiency, there is lot of room to bring about a big change. What if we devise methods to secure the 30% energy loss in buildings and not let it go waste? The obtained savings can be used to add to the energy production and help to realise the dream of 24 X 7 uninterrupted power supply. In a fresh move to initiate this change, Government of India appointed EESL to not only help make the existing buildings energy efficient but also improve their overall energy performance. To start with, EESL began installing energy efficient lighting in government buildings that have not only improved the overall energy consumption but is also giving out a better lighting output. This project is fired by the inculcation of Buildings Management Systems or the BMS, which provides a comprehensive view into building's energy consumptions through data driven live reports. The BMS is supported by a user-friendly software system that exhibits energy trend analysis and helps to optimize energy management strategies to further reduce the operational costs. EESL's buildings programme has successfully been completed at Niti Ayog, Shram Shakti Bhawan, India Habitat Center, UPSC building, IP Bhawan along with others. Currently, work is being carried out in more than 18 buildings to make them more energy efficient. It was observed that on an average, EESL has successfully received energy savings of about 19% in its completed buildings projects.

- **National Energy Efficient Fans programme (NEEFP):** EESL has recently started with its efficient fans programme based on the patterns of UJALA scheme. Under NEEFP, EESL aims to replace over 35 crore inefficient fans by BEE 5 star labeled energy efficient fans by 2018. Currently, the scheme has been implemented in the state of Andhra Pradesh (AP) and Uttar Pradesh (UP). In AP, EESL plans to distribute nearly 2 lakh fans to the consumers and in Uttar Pradesh over 3 Lakh fans will be distributed. EESL has distributed about 16,256 energy efficient fans in Andhra Pradesh and about 3,276 fans in Uttar Pradesh. Distribution in both regions is currently ongoing. Preliminary discussions with the Government of Rajasthan and Government of Bihar are underway. EESL plans to expand the operations of the scheme throughout India.

### 3. Small Industries Development Bank of India (SIDBI)

The Small Industries Development Bank of India (SIDBI), set up on April 2, 1990 under an Act of the Indian parliament, is the principal financial institution for the promotion, financing and development of the Micro, Small and Medium Enterprise (MSME) sector and for coordination of the functions of the institutions engaged in similar activities.

The business domain of SIDBI consists of Micro, Small and Medium Enterprises (MSMEs), which contribute significantly to the national economy in terms of production, employment and exports. MSME sector is an important pillar of the Indian economy as it contributes greatly to its growth, with a vast network of around 3 crore units, creating employment for about 7 crore people, manufacturing more than 6,000 products, contributing about 45% to manufacturing output and about 40% of exports, directly and indirectly. In addition, SIDBI's assistance also flows to the service sector including transport, health care, tourism sectors etc.

#### **Partial Risk Sharing Facility for Energy Efficiency (PRSF)**

The Indian financial sector boasts of strong and mature financial institutions (FIs) with considerable liquidity in the market. However, there are perceived risks in the mind of FIs which impede investments in energy efficiency (EE) opportunities in general, and to lending to ESCOs in particular. Demonstration of ESCO-based EE transactions through this project – Partial Risk Sharing Facility (PRSF) for energy efficiency projects – would help alleviate the perceived risks, assist the market actors like ESCOs to have better access to finance, mobilize commercial financing for EE investments across various demand side sectors and thereby trigger large-scale EE market transformation. Partial Risk Sharing Facility (PRSF) provides guarantees to the Participating Financial Institutions (PFIs) i.e., Banks/FIs/NBFCs for the energy efficiency loans extended by them through Energy Service Companies (ESCOs). The project has a total outlay of USD 43 million consisting of the “Risk Sharing Facility for Energy Efficiency” component of USD 37 million and technical assistance component of USD 6 million.

The entire “Risk Sharing Facility” component of USD 37 million is managed by SIDBI, under which partial credit guarantees are provided to cover a share of default risk faced by Participating Financial Institutions (PFI) in extending loans to eligible EE projects implemented through ESCOs. The technical assistance component of USD 6 million are managed by SIDBI and EESL, under which capacity building activities and other developmental/operational support for the project are provided. The World Bank is the project implementing agency.

#### 4. National Institution for Transforming India (NITI) Aayog

NITI Aayog is a Government of India policy think-tank established by replacing the Planning Commission. The stated aim for NITI Aayog is to foster involvement and participation in the economic policy-making process by the state governments.

One of the important mandates of NITI Aayog is to bring cooperative, competitive federalism and to improve centre state relations. Three sub-groups of chief ministers have been appointed for making recommendations in three important areas (centrally sponsored schemes, skill development and Swachh Bharat). NITI Aayog is supposed to provide opportunities to represent the economic interests of the state governments and union territories of India.

NITI Aayog has also been entrusted with the role to coordinate 'Transforming our World: the 2030 Agenda for Sustainable Development' (called SDGs). Moving ahead from the Millennium Development Goals (MDGs), SDGs have been evolved through a long inclusive process for achievement during 2016-2030. The SDGs cover 17 goals and 169 related targets resolved in the UN Summit meet of 25-27 September 2015. These SDGs will stimulate, align and accomplish action over the 15-year period in areas of critical importance for the humanity and the planet.

- **India Energy Security Scenarios, 2047 (IESS):** IESS, 2047 has been created with a shared conviction of NITI Aayog and the energy research community, of the value that intellectual advice adds to energy policy. The IESS, 2047 has been developed expressly as an energy scenario building tool. The guiding ambition of this is to develop energy pathways leading up to the year 2047, comprising of likely energy demand and supply scenarios. The tool has been so developed, that it can create hundreds of scenarios with different combinations of levels/efficiencies of energy demand and supply sectors. Since the Excel model in the IESS, 2047 has the capability to aggregate both the energy demand and supply choices of the user, it is a handy tool to suggest measures to shift the energy pattern in such a way, that the country's energy security considerations are advanced.

The IESS, 2047 is also capable of generating information as to what percentage of the total energy supply (as per the pathway chosen by the user), will be met by imports. Hence, while the tool segregates the demand for energy by sectors, and the supply numbers by sources, it also generates energy import numbers by source, and aggregates the same to offer total energy imports under different scenarios. As the scenarios generated for different sectors are linear (either rising or falling, as the case may be), the graphic representation of the data sets is simple and easily understandable even by non-energy experts.

- **National Energy Policy:** On the policy front, NITI Aayog will be leading the exercise of proposing a new National Energy Policy (NEP) for the country. While energy efficiency is universally acknowledged as the cheapest, fastest and cleanest way to address sustainable growth through policy formulation, its full potential is often not realized because of a lack of awareness of its positive impact on economy and environment leading to inadequate importance in policy making and subsequent resource allocation. AEEE along with FICCI and LBNL gave policy recommendations for enhancing the current Energy Efficiency policy and implementation framework to realize such potential. The recommendations are based on the inputs from key stakeholders and experts during a workshop organized by LBNL, FICCI and AEEE in October 2015; and

should serve as an initial draft for further inputs from a wider set of stakeholders and experts.

- **State Capacity Building Programme:** NITI Aayog along with AEEE will take up Energy Efficiency programmes with State Designated Agencies.

## 5. Department of Science & Technology (DST)

The Department of Science & Technology (DST) was established with the objective of promoting new areas of Science & Technology (S&T) and to play the role of a nodal department for organising, coordinating and promoting S&T activities in the country. It has activities ranging from promoting high end basic research and development of cutting edge technologies as well as to service the technological requirements of the common man through development of appropriate skills and technologies. The activities of DST in the field of Energy Efficiency in India include:

- **Joint Clean Energy Research & Development Centre (JCERDC):** The overall aim of the JCERDC is to facilitate joint research and development on clean energy, to improve energy access and to promote low-carbon growth. To achieve this objective, the Indo-US JCERDC supports multi-institutional network projects using a public-private partnership model of funding. It is funded by the Indian Department of Science and Technology (DST) and Department of Biotechnology (DBT); and the U.S. Department of Energy (DOE). The programme is being administered in India by the Indo-U.S. Science and Technology Forum (IUSSTF). The total funding for 5 years is \$100 million.

### ***Priority Areas and Government Funding in Energy Efficiency***

*Energy Efficiency of Buildings : This programme will cover Energy Efficiency of Buildings (\$6.25 million over five years from each side) including building heating and cooling, cool roofs, advanced lighting, energy-efficient building materials, software for building design and operations, building-integrated photovoltaics, etc.*

### **U.S. - India Joint Centre for Building Energy Research and Development (CBERD):**

The U.S.-India Joint Centre for Building Energy Research and Development (CBERD) is engaged in collaborative research and promotion of clean energy innovation in the area of energy efficiency in buildings with measurable results and significant reduction in energy use. CBERD has its focus on the integration of information technology with building physical systems technology with an aim to bring energy efficiency in commercial and multi-family residential high-rise buildings.

CBERD is dealing with multiple aspects of building energy efficiency in a coherent manner. However for ease of carryout R&D it has divided the project into following six distinct yet inter-connected tasks.

- *Building energy model & energy simulation*
  - *Monitoring and energy benchmarking*
  - *Integrated sensors and controls*
  - *Advanced HVAC system*
  - *Building envelopes*
  - *Climate responsive design*
- **The Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships:** To address the need for human resource development and capacity building in the area of Building Energy Efficiency, the Department of Science and

Technology (DST) and the Indo-US Science and Technology Forum (IUSSTF) have developed a dynamic visitation programme between Indian and US institutions and premier universities. The BHAVAN fellowships are envisaged to create a sustainable and vibrant linkage between the two nations, as well as build long term Indo-American science and technology relationships.

- **Clean Energy Research Initiative (CERI):** The DST, under the Clean Energy Research Initiative (CERI), plans to initiate a programme to support Research and Development in the area of Habitat Energy Efficiency. The Programme envisages support to India specific outcome based research in the areas of energy efficient building envelop technologies, low energy cooling systems, daylighting and electric lighting, building automation and controls for energy savings; which can provide scientific weight to policy formulation and help devise procedures, codes and standards. The emphasis is to sponsor research towards scientific, engineering, design and technological solutions to overcome barriers to achieve energy efficiency.

## 6. Indian Renewable Energy Development Agency Limited (IREDA)

Indian Renewable Energy Development Agency Limited (IREDA) is a Mini Ratna (Category – I) Government of India enterprise under the administrative control of Ministry of New and Renewable Energy (MNRE). IREDA is a public limited government company established as a Non-Banking Financial Institution (NBFI) in 1987; engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy and energy efficiency/conservation with the motto: “ENERGY FOR EVER”

Types of energy efficiency projects financed are:

- Replacement / retrofit of selected equipment with energy efficient equipment
- Modification of entire manufacturing process
- Recovery of waste heat for power generation

## 7. Central Electricity Regulatory Commission (CERC)

The Central Electricity Regulatory Commission (CERC), a key regulator of the power sector in India, is a statutory body functioning with quasi-judicial status under section 76 of the Electricity Act 2003. CERC was initially constituted under the Ministry of Power’s Electricity Regulatory Commissions Act, 1998 for rationalization of electricity tariffs, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, and for matters connected to electricity tariff regulation.

The Commission intends to promote competition, efficiency and economy in bulk power markets, improve the quality of supply, promote investments and advise government on the removal of institutional barriers to bridge the demand supply gap and thus foster the interests of consumers.

## 8. Forum of Regulators (FOR)

The Forum of Regulators (FOR) was constituted vide notification dated 16th February, 2005 in pursuance of the provision under section 166(2) of the Electricity Act, 2003. It consists of the chairperson of Central Electricity Regulatory Commission (CERC) and the chairpersons of State Electricity Regulatory Commissions (SERCs). The chairperson of CERC is the chairperson of the forum.

In 2010, the Forum of Regulators (FOR) came out with a set of model regulations to assist State Electricity Regulatory Commissions (SERCs) in drafting state specific Demand Side Management (DSM) regulations. These model regulations provide guidelines for all the activities, ranging from planning and approval to evaluation of DSM in the states. These included:

- Assessing the technical potential of DSM
- Setting of targets
- Constitution and functioning of DSM cells in the utilities
- Preparation of base line data and formulation of DSM Plan
- Review and approval of the same
- Preparation and approval of DSM Programme Document
- Implementation schedule and prioritization for each DSM programme
- Monitoring and reporting
- Evaluation, measurement and verification (EM&V) of the programmes

## **9. Ministry of New & Renewable Energy (MNRE)**

The Ministry of New and Renewable Energy (MNRE) is the nodal ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country.

The role of new and renewable energy has been assuming increasing significance in recent times with the growing concern for the country's energy security. The Indian Renewable Energy Development Agency (IREDA) is a Non-Banking Financial Institution under the administrative control of this ministry for providing term loans for renewable energy and energy efficiency projects.

## **10. Ministry of Urban Development (MoUD)**

The Ministry of Urban Development (MoUD) is the apex authority of the Government of India for formulating policies, sponsor and support programmes, coordinating the activities of various central ministries, state governments and other nodal authorities and monitoring the programmes concerning all matters of urban development in the country. A Handbook on Service Level Benchmarking (SLB) has been developed and released by the MoUD. The principal objective of SLB rollout is to enable the Urban Local Bodies (ULBs) to access performance grants under the 13th Finance Commission (FC) allocations through compliance of the conditions in SLB.

MoUD's national rollout strategy aims to extend capacity building and handholding support to municipalities, municipal corporations and parastatals through the Administrative Staff College of India's (ASCI) Centre for Energy, Environment, Urban Governance & Infrastructure Development. They are providing hand-holding support to state SLB cells to enable the urban local bodies to commit to minimum level of service standards and define actions towards realizing these standards in a given timeframe.

## **11. Ministry of Micro, Small & Medium Enterprises (MSME)**

Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. MSMEs not only play a crucial role in providing large employment opportunities at comparatively lower capital cost than large enterprises; but also help in industrialization of rural & backward areas, thereby reducing

regional imbalances and assuring more equitable distribution of national income and wealth. MSMEs are complementary to large enterprises as ancillary units and this sector contributes enormously to the socio-economic development of the country.

The ministry implements the “Technology and Quality Upgradation Support to Micro, Small and Medium Enterprises (TEQUP)” which focuses on two important aspects, namely:

- Enhancing competitiveness of MSME sector through energy efficiency, and
- Product quality certification

The basic objective of this scheme is to encourage MSMEs to adopt energy efficient technologies and to improve product quality of manufacturing in MSMEs. Adopting energy efficient technologies curtails the cost of energy thereby reducing the production cost and increasing competitiveness.

Under this scheme, a capital subsidy of 25% of the project cost subject to a maximum of Rs. 10 lacs shall be provided to a registered MSME unit. While 25% of the project cost will be provided as a subsidy by the Government of India, the balance amount is to be funded through a loan from the Small Industries Development Bank of India (SIDBI) / banks / financial institutions. The minimum contribution as required by the funding agency will have to be made by the MSME unit.

## **12. Housing and Urban Development Corporation (HUDCO)**

The Housing and Urban Development Corporation Limited (HUDCO) is a government-owned corporation in India. One of the public sector undertakings, it is wholly owned by the Union Government and is under the administrative control of the Ministry of Housing and Urban Poverty Alleviation. It is mandated with building affordable housing and carrying out urban development. HUDCO’s mission is to promote sustainable habitat development to enhance the quality of life.

The main objective of the HUDCO ‘CSR Policy’ shall be to operate in an economically, socially and environmentally sustainable manner in consultation with its stakeholders so as to ensure upliftment of the marginalised and under-privileged sections of the society to promote inclusive socio-economic growth, empowerment of communities, capacity building, environment protection, promotion of green and energy efficient technologies, and development of backward regions by specially focusing on the projects related to habitat and benefit of the poor.

## **13. Ministry of Petroleum and Natural Gas (MOPNG) and Petroleum Conservation Research Association (PCRA)**

The ministry along with PCRA has the mandate to promote conservation of petroleum products in the major sectors of economy like transport, industry, households and the agriculture sector. PCRA has been instrumental in setting EE standards for LPG stoves, diesel generator sets, diesel based agricultural pump sets and passenger cars. PCRA activities focus on improvement in fuel efficiency through Energy Audit, Fuel Oil Diagnostic Study, Service to Small Scale Industry, Follow-up Study, and Institutional Training Program etc. In the F.Y. 2014-15 itself PCRA have been able to identify the energy saving potential of 1.14 million metric tons of oil equivalent through 322 energy audits. We may roughly take 60% of these realized, thus reaching about 0.69 million metric tons of oil equivalent (MTOE).

## State Designated Agencies

### List of State Designated Agencies

S. No.	Name of the State	Contact Address	URL
1.	Andhra Pradesh	V.C. & Managing Director, New & Renewable Energy Development Corporation of A.P. Ltd.,(NREDCAP) Andhra Pradesh 5-8-207/2, Pisgah Complex, Nampally, Hyderabad-500 001	<a href="http://www.nedcap.gov.in/">http://www.nedcap.gov.in/</a>
2.	Arunachal Pradesh	Director Arunachal Pradesh Energy Development Agency (APEDA) Urja Bhawan, Tadar Tang Marg Post Box No. 141, P.O. Itanagar-791 111, Dist. Papum Pare, Arunachal Pradesh	
3.	Assam	Chief Electrical Inspector-cum-Adviser Electrical Inspectorate Government of Assam Mahabhairab Building Pub Sarania Road Guwahati-781 003 Assam	<a href="http://www.asda.gov.in/">http://www.asda.gov.in/</a>
4.	Bihar	Director Bihar Renewable Energy Development Agency (BREDA), 3rd Floor, Sone Bhawan, Birchand Patel Marg, Patna – 800 001	<a href="http://www.breda.in/">http://www.breda.in/</a>
5.	Chhattisgarh	Director Chhattisgarh State Renewable Energy Development Agency (CREDA) 2nd Floor, CSERC Building, Shanti Nagar, Raipur	<a href="http://new.credacg.org/">http://new.credacg.org/</a>
6.	Gujarat	Director Gujarat Energy Development Agency (GEDA) 4th floor, Block No. 11 & 12 Udyog Bhavan, Sector-11, Gandhinagar - 382017 Gujarat	<a href="http://geda.gujarat.gov.in/">http://geda.gujarat.gov.in/</a>
7.	Goa	Chief Electrical Engineer Division - X (Trng. - cum - O&M), Electricity Department, Curti, Ponda, Goa - 403 401	
8.	Haryana	Director Renewable Energy Department ,Haryana &HAREDA, Akshay Urja Bhawan, Institutional Plot No.1, Sector 17 Panchkula – 134109 Haryana	<a href="http://www.hareda.gov.in/">http://www.hareda.gov.in/</a>
9.	Himanchal Pradesh	Director (Energy) Directorate of Energy(GoHP), Phase-III,Sector-VI,New Shimla Pincode -171009.	<a href="http://www.hpseb.com/">http://www.hpseb.com/</a>
10.	Jharkhand	Director Jharkhand Renewable Energy Development Agency(JREDA) 328/B, Road No.- 4, Ashok Nagar, Ranchi Jharkhand-834002.	<a href="http://www.jreda.com/">http://www.jreda.com/</a>

S. No.	Name of the State	Contact Address	URL
11.	Karnataka	Managing Director Karnataka Renewable Energy Development Limited (KREDL) 39, Shanthi Gruha, Bharath Scouts & Guides, Palace Road, Bangalore-560 001	<a href="http://kredl.kar.nic.in/Index.asp">http://kredl.kar.nic.in/Index.asp</a>
12.		Director Energy Management Centre - Kerala, Sreekrishna Nagar, Sreekaryam, Thiruvananthapuram – 695 017, Kerala	<a href="http://www.keralaenergy.gov.in/">http://www.keralaenergy.gov.in/</a>
13.	Madhya Pradesh	Managing Director M.P.Urja Vikas Nigam Limited (MPUVNL) Urja Bhawan, Link Road No. 2 Shivaji Nagar, Bhopal (Madhya Pradesh) - 462 016	<a href="http://www.mprenewable.nic.in/">http://www.mprenewable.nic.in/</a>
14	Maharashtra	Director General Maharashtra Energy Development Agency (MEDA) MHADA Commercial Complex, 2nd Floor, Opp. Tridal Nagar, Yerwada, Pune-411 006	<a href="http://www.mahaurja.com/">http://www.mahaurja.com/</a>
15.	Manipur	Chief Engineer (Power) Office of the Chief Engineer (Power) Secretariat: Power Department Government of Manipur Manipur	<a href="http://manipursda.nic.in/">http://manipursda.nic.in/</a>
16.	Meghalaya	Senior Electrical Inspector Inspectorate of Electricity, Government of Meghalaya, Horse Shoe Building, Lower Lachumiere, Shillong – 793 001, Meghalaya	<a href="http://www.msda.nic.in/">http://www.msda.nic.in/</a>
17.	Mizoram	Chief Electrical Inspector Power & Electricity Department Electrical Inspectorate Government of Mizoram Zuangtui, Aizawl – 796 017 Mizoram	<a href="http://www.sdamizoram.com/">http://www.sdamizoram.com/</a>
18.	Nagaland	Chief Electrical Inspector Old Assembly Secretariat Near Old Assembly Hostel Kohima-797001, Nagaland. Tel Fax-- 0370-2292200	<a href="http://www.nstda.co.in/">http://www.nstda.co.in/</a>
19.	New Delhi	OSD Energy Efficiency And Renewable Energy Management Centre 2nd Floor, E-Block, Vikas Bhawan - II, Near GPO Building, Civil Lines, New Delhi-110055	
20.	Orissa	EIC(E)-cum-PCEI & SDA Orissa Unit – V, Power House Square, Bidyut Marg, Bhubaneswar Orissa-751 001	<a href="http://www.sdaodisha.org/">http://www.sdaodisha.org/</a>
21.	Punjab	Director Punjab Energy Development Agency (PEDA) Solar Passive Complex, Plot No. 1-2, Sector 33-D, Chandigarh (U.T.)-160 034	<a href="http://peda.gov.in/">http://peda.gov.in/</a>

S. No.	Name of the State	Contact Address	URL
22.	Rajasthan	Chairman & MD Rajasthan Renewable Energy Corporation Ltd (RRECL) E-166, Yudhishtir Marg, C-Scheme, Jaipur-302 005	<a href="http://www.rrecl.com/">http://www.rrecl.com/</a>
23.	Sikkim	Additional Chief Engineer cum Nodal Officer Sikkim SDA Energy & Power Department Government of Sikkim Gangtok	
24.	Tamil Nadu	Chief Electrical Inspector to Govt of Tamil Nadu Electrical Inspectorate Department Government of Tamil Nadu Thiru Vi.Ka. Industrial Estate, Guindy, Chennai-600 032	<a href="http://www.tnei.tn.gov.in/">http://www.tnei.tn.gov.in/</a>
25.	Tripura	General Manager (Technical II) Tripura State Electricity Corporation Ltd. (TSECL) Bidyut Bhavan North Banamalipur Agartala – 799 001 Tripura	<a href="http://www.sdatripura.in/">http://www.sdatripura.in/</a>
26.	Uttarakhand	Director Uttarakhand Renewable Energy Development Agency (UREDA) Urja Park Campus, Industrial Area Patel Nagar, Dehradun-248001 (Uttarakhand)	<a href="http://ureda.uk.gov.in/">http://ureda.uk.gov.in/</a>
27.	Uttar Pradesh	Managing Director Uttar Pradesh Power Corporation Ltd (UPPCL) 3rd Floor, Shakti Bhawan Extn, 14, Ashok Marg, Lucknow - 226 001	<a href="http://www.uppcl.org/">http://www.uppcl.org/</a>
28.	West Bengal	Director (Regulatory & Trading) & Chairman ECAT West Bengal State Electricity Distribution Co. Ltd. (WBSSEDCL) Vidyut Bhawan, 4th Floor, Block-DJ, Sector II Bidhanagar (Salt Lake), Kolkata-700 091	<a href="http://www.wbsedcl.in/">http://www.wbsedcl.in/</a>
29.	Andaman & Nicobar	Andaman & Nicobar SDA Electricity Department, A&N Administration Vidyut Bhawan, Port Blair – 744 101	<a href="http://electricity.and.nic.in/">http://electricity.and.nic.in/</a>
30.	Chandigarh	SE (Electrical) Electrical Circle, Room No. 523, 5th Floor, Deluxe Building, U.T Sectt. Sector 9-D, Chandigarh-160 009	
31.	Lakshadweep	Superintending Engineer Electricity Division Office Union Territory of Lakshadweep, Kavaratti-682 555	<a href="http://www.lakpower.nic.in/">http://www.lakpower.nic.in/</a>
32.	Pondicherry	Project Director Renewable Energy Agency of Pondicherry No. 10, Second Main Road, Elango Nagar, Puducherry - 605 011	<a href="http://www.pon.nic.in/">http://www.pon.nic.in/</a>
33.	Jammu & Kashmir	Principal Secretary to Government Power Development Department, Civil Secretariat, Srinagar Jammu & Kashmir	



# **MULTILATERAL-BILATERAL ORGANISATIONS**

## Bilateral Organizations

### 1. US-India Energy Cooperation <sup>1</sup>

The United States and India have a long and successful strategic partnership in the energy sector. The energy cooperation between the two countries, which is technical, economic, and bilateral, is strengthening year on year.

In November 2009, the United States and India launched the Partnership to Advance Clean Energy (PACE), which is working to accelerate inclusive, low carbon growth by supporting research and deployment of clean energy technologies. During their first bilateral summit in September 2014, Indian Prime Minister Narendra Modi and U.S. President Barack Obama announced a commitment to strengthen and expand PACE through a series of priority initiatives. When the two leaders met again in January 2015, they announced several new activities under PACE.

Over the past year, India has revised its renewable energy target to 175 GW by 2022. The national solar target was scaled up by five times, reaching 100 GW by 2022, of which 40 GW is expected to come from solar rooftop. The activities of the PACE initiative are aligned to support India's ambitious clean energy targets.

In order to track progress of the various levels of bilateral engagement on energy, the U.S. – India Energy Dialogue is convened annually. In addition, the United States engages India in the multilateral Clean Energy Ministerial forum.

#### *a) United States Department of Energy*

US Department of Energy partners with Government of India ministries directly and with its laboratories to provide bi-lateral technical assistance support by working closely with Ministry Of Power, Coal And New And Renewable Energy and Department of Science and Technology.

#### **Center for Building Energy Research and Development<sup>2</sup>**

The bilateral US-India Joint Center for Building Energy Research and Development (CBERD) is a five-year programme (2013-2017) is administered by the US Department of Energy (U.S. DOE) and the Government of India's, Department of Biotechnology (DBT), and Department of Science and Technology (DST) with the support of the Indo-US Science and Technology Forum (IUSSTF). The bilateral US-India Joint Center for Building Energy Research and Development (CBERD) programme brings together multidisciplinary expertise from eleven leading research and academic institutions in India and the U.S. to conduct collaborative research to promote energy efficiency innovations. CBERD lead Research and Development organizations are Lawrence Berkeley National Laboratory and Centre for Environmental Planning and Technology University (CEPT University). The R&D consortium collaborates with over two dozen industry partners to create a dynamic public-private partnership, with the goal of promoting clean energy innovation in energy efficiency with measurable results and significant reduction in energy use in both nations through this strong foundation of collaborative research and development.

#### **Accelerating Energy Efficiency in Indian Data Centers**

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<sup>1</sup> <http://energy.gov/ia/initiatives/us-india-energy-cooperation>

<sup>2</sup> [www.cberd.org](http://www.cberd.org)

The initiative is jointly funded by the US Department of Energy and U.S. Department of State, is being jointly led by the Lawrence Berkeley National Laboratory and Confederation of Indian Industry (CII) under the overall guidance of the Bureau of Energy Efficiency. The focus is to implement an energy efficiency standard for Indian data centers in the context of existing policy (e.g., ECBC, PAT) through in-depth consultation with a broad Data Center Stakeholder Consultative group.

### **US-India Energy Smart Cities activity on Electric Vehicles**

USDOE will support the Lawrence Berkeley National Laboratory to engage with several partners to deliver a cohesive analytical technical assistance package to support specific policies and programmes under the National Missions on Smart Cities and Electric Mobility. The work will help the Govt of India design an effective EV incentive policy package and assist the Govt of India in investing its funds on EV charging infrastructure in an optimal manner to get maximum EV adoption.

### **Technical Assistance on Standards and Labeling Programme and the RAC Challenge Initiative**

USDOE is supporting Lawrence Berkeley National Laboratory and CLASP to provide technical assistance to the Bureau of Energy Efficiency for its Standards and Labeling programme and the AC Challenge initiative.

### ***b) United States Agency for International Development (USAID) India***

The United States Agency for International Development (USAID) partners with India to address critical development challenges through various programmes of the U.S. Government. These include Feed the Future, Global Health and Global Climate Change initiatives. USAID is supporting India in accelerating its transition to a low emission and energy secure economy through clean energy partnerships. The Partnership to Advance Clean Energy (PACE) programme has mobilized \$2.38 billion in public and private sector resources for projects such as “net zero” energy buildings, smart grids and more efficient heating, ventilation and air conditioning systems in India.<sup>3</sup>

### **Partnership to Advance Clean Energy (PACE-D)**

In 2009, the United States and India launched the Partnership to Advance Clean Energy (PACE), to accelerate inclusive, low carbon growth through research and deployment of clean energy technologies. PACE includes three components: Research (PACE-R), Deployment (PACE-D), and Off-grid Energy Access (PEACE). The PACE-D Technical Assistance Programme serves as the Secretariat to the overall PACE initiative. As part of its secretariat role, the Programme provides coordination and support to the different U.S. agencies that are implementing clean energy programmes in India.<sup>4</sup>

### **Energy Conservation and Commercialization (ECO) Programme**

The Energy Conservation and Commercialization (ECO) Bilateral Project Agreement was signed between the Government of India (GOI) and the United States in January 2000 with the objective to enhance commercial viability and performance of the Indian energy sector as well as to promote utilization of clean and energy-efficient technologies in the sector. ECO phase I (ECO-I) helped India set up the Bureau of Energy Efficiency (BEE) to enforce the country's Energy Conservation Act of 2001. ECO-II helped agencies in a few targeted states develop energy conservation strategies and test new approaches through pilot projects. It also

<sup>3</sup> <http://newdelhi.usembassy.gov/usaidindia.html>

<sup>4</sup> <http://www.pace-d.com/about-us-2/>

contributed to the establishment of India's first energy efficiency (EE) codes for buildings. ECO-III (2006-2011) helped BEE develop and implement the Energy Conservation Building Codes (ECBC) and provided technical assistance to Government of Gujarat and Punjab, with an overall focus on improving energy efficiency in the building sector, developing capacity of states to implement large scale energy efficiency programmes in the municipal sector, and in establishing energy efficiency centers (CEPT University for buildings, SEE-Tech for EE in MSME and WBREDA for appliance energy efficiency), and developed a roadmap for Net Zero Energy Buildings in India.<sup>5</sup>

## 2. Indo-German Energy Programme (IGEN)

The Indo-German Energy Programme is implemented jointly by GIZ and KfW development bank, in cooperation with their Indian partners. The bilateral cooperation of India and Germany in the energy sector can be classified into three major areas, namely, Energy Efficiency (with Central Electricity Authority and BEE), Renewable Energy (with MNRE), and Policy Cooperation. Many of the programmes under these three thrust areas are multi-year initiatives, and include:

- Energy Efficiency: Demand side Energy Efficiency and Perform, Achieve, Trade (PAT)
- Rooftop Solar Power programme
- Renewable Energy (Comsolar- commercialization of solar in urban and industrial areas), Green Energy Corridors, Integration of renewable energy into Indian electricity system)
- Access to Energy (IGEN-ACCESS)

### a. GIZ India

For over 60 years, GIZ has been working jointly with partners in India, in sustainable economic, environmental and social development. GIZ, in close cooperation with Indian partners, offers tailor-made solutions to meet local needs. The key focal areas of Indo-German cooperation are:

- energy
- the environment
- sustainable economic development

### Regional energy efficiency programme South Asia

This programme provided capacity development measures for energy efficiency experts and multipliers. The programme was coordinated by the human capacity development unit of GIZ India, and worked in areas of energy management and auditing, financing of energy efficiency, as well as energy efficiency in brick making industry<sup>6</sup>.

### Indo-German Energy Forum (IGEF)

Indo-German Energy Forum (IGEF) was established in 2006 to promote energy dialogue, with the aim of intensifying and deepening Indo-German co-operation in the areas of: Energy Security, Energy Efficiency (EE), Renewable Energy (RE), Investment in energy projects, collaborative research and development. Sub-groups of this programme have been created as follows:

- Efficiency Enhancement in Fossil Fuel Based Power Plants
- Renewable Energies
- Demand-Side Energy Efficiency and Low Carbon Growth Strategies.
- Green Energy Corridors (Large scale grid integration of RE)

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<sup>5</sup> [www.eco3.org](http://www.eco3.org)

<sup>6</sup> <https://giz.de/en/worldwide/16917.html>

The German Ministries (BMZ, BMUB and BMWI) and government agencies (GIZ and KfW) have partnered in the energy sector with Indian ministries (MoP and MNRE), Indian government agencies (BEE and CEA) Indian financial institutions (IREDA and NHB), Indian utilities (NTPC)<sup>7</sup>.

### **Demand-Side Energy Efficiency and Low Carbon Growth Strategies**

The Indian Ministry of Power and the German Environment Ministry and the Ministry for Economics and Technology work together to exchange experiences towards developing enabling framework conditions for enhanced energy efficiency. Planned activities under the programme:

- Energy Efficiency in MSMEs: Roll-Out of an Award Scheme
- Promotion of ESCO Projects in Industries

### ***b.KfW India***

KfW is a German government-owned development bank, based in Frankfurt and it is supporting the Indian government in finding ways to pursue socially responsible yet climate-friendly growth. The support includes loans to promote renewable energies, energy efficiency, sustainable economic development, sustainable urban development and natural resource management.<sup>8</sup>

### **KfW energy-efficient housing in India**

KfW provided a 50 million EUR credit line to the Indian National Housing Bank (NHB) to refinance energy efficient homes. KfW launched a cooperation between Germany's Fraunhofer Institute for Building Physics (IBP) and India's "The Energy and Resources Institute" (TERI) in New Delhi in 2010 to develop a calculation model to determine the energy saving potential of residential buildings. The model calculates the total energy requirements of a building and energy savings via active energy efficiency measures such as air conditioning and lighting, and passive measures like wall insulation and using natural light. New buildings which achieve energy savings of at least 18 % through passive measures alone, and at least 30 % through a combination of active and passive measures can be certified and refinanced under the programme. All in all, these projects comprise more than 20,000 residential units which, combined, will consume around 40,000 megawatt hours less electricity and result in a reduction of almost 37,000 tonnes of carbon emissions every year<sup>9</sup>.

### **Energy efficiency in public buildings and infrastructure**

KfW has provided EESL with a reduced-interest loan amounting to EUR 50 million. The aim of this loan is to establish EESL's business model in India and support energy efficiency investments. The priority area in the programme is to modernize the country's street lighting to be replaced by energy efficient LED lights. ESSL also distributes LED lights at reduced prices to private households. The focus of KfW's programme on public buildings and infrastructure is complementing current financial cooperation projects, which promote energy efficiency in SMEs and private households. For example in switching public and commercial buildings to energy-saving cooling and lighting technology, the services range from experts' opinions, planning and financing, energy-saving measures<sup>10</sup>.

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<sup>7</sup> <https://energyforum.in>; <http://energyforum.in/>

<sup>8</sup> <https://www.kfw-entwicklungsbank.de>

<sup>9</sup> <https://www.kfw.de>

<sup>10</sup> <https://www.kfw-entwicklungsbank.de>

### 3. Swiss Agency for Development and Cooperation (SDC) - India

The Swiss Agency for Development and Cooperation (SDC) is Switzerland's international cooperation agency and has been a partner of India for more than fifty years. Since 2011, SDC's programme in India focuses specifically on the issue of climate change. Its overarching goal is to contribute to a climate compatible development in India. Therefore, SDC supports innovative climate change adaptation and mitigation projects, facilitates the generation and dissemination of knowledge and contributes to climate change related policy processes. Currently, SDC is supporting energy efficiency related projects in the areas of buildings, low carbon cement, MSMEs (micro, small and medium enterprises) in the foundry sector and energy-smart city development<sup>11</sup>.

#### **Indo-Swiss Building Energy Efficiency Project**

The Indo-Swiss Building Energy Efficiency Project (BEEP) is a bilateral cooperation project between the Ministry of Power (MoP), Government of India and the Federal Department of Foreign Affairs (FDFA) of the Swiss Confederation. The Bureau of Energy Efficiency (BEE) is the implementing agency on behalf of the MoP while the Swiss Agency for Development and Cooperation (SDC) is the agency in charge on behalf of the FDFA. The overall objective of the project is to reduce energy consumption in new commercial buildings and to disseminate best practices for the construction of low energy residential and public buildings. The project contributes to strengthening and broadening the Bureau of Energy Efficiency's (BEE) building energy conservation programme for the 12th Five-Year Plan. The project is of 5 years duration (2012-16)<sup>12</sup>.

### 4. Agence Française de Développement (AFD)

Agence Française de Développement is the operator for France's bilateral development finance mechanism. AFD supports the implementation of energy efficiency measures and renewable energy generation with various partners, private sector and public entities. AFD has partnered with SIDBI (Small Industries Development Bank of India) to promote access to credit for SMEs making investments to save energy. AFD also supports the energy service company (ESCO) Public EESL, through a funding of 50 million euros to promote investment in energy savings realized by public entities in the areas of lighting and public buildings. AFD is supporting several Indian public financial institutions through four credit lines "green" for a total amount of € 370 million. These financings are mostly accompanied by technical assistance, including market research, practical case studies and workshops. More than 450 energy efficiency and renewable energy projects 15 projects were funded at the end of 2015. the greenhouse gas emissions savings are estimated at 33 million tons of CO<sub>2</sub> eq.

#### **EESL- Supporting energy efficiency through innovative financial model**

EESL is the ESCO responsible for promoting the financing and implementation of energy efficiency projects for public entities (including municipalities). AFD provides funding to EESL 50 million enabling it to achieve some of the planned investments in its business plan for years 2015-2017. The project aims to:

- Finance investments in energy saving by public entities, primarily in the areas of public lighting and public buildings;
- Demonstrate the relevance of the ESCO model in India and support the growth of this market;

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<sup>11</sup> <http://beepindia.org/pdf/SDC-India-Brochure.pdf>

<sup>12</sup> <http://beepindia.org/content/indo-swiss-beep>

- Support the Indian government policy to promote the improvement of energy efficiency.

### **Improving the energy efficiency of Indian SMEs – SIDBI**

Indian SMEs, whose number is estimated at 46 million in 2015, represent over 45% of industrial production and 25% of the energy consumption of the Indian industry. They have a direct impact on both employment and on the energy sector. Small Industries Development Bank of India (SIDBI) was created by the Indian government to promote and ensure the refinancing of the SME sector. Recently, SIDBI has set as a strategic focus of business growth the green economy sector, including the promotion of energy efficiency and renewable energy. AFD granted a sovereign SDBI soft loan of € 50m to build a credit offer 'green' and to finance investments in energy-efficient equipment or for the production of renewable energy for consumption on site. Over 400 projects have benefited on whole territory and in various sectors, such as ceramics, textiles, foundry and metallurgy. The energy saved with this funding is estimated at 84.3 GWh / year<sup>13</sup>.

### **5. Department for International Development DFID India**

The Department for International Development (DFID) India is part of the British High Commission family. DFID India's focus areas are: supporting partner states in implementing comprehensive approaches to poverty-reduction, supporting effective provision of services to the poor, and supporting an enabling environment for economic growth<sup>14</sup>.

### **Research Councils UK India**

Research Councils UK (RCUK) India, launched in 2008, brings together the best researchers in the UK and India through high-quality, high-impact research partnerships. RCUK India has facilitated co-funded initiatives between the UK, India and third parties that have grown close to £150 million. The research collaborations are often closely linked with UK and Indian industry partners, with more than 90 partners involved in the research. Funding up to £5mn from the Technology Strategy Board, with matched resources from India's Department of Science Technology (DST) was announced for industrial R&D collaboration<sup>15</sup>.

### **Prosperity Fund India Programme**

The Prosperity Fund announced funds worth £1.3bn over the next 5 years, to promote economic reforms and development needed for growth in partner countries, including improving the business climate, competitiveness and operation of markets, energy and financial sector reforms. The prosperity fund offers targeted funding to create real, measurable outcomes which will benefit the prosperity of both the UK and India in support of the objectives like Increased energy efficiency for growth, emissions reduction and energy security, enhanced awareness of climate change and its impacts amongst policy makers– including urban transport, green buildings, energy efficient street lighting, waste and water management, and localised renewable energy<sup>16</sup>.

<sup>13</sup> <http://www.afd.fr>

<sup>14</sup> <http://www.globalhand.org/en/organisations/23257>

<sup>15</sup> <http://www.rcuk.ac.uk>

<sup>16</sup> <https://www.gov.uk/government/publications/prosperity-fund-india-programme>

## Multilateral Organizations

### 1. The World Bank

The World Bank Group's Partnership Strategy for India (2013-2017) will help India lay the foundations for achieving "faster, sustainable, and more inclusive growth" by offering an integrated package of financing, advisory services, and knowledge. Between July 2013-June 2014, funding for India was \$5.2 billion (\$2.0 billion in International Bank for Reconstruction and Development (IBRD), \$3.1 billion in International Development Association and \$0.1 billion in CTF or Clean Technology Fund) across 16 projects<sup>17</sup>.

#### **Partial Risk Sharing Facility (PRSF)**

The World Bank is facilitating support from the Clean Technology Fund (CTF) and Global Environment Facility (GEF) for a Partial Risk Sharing Facility (PRSF) aimed at kick-starting the Performance Sharing Contracting market for Energy Efficiency projects in India. This includes large scale private sector industries including PAT sector, Micro, Small and Medium Enterprises (MSMEs) and commercial buildings in India. The PRSF comprises of a risk-sharing fund corpus of US\$35 million implemented by SIDBI, a CTF contribution of US\$25 million and a GEF contribution of US\$10 million (Component 1) and a TA and capacity building component from a GEF component of US\$8 million, with US\$6 million implemented by SIDBI & US\$2 million implemented by EESL. The PRSF is proposed to be implemented through Small Industries Development Bank of India (SIDBI), a financial intermediary, a Project Executing Agency (PEA) along with a Technical Assistance (TA) component implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL)<sup>18</sup>.

#### **International Finance Corporation (IFC)**

IFC, a member of the World Bank Group, is the largest global development institution focused exclusively on the private sector in developing countries. IFC works with the private sector - advising them on environmental, social and governance standards, energy and resource efficiency, and supply chains. They provide access to critical finance for individuals and micro, small, and medium enterprises through their work with financial intermediary clients. Since 1956, IFC has invested in 346 companies in India, providing over \$10.3 billion in financing for its own account and \$2.9 billion in mobilization from external resources. As of June 30, 2014, IFC's committed portfolio in India stood at \$4.7 billion, making India IFC's largest portfolio exposure.

IFC is working with local municipal corporations to improve street lighting infrastructure and to reduce energy consumption. IFC's scope includes city's municipal corporation in designing, structuring, and managing the bid process to identify a private sector partner to manage the street lighting system<sup>19</sup>.

### 2. Clean Energy Ministerial<sup>20</sup>

The Clean Energy Ministerial (CEM) is a high-level global forum to promote policies and programmes that advance clean energy technology, to share lessons learned and best practices, and to encourage the transition to a global clean energy economy. Initiatives are based on areas of common interest among participating governments (including India) and other stakeholders.

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<sup>17</sup> <http://www.worldbank.org/en/country/india/overview#2>

<sup>18</sup> <http://www-wds.worldbank.org>

<sup>19</sup> <http://www.ifc.org/>

<sup>20</sup> <http://www.cleanenergyministerial.org>

CEM's work unites 23 participating CEM countries and the European Commission in efforts to improve energy efficiency, enhance clean energy supply, and expand clean energy access. Our work takes place through three main activities:

- High-level policy dialogue at annual ministerial meetings helps advance international collaboration to accelerate the adoption of clean energy policies and practices.
- Public-private engagement builds the industry, government, and civil society cooperation needed to scale up clean energy around the globe.

Year-round work through action-driven, transformative clean energy initiatives expands the deployment of clean energy technologies, policies, and practices.

Three CEM initiatives that are closely linked with promotion of energy efficiency at a global level are described below:

### **Super-Efficient Equipment and Appliance Deployment (SEAD)**

Appliance and equipment efficiency has enormous potential to reduce energy demand and carbon emissions while lowering energy costs for consumers, businesses, and institutions. SEAD partners are working to create a common technical foundation to allow governments to more easily adopt cost-effective appliance efficiency policies and programmes. Broader market transformation efforts—including incentives, awards, and procurement programmes—seek to further accelerate the global pace of progress for energy-efficient equipment and appliances. Scaled up globally, energy efficiency would cost about US\$0.02–US\$0.05 per kilowatt-hour saved, a fraction of the cost of clean energy from other sources. The Super-Efficient Equipment and Appliance Deployment (SEAD) initiative of the Clean Energy Ministerial and the International Partnership for Energy Efficiency Cooperation aim to make it easier for governments and the private sector to capitalize on these opportunities. As a direct result of cooperative work through the SEAD initiative, Korea and India have either adopted or proposed 13 standards and policies to advance the energy efficiency of lighting, televisions, and ceiling fans.

### **Electric Vehicles Initiative (EVI)**

EVI will enable progress toward this goal by: a) Encouraging the development of national deployment goals, as well as best practices and policies to achieve those goals; b) Leading a network of cities to share experiences and lessons learned from early EV deployment in urban areas and regions; c) Sharing information on public investment in research, development, and demonstration (RD&D) programmes to ensure that the most crucial global gaps in vehicle technology development are being addressed; d) Engaging private-sector stakeholders to better align expectations, discuss the respective roles of industry and government, and focus on the benefits of continued investment in EV technology innovation and EV procurement for fleets.

Electric vehicles hold significant potential for increasing energy security, reducing carbon emissions, and improving local air quality. Transportation accounts for about one-fifth of global energy use, and passenger vehicles account for about ten percent of energy-related carbon dioxide emissions. With the rapid rise in personal vehicle ownership around the globe, demand for fuel will continue to increase along with carbon emissions unless there is a shift in transportation. The Electric Vehicles Initiative (EVI) provides a forum for global cooperation on the development and deployment of electric vehicles (EVs). The initiative seeks to facilitate the global deployment of 20 million EVs, including plug-in hybrid electric vehicles and fuel cell vehicles, by 2020. EVI's [Global EV Outlook](#), [EV City Casebook](#), and [other](#) online resources provide policy makers and practitioners with information on leading-edge policies, incentives,

pilot projects, and innovative solutions to accelerate the global push toward cleaner, electrified transportation.

### **Global Sustainable Cities Network (GSCN)**

GSCN's overarching objectives are: a) to provide network members with unbiased information about policy, technology, and supplier performance in clean energy supply and energy efficiency; b) to introduce them to potential partners. Cities are responsible for much of the world's economic output, energy consumption, and carbon emissions, and they are therefore the arena where clean energy deployment is most likely and urgent. Energy efficiency has long been an opportunity area for cities, and it is now complemented by the increasing potential for cities to produce energy, which has been notably enabled by the falling cost of renewable energy. Through GSCN, participating governments are collaborating on groundbreaking sustainable city initiatives. GSCN is focusing initially on waste-to-energy and demand-side management efforts, and it has released country snapshots and convened workshops to share national experiences and evaluate policy and technology options for enhancing market growth and cross-investment in these two areas.

### **Advanced Cooling Challenge**

Electricity demand for air conditioning is huge—and getting bigger every day. For example, the additional electricity demand generated by new in-room air conditioners purchased between 2010 and 2020 is projected to grow to more than 600 billion kilowatt-hours globally by 2020. This growth poses a challenge to electricity grids already struggling to satisfy existing demand. The Advanced Cooling Challenge campaign urges governments and industry to develop and deploy at scale super-efficient, smart, climate-friendly, and affordable cooling technologies that are critical for prosperous and healthy societies.

The AC Challenge's founding members include the United States, India, China, Canada, and Saudi Arabia who have committed to implementing policies to stimulate demand through energy efficiency labeling and promotion efforts, procurement and energy efficiency challenges and prizes, or other market transformation programs. CEM calls on other governments and businesses to enter the AC Challenge and make their own commitments. Many companies and businesses have already responded to the Call-to-Action issued by the CEM AC Challenge, including: Ingersoll Rand, Honeywell, Danfoss, Goodman, Daikin Applied, and the San Francisco International Airport. The AC Challenge also received supporting commitments from leading organizations, including the Children's Investment Fund Foundation, the Institute for Governance and Sustainable Development, the ClimateWorks, the Natural Resources Defense Council, and the United Nations Environment Programme

### **3. Asian Development Bank**

The country partnership strategy (CPS), 2013-2017 for India supports its 12th Five Year Plan to create jobs for youth, enhances ongoing investment reforms, and improves infrastructure in critical areas, such as energy, transport, urban services and water. The partnership focuses on placing people at the heart of development by creating skills that will allow youth to secure better jobs and wages, and then on companies, the main creators of these jobs. The strategy combines physical investments with knowledge products to target emerging issues like urbanization, water scarcity, climate change, emission controls, internet connectivity, vocational training, and development of capital markets<sup>21</sup>.

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<sup>21</sup> <http://www.adb.org/countries/india/strategy>

#### 4. United Nations Industrial Development Organization (UNIDO)

UNIDO is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. Its mission is to promote and accelerate inclusive and sustainable industrial development (ISID) in developing countries and economies in transition<sup>22</sup>.

#### **GLOBAL CLEANTECH INNOVATION PROGRAMME for SME's in INDIA**

The Global Cleantech Innovation Programme (GCIP) for small- and medium-sized enterprises (SMEs) leverages the power of entrepreneurship to address the energy, environmental and economic problems. GCIP delivers both environmental benefits and economic vitality and it empowers entrepreneurship and local initiatives. Each country receives funds worth USD 1 million to USD 2 million from the Global Environment Facility. The Cleantech Open Programme was launched by the Ministry of MSME in partnership with United Nations Industrial Development Organisation (UNIDO) for promoting Innovations in the Indian SMEs in clean technologies. The programme focuses on mentoring and investor interface and will be of immense use for a SME innovator in the innovator entrepreneur ecosystem<sup>23</sup>.

#### 5. United Nations Development Programme (UNDP)

The United Nations Development Programme (UNDP) is headquartered in New York City, and it provides expert advice, training, and grants support to developing countries, with increasing emphasis on assistance to the least developed countries. UNDP has worked in India since 1951 in areas of human development, from democratic governance to poverty eradication, to sustainable energy and environmental management<sup>24</sup>.

#### **Energy Efficiency in Buildings**

UNDP collaborated with the Ministry of Power, Government of India, to implement the UNDP-GEF-BEE project 'Energy Efficiency Improvements in Commercial Buildings,' to operationalise the Energy Conservation Building Code (ECBC) across Indian states. This initiative enhanced the institutional capacities of State Designated Agencies (SDAs) to expand the compliance of ECBC and demonstrate model energy efficient commercial buildings in different climatic zones of the country<sup>25</sup>.

#### 6. SE4ALL

The Sustainable Energy for All initiative is a multi-stakeholder partnership between governments, and the private sector. Launched by the UN Secretary-General in 2011, it has three objectives:

- Ensure universal access to modern energy services.
- Double the global rate of improvement in energy efficiency.
- Double the share of renewable energy in the global energy mix.

Affordable renewable energy technologies bring modern energy services to rural communities where extension of the conventional power grid is prohibitively expensive and impractical. Energy efficiency can provide substantial cost savings to governments, businesses and

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<sup>22</sup> <http://www.unido.org/who-we-are/unido-in-brief.html>

<sup>23</sup> <http://www.unido.org/>

<sup>24</sup> <http://www.in.undp.org/content/india/en/home/ourwork/overview.html>

<sup>25</sup> [http://www.undp.org/content/dam/india/docs/ICEEB%202015\\_Compendium.pdf](http://www.undp.org/content/dam/india/docs/ICEEB%202015_Compendium.pdf)

households, while freeing up power for other more productive uses. Achieving the three objectives together will maximize development benefits and help stabilize climate change over the long run<sup>26</sup>.

## 7. Efforts of European Union

### *Joint Declaration between the European Union and the Republic Of India on a Clean Energy and Climate Partnership*

In 2012, a Joint Declaration for Enhanced Cooperation on Energy between the EU and the Government of India was signed to prevent and adapt to climate change. This was updated in 2016, and it includes:

- Further policy development on Energy Efficiency in buildings, including the deployment of experts for implementation of the Energy Efficiency in Buildings Codes in 4 Indian States.
- Support to India's solar mission including technical studies necessary for the development of large scale solar parks, focus on grid integration and advocating global collaboration in R & D.
- Development of cooperation established on smart grids, including through exchanges on policy development, technical exchanges and study visits<sup>27</sup>.

## 8. SAARC Energy Centre<sup>28</sup>

South Asian Association for Regional Cooperation (SAARC) was created in 1985 with its Secretariat in Kathmandu, Nepal. Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka are the proud Members of this Association. The SAARC Secretariat is supported by Regional Centres established in Member States to promote regional cooperation.

Sixteenth SAARC Summit (Silver Jubilee Summit) held in Thimphu, 28-29 April 2010 attached utmost importance on energy especially the energy conservation in the region. The Silver Jubilee Declaration "Towards a Green and Happy South Asia" adopted by the leaders directed SAARC Energy Centre to create a web portal on Energy Conservation for exchange of information and sharing of best practices among SAARC Member States. India is a founder member of this center and working on few areas with BEE, NTPC, CEA and NHPC since 2014.

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<sup>26</sup> [http://www.se4all.org/sites/default/files/l/2014/12/fp\\_se4all\\_overview.pdf](http://www.se4all.org/sites/default/files/l/2014/12/fp_se4all_overview.pdf)

<sup>27</sup> <http://www.consilium.europa.eu/en/workarea/downloadAsset.aspx?id=40802210426>

<sup>28</sup> <http://www.saarcenergy.org/>

# **FINANCIAL INSTITUTIONS AND SCHEMES**

## Financial Institutions

### 1. EEFP (Energy Efficiency Financing Platform)

The aim of Energy Efficiency Financing Platform (EEFP) is to overcome barriers to financing of energy efficiency projects through risk sharing strategies and capacity up-gradation of financial institutions. That is, EEFP aims to create a mechanism towards mainstream financing of energy efficiency projects. In 2010, The Bureau of Energy Efficiency (BEE) and The Hongkong and Shanghai Banking Corporation Limited, India (HSBC India) signed a Memorandum of Understanding (MOU) to work closely for the Energy Efficiency Financing Platform (EEFP). In subsequent years, BEE signed MOUs with PTC India Ltd; SIBDI; Tata Capital and IFCI Ltd to promote financing of Energy Efficiency projects.

In May 2015, BEE signed a MoU with Indian Banks Association for the Training Programme for Scheduled Commercial Banks on Energy Efficiency Financing. The training covers modules/presentations required for the understanding of energy efficiency projects and their characteristics, and it aims to help in technical/financial evaluation of EE projects. BEE also organized training of trainers workshops in June 2015 that focused on building the capacity of loan officers and risk managers and provide an overview on the technical and economic characteristics of EE projects, business models, financing needs, and risk management approaches. A report titled “Success Stories of Energy Efficiency Projects Financed in India” had been developed by SIBDI and India SME Technology Services Ltd. in 2015, that highlights 50 case studies of EE Financing for projects<sup>29</sup>.

### 2. Tata Capital Cleantech Limited and IFC

Tata Capital Cleantech Limited (TCCL) is a joint venture between Tata Capital Limited and International Finance Corporation (IFC), a member of the World Bank Group. TCCL is a focused initiative to assist, via financing and advisory services, companies that promote clean technology. TCCL will focus on the following key areas:

- Energy Efficiency
- Renewable energy generation projects, such as wind power, small hydro power, solar power, bio-mass and waste treatment
- Water management projects
- Projects that aid carbon footprint reduction

In April 2016, TCCL and IREDA (India Renewable Energy Development Agency) signed a MOU that will allow TCCL to take over IREDA’s renewable energy project portfolio and “help both share opportunities, distribute risks and leverage their underwriting capacities.” TCCL and IREDA will also implement consortium financing<sup>30</sup>.

### 3. ICICI Bank Limited

In 2012, the Asian Development Bank provided a \$100-million credit line to ICICI Bank to fund renewable energy and energy efficiency projects. The credit will be available to projects identified by the ADB and ICICI Bank. This is taking into consideration Indian Government objectives and overall impact assessment, according to ADB. The bank’s support will help in developing renewable energy and energy efficiency in priority sectors. It will also catalyse local

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<sup>29</sup> <http://www.businesswireindia.com>, <http://www.kxsd.org/>, <https://beeindia.gov.in/content/eefp>, <https://beeindia.gov.in>

<sup>30</sup> <http://online.tatacapital.com/CleantechFinance/AboutUs.htm>, <http://articles.economictimes.indiatimes.com>

commercial bank financing to support the development of smaller and medium-size renewable energy and energy efficiency projects that are too small for ADB to support on a project-by-project basis<sup>31</sup>.

#### **4. SIDBI (Small Industries Development Bank of India)**

Sidbi has several financial incentive schemes for energy efficiency projects, noteworthy of which are:

- A SIDBI-JICA line of credit for energy efficiency projects
- SMILE Scheme- a soft term loan of upto INR 10 million (Rupees 1 Crore) for capital improvement projects that will improve the energy efficiency of businesses.

#### **5. YES Bank**

YES BANK had committed to target funding 500 MW of clean energy every year at the UN Climate Summit in New York in 2014 and topped the target with funding for 1,100 MW of projects in that year. YES BANK was also the first bank to give the “Green Energy Commitment” to the Govt. of India during RE-INVEST 2015, for financing 5,000 MW of renewable energy projects in 5 years.

In February 2015, YES BANK became the 1st Bank in India to issue a Green Infrastructure Bond with an issue size of INR 1,000 Cr (oversubscribed 2x). This was followed by INR 315 Crore Green Bond issuance in July 2015, subscribed by IFC Washington, marking IFC’s first investment in an Emerging Markets Green Bond and was subsequently listed on the London Stock Exchange in August 2015. In January 2016, YES BANK also formalized its MoU with the London Stock Exchange (LSEG) to develop bonds and equity issuances, with a particular focus on the relatively untapped sector of Green Infrastructure Finance. As part of the agreement with LSEG, YES BANK announced that it plans to list a Green Bond of up to USD 500 Million on London Stock Exchange by December 2016.

YES BANK has financed over 2,000 MW of renewable energy projects in 2015 through underwriting, co-financing, refinancing, securitization, and several other innovative financing structures including underwriting India’s first IIFCL-ADB backed Credit Enhanced, secured listed & rated NCDs in the solar energy sector<sup>32</sup>.

#### **6. Foundation for MSME Clusters**

Foundation for MSME Clusters works for development of MSMEs through cluster development approach. Areas of focus include productivity & competitiveness, energy efficiency, business responsibility, policy & research, common infrastructure development, training & capacity building, marketing and innovation.

In collaboration with FMC, European Union, UNIDO, GIZ, GRI, IICA and SIDBI, the initiative ‘Scaling Up Sustainable Development of MSME Clusters in India’ aims to support MSME clusters in India, enabling the adoption of sustainable environment and social business practices<sup>33</sup>.

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<sup>31</sup> <http://www.thehindubusinessline.com>

<sup>32</sup> <https://www.yesbank.in>

<sup>33</sup> <https://www.yesbank.in>, <http://fmc.org.in/services/>, <http://fmc.org.in/productdemo/?q=46>

## Financial Schemes

### 1. Infrastructure Debt Funds by Non Banking Financial Companies (NBFCs)

In April 2016, the Reserve Bank of India (RBI) allowed Infrastructure Debt Fund-non banking financial institutions (IDF-NBFCs) to raise up to 10% of their total outstanding borrowings through shorter tenure bonds and commercial papers. These funds can be invested in public-private partnership projects without a government-backed authority. As a result, even private infrastructure projects can raise and receive funds, provided they have completed at least one year of satisfactory commercial operations. According to analysts estimates, about INR 12,000 Crores of renewable energy projects will be up for refinancing in the next few quarters<sup>34</sup>.

### 2. Financing of Energy Audits and Energy Efficiency projects by Banks

Under the UN Foundation support, and coordinated by UNEP, and designed by the World Bank (ESMAP group), the three countries initiative between Brazil, China and India was launched in 2002. Several Banks in India collaborated under this programme, and five Banks – State Bank of India, Bank of Baroda, Canara Bank, Indian Bank and Union Bank of India launched energy efficiency financing scheme with internal board approvals. Under this programme, Banks were supported by World Bank to share up to 50 percent of the Energy Audit costs, as well as to lend at a 1% lower interest rate investment in implementing energy efficiency. The objective was to sensitise banks to the benefit of cash-flow based energy efficiency and ESCO financing, and to create a funding base to activate the ESCO industry in India. The top-management among five banks mentioned above, had begun to view energy efficiency as a potential business opportunity with short payback. However, fast growth of the energy efficiency financing was constrained by lack of awareness and clarity at the operational level of the banks.

### 3. Energy Efficiency Services Limited- Supporting energy efficiency through innovative financial models

EESL has devised various innovative financial models for extending its energy efficiency services in the Indian market. These include the ESCO model, On Bill Financing (OBF), the state subsidy method, distribution by state and upfront mode of payment. Under the ESCO model the utility purchases energy savings using pre-determined rate and hence EESL recovers its investment. In OBF model, EESL makes the entire investment for energy efficient product and the recovery is made directly from the consumer. The consumer may pay a token money upfront and pay the remaining cost through installments added to the electricity bill. The upfront method involves the consumer to pay for the entire cost of the energy efficient product. Lastly, some states also choose to provide subsidies to domestic consumers and hence the initial cost for energy efficiency commodity is brought down to the end consumer. In subsidies, the balance amount is paid back by the state to EESL. Energy Efficiency Services also executes some projects through the Project Management Consultancy (PMC) model, where a consultancy fee is charged for the energy efficiency services extended.

### 4. Partial Risk Sharing Facility (PRSF)

The World Bank is facilitating support from the Clean Technology Fund (CTF) and Global Environment Facility (GEF) for a Partial Risk Sharing Facility (PRSF) aimed at kick-starting the Performance Sharing Contracting market for Energy Efficiency projects in India. This includes large scale private sector industries including PAT sector, Micro, Small and Medium Enterprises

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<sup>34</sup> <http://articles.economictimes.indiatimes.com/>

(MSMEs) and commercial buildings in India. The PRSF is to be implemented through Small Industries Development Bank of India (SIDBI), a financial intermediary, a Project Executing Agency (PEA) along with a Technical Assistance (TA) component implemented jointly by SIDBI and Energy Efficiency Services Limited (EESL)<sup>35</sup>.

The PRSF, of a total corpus of US\$43 million, will consist of two components; **Component 1:** A partial risk sharing facility for energy efficiency, managed by SIDBI, of US\$37 million, funded from a GEF contribution of US\$12 million and backstopped by a CTF Guarantee, in the form of contingent finance, of US\$25 million, and **Component 2:** A technical assistance and capacity building component of US\$6 million, funded by GEF, of which US\$4 million is managed by SIDBI and US\$2 million is managed by EESL.

**PRSF Objective & EESL's Scope of Work:** The PRSF is broadly aimed at addressing various market barriers that impede EE practices and financing, and to catalyze the energy savings performance contracting modality of transactions for implementing EE projects through ESCOs in India. The project will contribute to the NMEEE initiative of GOI. The objective of the PRSF project, which is designed as a pilot-scale engagement, is to trigger EE market transformation through the implementation of ESCO-based performance contracting mechanisms. By design, the PRSF project will support sub-projects that are not being financed by the domestic financial institutions in a business-as-usual scenario due to the risks they perceive in the area of EE. PRSF project aims to demonstrate that the ESCO-based implementation approach in the Indian EE market should work, and is designed to address the barriers faced in the market.

EESL will deliver technical support to address broader EE market barriers in India. Its support will be on a broader scale and reach out to a larger set of EE market stakeholders than SIDBI's. BEE has authorized EESL to implement enabling activities for the PRSF. There are synergies in the objectives laid down for EESL and that of PRSF, particularly in enabling access to commercial lending. The value additions that EESL brings to the implementation of the TA and capacity building component of PRSF are:

- a) EESL's unique position to develop aggregated EE projects. These projects could then be implemented by ESCOs selected through a competitive process, by EESL, or EESL or by a combination of the two.
- b) EESL provides credibility to ESCOs by helping build their capacity and/or financially supporting them with equity, lines of credit etc.
- c) EESL could support the participating FIs in training, capacity building, which is also important in sustaining commercial lending in the EE sector.
- d) EESL provides a platform to the participating FIs, ESCOs and the regulators to work together for the common objective.

## 5. Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)

One of the key elements of the NMEEE, aimed at industry, is the establishment of a Framework for Energy Efficient Economic Development (FEEED), which mainly focuses on developing fiscal and investment guarantee instruments to promote energy efficiency. FEEED includes a Partial Risk Guarantee Fund (PRGF) and a Venture Capital Fund for Energy Efficiency (VCFEE). The PRGFEE is a risk-sharing mechanism that provides commercial banks with partial coverage of

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<sup>35</sup><http://www-wds.worldbank.org>

risk exposure against loans issued for energy efficiency projects. The support under PRGFEE is limited to government buildings, municipalities, SMEs and industries.

REC, RECPDCL & EESL together have formed a consortium through a Memorandum of Understanding (MoU) and acting as an Implementing Agency (IA) under this scheme. PRGFEE shall be supported by and issued solely on the basis PRGFEE fund to be provided by the Ministry of Power, Government of India through BEE in this regards. As a part of NMEEE, BEE is setting up PRGFEE to provide risk cover up to 50% of debt in an energy efficiency projects. Total available fund under this scheme is Rs. 311.58 crores over a period of 3 years as shown in table below:

Year	Year 1	Year 2	Year 3
Available fund with PRGFEE - (INR Cr.)	70.08	70.08+80	70.08+80+161.50

# The dreams of today inspire the innovation of tomorrow

It would be easy for us to sit back and reflect on what we've achieved after more than 150 years of innovation. It is much harder to take history and build on it, but that's how we work and that's exactly what we've done. Future success depends on continual innovation, nurturing talent and searching for bigger ideas. Ideas like Solar Impulse – a plane attempting to fly around the world powered only by the sun and utilizing innovative materials from Covestro.



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