Investment Bazaar

REPORT ON ONE - DAY CONFERENCE & EXPO ON INVESTMENT BAZAAR FOR ENERGY EFFICIENCY

Senate Hall, Dolphin Hotel, Visakhapatnam
23rd November 2022

Program By:
Andhra Pradesh State Energy Conservation Mission
In association with Bureau of Energy Efficiency

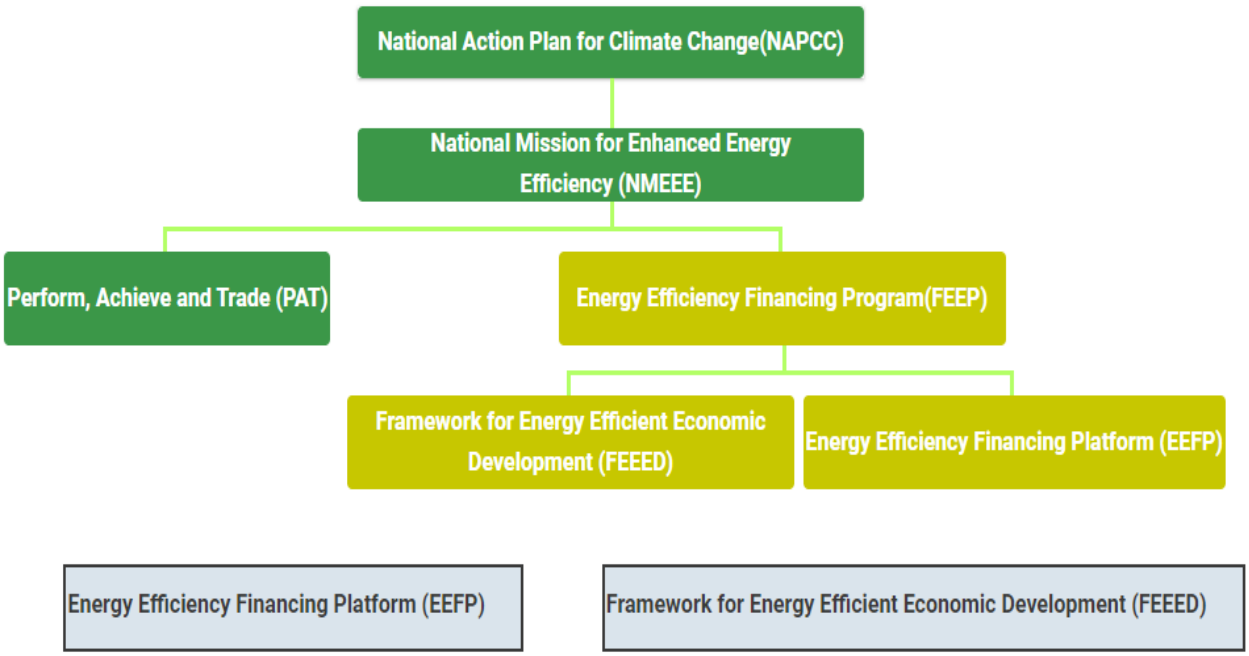
CONTENTS

CHAPTER - 1
BACKGROUND

Energy efficiency is recognized as the most cost-effective solution to meet the rapid growth in energy demand. Energy efficiency enhances energy security while moving towards reducing the energy supply/demand gap. Thus, energy efficiency paves the way for economic development without compromising on present needs.

Energy Efficiency Financing Platform (EEFP) was launched as one of the initiatives under National Mission for Enhanced Energy Efficiency to provide a platform to interact with Financial Institutions (FIs) and project developers for the implementation of energy efficiency projects. Under this program, Memorandum of Understandings (MoUs) have been signed by BEE with Financial Institutions to promote financing for energy efficiency projects.

The objective of Financing Energy Efficiency Program (FEEP) is to accelerate energy efficiency financing by creating fiscal instruments, capacity building of Financial Institutions and by organizing awareness/ outreach activities for industries, MSMEs, OEMs and ESCOs.



Financing Barrier in Energy Efficiency Financing

1. Local financial institutions have difficulties in assessing the technical and economic soundness of Energy Efficiency projects.

2. Industries expressed reluctance to take loans for Energy Efficiency project.
3. The non-availability of sufficient credit facilities and the difficulties in obtaining required finances for energy saving projects are strong deterrents to investments in energy efficiency in India.
4. Lack of awareness: The main barrier to energy conservation is the lack of awareness among the industry managers of the potential gains from improved efficiency. Industries as well as government are yet to take into consideration factors such as tax credits, depreciation benefits, electricity price escalation, life cycle savings of the investment and the timely release of money.
5. Economic and market distortions: The response to conservation measures is irrational because of inappropriate pricing, other market distortions and socio-economic factors.
6. For high level private sector managers or investors, energy efficiency projects often rank low on the priority lists as compared to financing other core business investment projects.

Presently, BEE is working on conducting "Investment Bazaar for Energy Efficiency" in various states/UTs to accelerate and facilitate financing of EE projects/technologies through SDAs.

How to Overcome Financing Barrier in Energy efficiency Financing

1. Key Constraint should be identified, to increase investment and financing flows in energy efficiency projects.
2. Existing investment opportunities for energy efficiency and the level of investment in energy efficiency should be assessed.
3. Regulatory and institutional support should be provided for investments in EE.
4. Bringing international assistance in increasing the level of energy efficiency investments.
5. Create a Financing environment for energy efficiency investments.
6. Steps should be taken to increase energy efficiency project investment viability.
7. Investments should be made in industrial energy efficiency.

Following are the activities to encourage efficient use of energy in the Micro Small and Medium Enterprises (MSMEs):

1. Monitoring of Energy Usage and Technology Analysis
2. Capacity building and Outreach Awareness
3. Implementation of EE measures
4. Development of Innovative Financing Mechanisms

CHAPTER - 2
INTRODUCTION

Investment Bazaar: Bureau of Energy Efficiency (BEE), in association with State Designated Agencies (SDAs) organizes state level events by the name of **"Investment Bazaar for Energy Efficiency"** with the aim to provide the necessary platform in which Bankable Energy Efficiency projects can be showcased in presence of Financial Institutions, OEMs, industries, ESCOs etc.

The objective of the conference was to provide a one-stop platform for all the stakeholders to interact with each other to deliberate and share the best practices in energy efficiency and financing options for energy efficiency projects.

1. To provide the necessary platform to showcase Bankable Energy Efficiency Projects in presence of Financial Institutions, OEMs, industries, ESCOs etc. to accelerate and facilitate the financing of energy efficiency projects and technologies.
2. This event shall facilitate in creating the awareness among industry stakeholders on different financing schemes, EE product/services, ESCO mode of implementation of EE projects.

Target Beneficiaries are:

- Financial Institutions (Banks and NBFCs);
- MSMEs, Large Industries;
- Energy Service Companies (ESCOs);
- Buildings & Municipalities;
- Other Energy Consuming Sectors.

Andhra Pradesh State Energy Conservation Mission (APSECM), in association with Bureau of Energy Efficiency (BEE), Ministry of Power, Govt. of India organized a one-day Conference & Expo on 'Investment Bazaar for Energy Efficiency' on **23rd November 2022** at **Senate Hall, Dolphin Hotel, Visakhapatnam.** This is the Second Investment Bazaar that has been organized in Vizag in the state of Andhra Pradesh.

The Conclave witnessed a grand gathering of around 100 people representatives with distinguished panelists.

The event was inaugurated by officials Shri Ashok Kumar - DDG of BEE; Shri A Chandrasekhara Reddy - CEO, APSECM; Shri D. Chandram - Director Finance & HRD, APEPDCL; Shri AVV Surya Pratap - Director - Projects, APEPDCL; and Shri Madan Mohan Illa - GM, PFC Bank.

CHAPTER - 3
INAUGURAL SESSION

The Inaugural Session of the conclave took place **at the Senate Hall of Hotel Dolphin** and was graced by an august gathering of more than 100 delegates and distinguished guests at dais.

Shri Anuj Gupta, Partner, D2O delivered the welcome address by extending a warm welcome to the dignitaries on the dais, industry leaders & senior representatives from industry.

The Inaugural Session began with invocation of Goddess Saraswati's grace in the form of a lamp lighting ceremony by the honorary guests of the conference. The opening session was devoted to two issues. The first was on energy security and conservation; & the second, technology providers were encouraged to bring innovative EE products and appealed to financial institutions were urged to come forward with financing options for EE projects.

Shri A Chandrasekhara Reddy, CEO, APSECM thanked BEE for supporting APSECM in implementing various Energy Efficiency activities with an aim to expand and promote financing in energy efficiency projects in the State. The State government is considering energy efficiency as a powerful tool to increase energy security and most cost-effective solution to meet escalating energy demand in future and sustainable of energy sector.

He emphasized that “Energy efficiency projects provide an excellent opportunity for financial institutions to do business and grow their business in the state. Andhra Pradesh is strong today and will become stronger tomorrow. The investment will also help the state to improve its energy efficiency projects/Proposals, which will help achieve energy security, boost the economy, create jobs, Bridging the gap between demand and supply of energy and protect the environment by reduce GHG emissions."

Dr. Ashok Kumar DDG, BEE in his special address appreciated APSECM initiatives in the energy efficiency sector. He focused on “Projects worth more than ₹15,000 crores would be taken up in the next five years at the national-level. A roadmap of sustainable and holistic approach to national energy efficiency program (ROSHANEE) was introduced to upscale implementation of energy efficiency measures under various financing schemes.

Speaking on the same, he mentioned that it would reduce the nationally prescribed emission intensity by 45% from the 2005 level by 2030. The Investment Bazaar is one such initiative to showcase viable energy efficiency projects in the presence of Financial Institutions, and industries representatives, with an objective of bringing concrete deals to finance those EE projects.

Further, the BEE DDG added that the country has an investment potential of around 713 Lakh crore in the energy efficiency sector as per some estimates.

Addressing the dignitaries gathered at the conference, **Shri AVV Surya Pratap, APEPDCL** stressed on the importance of investments in EE of projects given the rising energy tariffs, increased product costs and also rising carbon emissions. He said enthusiastically that “Why are we not replacing old motors with EE motors in next 2-3 years? Our own model to tackle GWP and climate change at micro level should survive. Time has come for FI’s to play a major role in EE technology implementation.”

Shri D Chandram, APEPDCL highlighted the importance of EE financing especially in developing countries like India and there is a lot of scope of improvement. He appreciated APSECM’s leadership in implementing EE activities and technologies in Andhra Pradesh.

He said “Investment Bazaar for EE is a common ground where FI’s and industries can come together on a single large platform. It is a great initiative to mobilize funds for betterment of the EE sector.”

Shri Madan Mohan Illa, GM, PFC also graced the inaugural session of the conference. He emphasized on the Panchamrit Mantra, which has been assured by Hon'ble PM Shri Narendra Modi to the United Nations. He mentioned the various initiatives taken by Power Finance Corporation and its special focus on the area of energy efficiency in Power sector.

EE Poster & the Facilitation Center Brochure containing 92 technologies recognized by BEE was released during the inaugural session.

CHAPTER - 4
TECHNICAL SESSION

The session began with a presentation by **Shri Madan Mohan Illa, representative of PFC**, where he highlighted on the investment potential of Rs 10 lakh crore in the energy efficiency sector in India (UNNATEE Report). On EE financing schemes, during the technical session he discussed the following:

1. About PFC & its financial Performance.
2. Product Portfolio & Loan Lifecycle Support.
3. Criteria for EE funding & focusing funding area
4. EE funding Domain and PFC funding.

In response to a question from the audience "How will PFC benefit those industries which are stressed in this financial distress situation" he said that PFC has a longer repayment tenure, higher exposure limits, less financial stress, flexible reset options and no hidden charges etc.

During the post lunch session **Shri. Gunturi Srinivasa Sarma, AGM, SIDBI**, **Visakhapatnam** spoke in detail about "EE financing schemes available for MSMEs."

The following financing schemes and initiatives by SIDBI were discussed by

1. Green Financing Scheme (GFS)
2. End to End Energy Efficiency (4E)
3. Partial Risk Sharing Facility (PRSF)
4. TIFAC-SIDBI Technology Innovation Program (Srijan)

Green Financing Scheme (GFS) – This scheme was launched in March 2022 and available to MSME and service providers with a quantum of assistance of 20 crores and 50 crores respectively. A minimum of 10% of project cost should be contributed by promoter with a debt-equity ratio of 3:1 for company. The maximum repayment is 10 years with interest rates ranging from 7.60% - 9.40%.

End to End Energy Efficiency (4E) – This scheme was launched for MSMEs in manufacturing and service sector in June 2014 with a quantum of assistance of Rs 5 crores and repayment time of 5 years. The affiliated interest rates are in the range of 6.4% - 7.5%. The type of projects covered are

EE and Solar PV for captive consumption. The promoter contribution should be minimum 10% of project cost.

Partial Risk Sharing Facility (PRSF) This scheme is to increase investment and transform EE market through energy service companies ("ESCOs"). MSMEs, Large Industries, Municipalities, Buildings, DISCOMs, EV Infrastructure are host entities. The minimum loan amount is Rs. 10 Lakh and maximum loan amount is Rs.15 Crores per project. The guarantee tenure is the lower of 5 years or loan tenure.

TIFAC-SIDBI Technology Innovation Programme (Srijan) - To promote innovation, up scaling, demonstration and commercialization of new and innovative technologies.

Shri. Kranth, Manager, SBI discussed willingness of SBI in financing EE products and technologies. He shared that SBI is funding for renewable energy to the small and large industries form 1kW to 590 MW solar plant. He also said that SBI also provide loan of up to 50 Cr. for Roof top/Ground based Solar. He also discusses the CAPEX and RESCO financial options.

CHAPTER - 5
BANKABLE PROJECTS

Shri. Sudanshu Kumar, Senior Manager, Rashtriya Ispat Nigam Limited showcased three bankable projects during event. The following is the summary of the three projects showcased by RINL (Visakhapatnam Steel Plant).

1. Establishment of Micro turbine to utilize around 20 T of 2.5 ata steam pressure.
2. Condenser Vacuum Improvement in Captive Power Plant.
3. Floating Solar Power Plant of 150 MW capacity.

PFC, Indian Bank, YES bank, and SBI express their interest in those projects. Responding to the query of MM Illa PFC, RINL said that they will prepare the DPR after getting the approval of the Management. They will approach PFC soon with DPR.

Shri Nehe Sreenivasulu, Sr. Manager, Mohan Spintex India Ltd showcased two bankable projects during the event. The following is the summary of the two projects showcased by MSIL.

1. Replacing Electrical heating with Heat Pump, EE motors etc.
2. 4 MW solar roof top.

Shri. N Satish, Sagar Cements Ltd- Gudipadu plants showcased two bankable projects during the event. The following is the summary of the two projects showcased by SCL.

1. Power generation from Waste Heat Recovery (3.4 MW).
2. Preheater downcomer duct pressure reduction.

The Outcomes of the Investment Bazaar -1, Visakhapatnam are as follows:

APSECM has received following Willingness Forms for Financing for Implement EE Measures/Projects.

Sl. No	Name of the Company	Type of Industry/ Sector	Nature of project Proposal
1.	Rashtriya Ispat Nigam Limited	Iron & Steel	1. Floating Solar Power Plant 2. Micro Turbine to Utilize the 2.5ata Steam Pressure 3. Condenser Vacuum Improvement in Captive Power Plant-1 TG's
2.	The Ramco Cements limited- Vizag Grinding Unit	Cement Grinding	1. Energy Conservation improvements in Compressors/ Running Equipment 2. Procurement of New Energy efficiency appliances/ Equipment/Technologies
3.	My Home industries Private	Cement	1. Procurement of New Energy efficiency appliances/

	Limited		Equipment/Technologies
4.	Aurorindo Pharma Limited	Pharma	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies 2. Replacement of old energy intensive appliances with EE appliances
5.	Andhra Paper Limited	Pulp & Paper	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies 2. Replacement of old energy intensive appliances with EE appliances
6.	Brandex Apparel India Limited	Textile	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies
7.	Laurus labs Limited	Pharma	1. Replacement of old energy intensive appliances with EE appliances
8.	Poduri Plastics	Manufacturing	1. Replacement of old energy intensive appliances with EE appliances
9.	Sravan Shipping Services Private Limited	industrial Services	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies
10.	SUSV Infra & Property Services Private Limited	Construction	1. Replacement of old energy intensive appliances with EE appliances
11.	Kehems Technologies Private Limited	Manufacturing	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies 2. Replacement of old energy intensive appliances with EE appliances
12.	Anrak Aluminium Limited	Power Plant/ Aluminium Manufacturing	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies 2. Replacement of old energy intensive appliances with EE appliances
13.	Arora Consultancy	Pharma	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies
14.	APUIAML (Andhra Pradesh Urban infrastructure Asset Management)	Asset Management	1. Procurement of New Energy efficiency appliances/ Equipment/Technologies 2. Replacement of old energy intensive appliances with EE appliances

IDENTIFIED BANKABLE PROJECTS
Investment Bazaar -1 at Vishakhapatnam (23rd Nov. 2022)

S.N	Company Name	Project name	Value ₹ Cr.
1	Vishakhapatnam Steel Plant	**Floating Solar Power Plant of 150 MW capacity**	**1200**
2	Vishakhapatnam Steel Plant	Installation of Micro turbine to utilise 2.5 ata steam pr	1
3	Vishakhapatnam Steel Plant	Condenser Vacuum improvement in CPP-1 (3 nos. of 60 MW)	12
4	Mohan Spintex	Replacing Electrical heating with Heat Pump, EE motors etc.	2
5	Mohan Spintex	**4 MW Solar Roof top**	**20**
6	Sagar Cement	Power generation from Waste Heat Recovery (3.4 MW) Preheater downcomer duct pressure reduction	36
7	Sagar Cement	Preheater downcomer duct pressure reduction	0.25
		Total EE projects	**51**
		Total Renewable projects	**1220**

CHAPTER - 6
PRODUCT DISPLAY OF OEMS DURING EVENTS

Shri Varun Jami, Co- founder, GreenJams in his talk on Carbon Negative, Efficient and Economic Building Material he highlighted Award winning clean construction technology startup backed by Ministry of Housing and Urban Affairs GreenJam presents AgroCrete carbon negative building material. It is a carbon-negative building material made from crop residues like rice straw, bagasse, cotton stalks etc. and by-products of steel and power industries. It is available in block form and replaces traditional bricks and blocks for 50% lower construction costs and 350% higher thermal insulation.

Shri Ramesh R, Associate Manager – South Region, Godrej & Boyce Mfg. Co. Ltd informed that out of 100% power input, only 10-15% is used and the rest goes as losses, most in the form of heat. Compressed air is the most inefficient source of energy and the costliest form of energy. Godrej Intelligent Flow Control (IFC) system can be used for demand side which reduces artificial demand by maintaining const pressure and energy saving tune of 4-25%. It works with all types of compressors. Godrej (Intelligent Compressor Control) is used for supply side where it controls multiple compressors.

Shri Mohammad Omar, Manager Sales, Kehems Technologies Pvt. Ltd. discussed energy finance business by performance contracting towards sustainability for chillers & heat pumps. Where they demonstrated at The Leela Palace, Bangalore and Dr. Reddy's Laboratory how they provided solutions for chillers, heat pumps and thermal storage.

Shri Wilson Babu, Regional Manager, Testo discussed the equipment such as flue gas analyzers including their durability, cost, purchasing policy and usage. Testo sells measuring instruments capable of long-term use, and focuses on stability and high quality in development.

Shri A V Satyakumar, Manager Sales & Service, Danfoss discussed on Optimize the energy efficiency of Pump & fan using VFD. It is informed that 20% of the world's energy consumption is electrical energy, while 50% of that is consumed by electrical motors. AC drives control power supply to electric motors and typically save 15-40% of energy consumed. Today 75% of AC drives are used on pumps, fans and compressors – Variable Torque Loads. AC drives have the potential to save 8% of global electricity consumption by 2040. The industry is said to have the commitment, passion, and dedication and the quality, application-optimized products to bring this vision to reality. A VFD controls electric motors so they only run at the speed necessary to obtain the desired effect, reduction of speed by only 10% will give energy savings of 27%.

Financial Institutions & OEMs represented at Investment Bazaar with Stall	
Financial Institution	**Original Equipment Manufacturers (OEMs)**
Small Industries Development Bank of India (SIDBI)	Godrej & Boyce Mfg. Co. Ltd
YES Bank	Kehems Technologies Pvt Ltd
	Green Jams represented by Varun Jami

ANNEXURE

One-Day Conference on Investment Bazaar for Energy Efficiency

Date: 23rd November 2022
Venue: Senate Hall, Dolphin Hotel, Visakhapatnam

PROGRAM SCHEDULE

Time	Topic	Speaker
09:30 AM - 10:00 AM	**REGISTRATION**	
10:00 AM - 11:30 AM	**INAUGURAL SESSION**	
10:00 AM - 10:10 AM	Prayer Song & Lamp Lighting	
10:10 AM - 10:20 AM	Welcome Address	**Shri Anuj Gupta** Partner, Design2Occupancy
10:20 AM - 10:30 AM	Inaugural Address	**Shri A Chandrasekhara Reddy** Chief Executive Officer, APSECM
10:30 AM - 10:40 AM	Special Address	**Shri Ashok Kumar** Deputy Director General, Bureau of Energy Efficiency
10:40 AM - 10:50 AM	Special Address	**K Santhosha Rao** Chairman & Managing Director APEPDCL
10:50 AM - 11:00 AM	Keynote Address	**Shri K. Vijayanand** Special Chief Secretary Energy, Government of Andhra Pradesh
11:00 AM - 11:10 AM	Thematic Address	**Shri Madan Mohan Illa,** General Manager Power Finance Corporation Ltd.
11:10 AM - 11:15 AM	**Launching Brochure of Energy Efficient Technologies**	
11:15 AM - 11:20 AM	Vote of Thanks & Felicitation	**Smt. V. Padmaja** Dy EE, APSECM
11:20 AM - 11:40 AM	Visit to Exhibition Area and Group Photograph followed by Tea	
TECHNICAL SESSION: 1 "Financing Large Industries for EE Measures/Technologies"		
11:40 AM - 12:00 PM	Energy Efficiency Financing schemes available for large industries	**Shri Madan Mohan Illa,** General Manager, PFC
12:00 PM - 12:20 PM	Presentation from Rashtriya Ispat Nigam limited (Vizag Steel) – 3 Nos. Bankable Project	**Shri. Sudhanshu Kumar,** Sr. Manager (EMD), RINL
12:20 PM - 12:40 PM	Energy Efficiency Financing Schemes available for Industries	**Shri. Pravin Kumar Singh** Chief Manager, Indian Bank

12:40 PM - 01:00 PM	Discussion from Maa Mahamaya Ind Ltd- 1 No. Bankable Project	**Shri. S. Sutheesan,** Sr. Manager, Maa Mahamaya Ind Ltd.
Q & A Session followed by Felicitation of the Speakers		
01:00 PM – 02:00PM	Lunch Break	
TECHNICAL SESSION: 2 "Financing MSMEs for EE Measures/Technologies"		
02:00 PM - 02:20 PM	EE Financing schemes available for MSMEs	**Shri Gunturi Srinivasa Sarma** AGM, SIDBI, Visakhapatnam
02:20 PM - 02:40 PM	Presentation from Mohan Spintex India Ltd - 1 No. Bankable Project	**Shri Nehe Sreenivasulu** Sr. Manager, Mohan Spintex India Ltd
02:40 PM - 03:00 PM	Presentation from Sagar Cements Ltd	**Sagar Cements – Virtual**
03:00 PM - 03:20 PM	Energy Finance Business	**Shri Mohammad Omar,** Manager Sales Kehems Technologies Pvt. Ltd.
03:20 PM - 03:40 PM	Compressed Air Energy Saving Systems	**Shri Ramesh R** Associate Manager – South Region, Godrej & Boyce Mfg. Co. Ltd.
03:40 PM - 04:00 PM	Agrocrete: Carbon Negative, Efficient and Economic Building Material	**Shri Varun Jami** Co- founder, GreenJams
04:00 PM - 04:20 PM	Optimize the energy efficiency of Pump & fan using VFD	**Shri A V Satyakumar** Manager Sales & Service, Danfoss
04.20 PM – 04.40 PM	Presentation by Testo	**Shri Wilson Babu** Regional Manager, Testo
04:40 PM - 04:50 PM	Concluding Remarks	**Shri Vijayarengamani R** AEA, PAT Cell, APSECM
Q & A Session followed by Felicitation of the Speakers		
04:50 PM	End of the Program followed by Tea	

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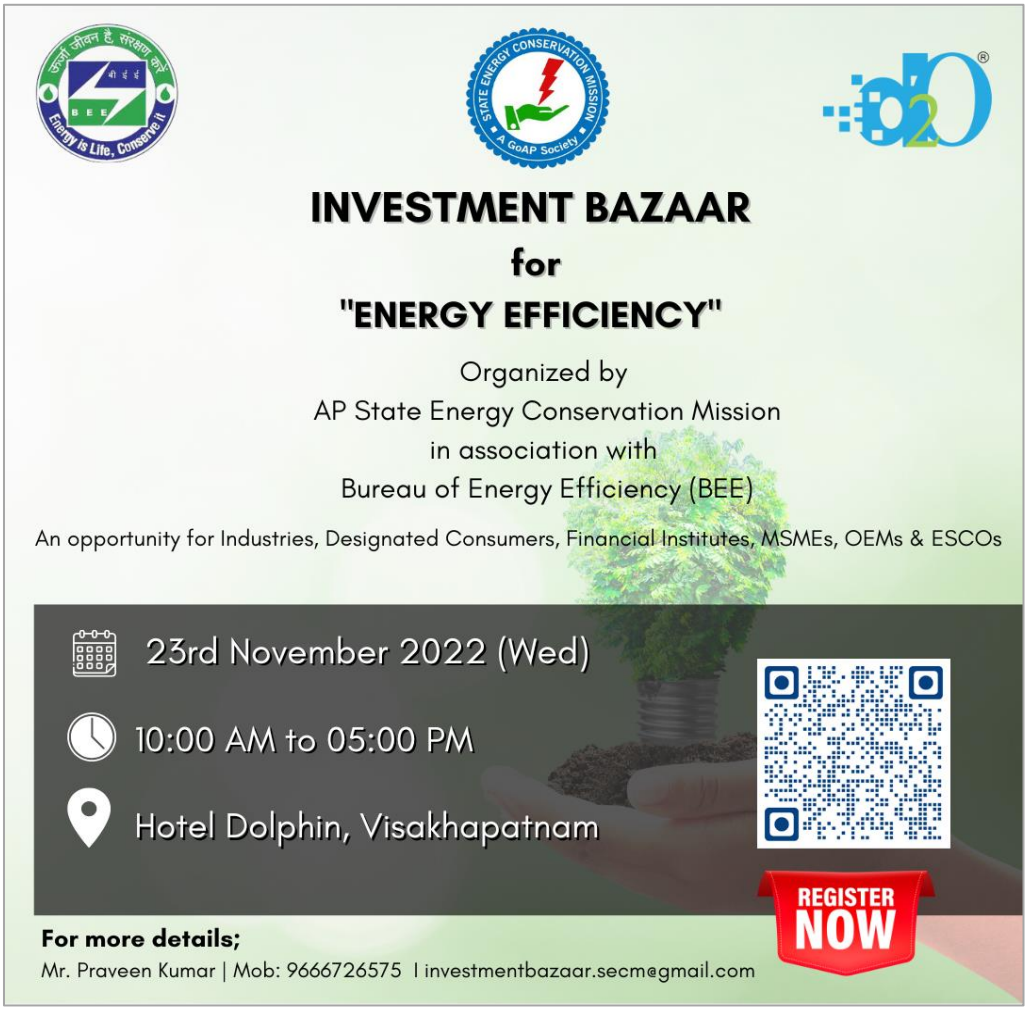
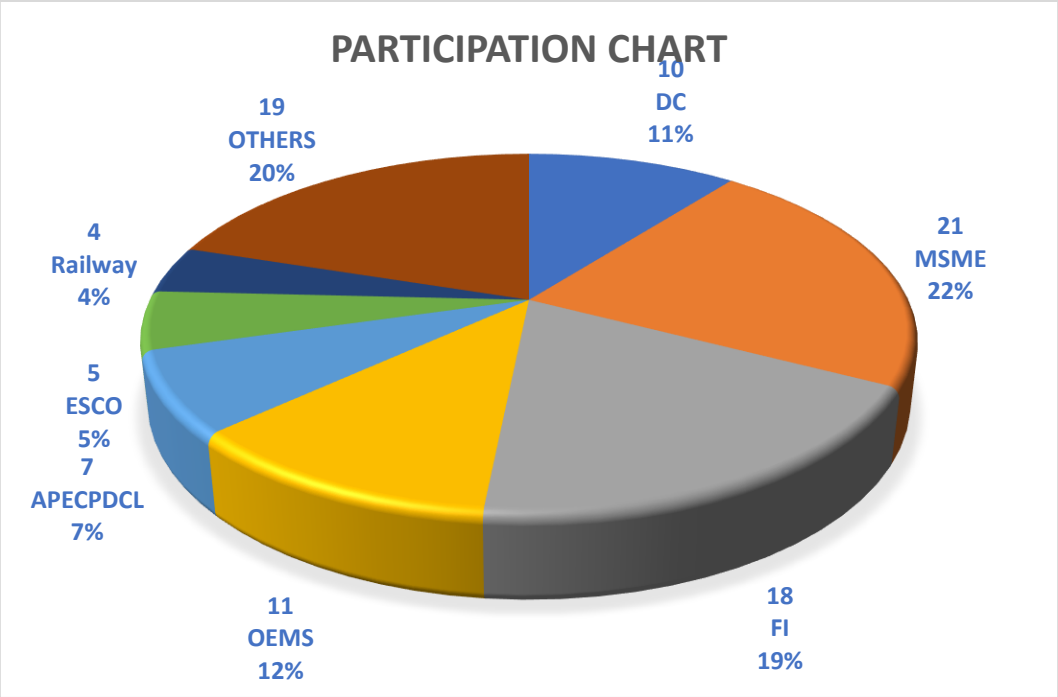
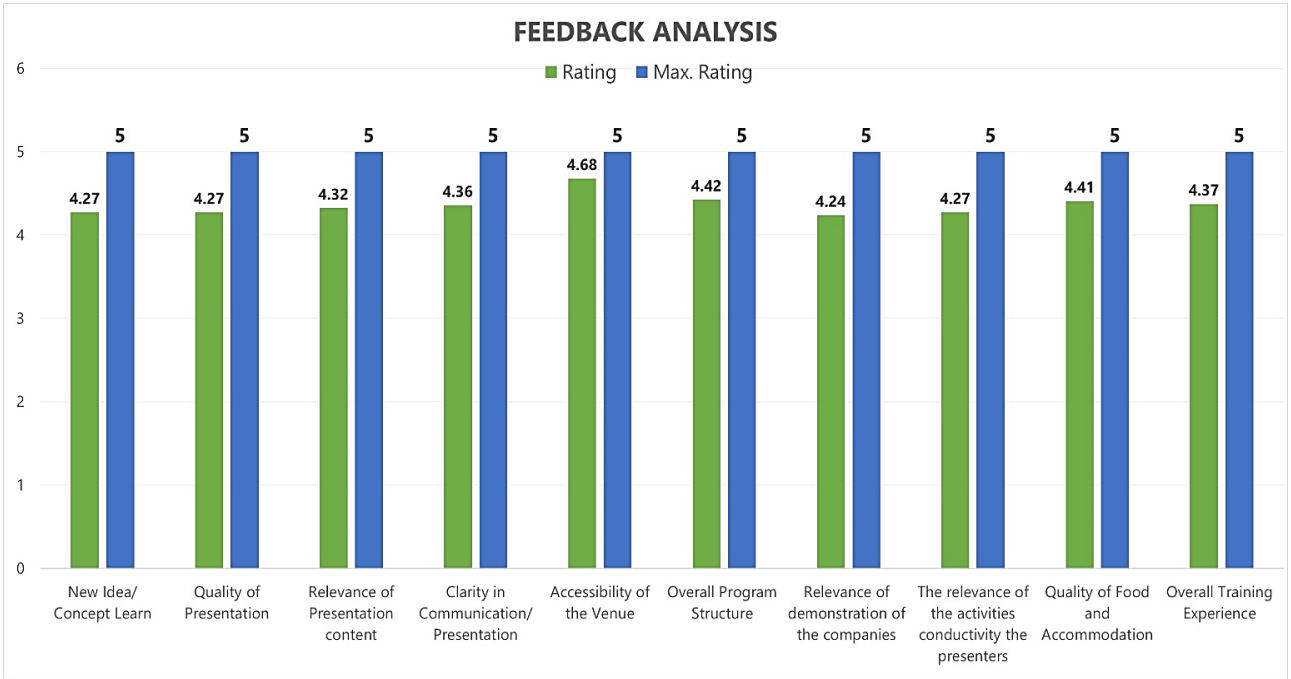

INVESTMENT BAZAAR
for
"ENERGY EFFICIENCY"
Organized by
AP State Energy Conservation Mission
in association with
Bureau of Energy Efficiency (BEE)
An opportunity for Industries, Designated Consumers, Financial Institutes, MSMEs, OEMs & ESCOs
23rd November 2022 (Wed)
10:00 AM to 05:00 PM
Hotel Dolphin, Visakhapatnam
REGISTER NOW
For more details;
Mr. Praveen Kumar | Mob: 9666726575 I investmentbazaar.secm@gmail.com

PARTICIPATION LIST





IMPORTANT FEEDBACK THAT RECEIVED DURING THE VISAKHAPATNAM CONFERENCE

- One in six months or annual sessions will be ideal – **Mr. Ranjana, Brandix Apparel India Ltd.**
- Structure of the program is good, Keep it up – **Mr. M Mahesh, Jayaolthi Cements P.Ltd.**
- Learn new concepts in the segment of 'Net Zero' – **Mr. Naga Raju M, KEC International Ltd.**
- Looking forward to the similar programs and awareness – **Mr. A V Satya Kumar, Danfoss Industries**
- I learned so much about energy saving. I will implement in my company- **Mr. P Kameswar Rao, Anrak Aluminum Ltd.**
- Program is good and well organized – **Mr. E. Giriswarao, APSPDCL.**
- Good initiative by BEE for researching organizations – **Mr. Pravin KV Singh, Indian Bank**
- Good event by BEE more practical presentations needed- **Mr. B.Ramaswamy, MHIPL**
- Very good efforts in creating a nice platform for Industries having scope for imparting energy efficiency initiatives and financial institution. – **Mr. O. Simhadre, APEPDCL**
- Product/ System engineering will be very much relevant for us. – **Mr. V V R Gurunath, RTPP**
- Well organized program is a nice platform between industries and financial institutions which will hopefully end on positive note in financial assistance. – **Mr. P. Rajkumar, APEPDCL**
- Well-organized program – **Mr. VVVS Pulk Reddy, RINL**
- More interaction with industries is recommended- **Mr. V. Srikant, Indian Bank**
- The program is full of good ideas, and motivation. – **Mr. A. Surya Rao, Ramuyasri Electrical Automation**
- Need to awareness of new technologies – **Mr. O. Venkateswar Rao, APUIAML**
- It will be more helpful to audience to provide awareness about new technologies which are upcoming in the area of energy efficiency. – **Dr. Kumar Raja, APUIAML**

PHOTO GALLERY


One-Day Conference
on
"Investment Bazaar for Energy Efficiency"
One-Day Conference
on
"Investment Bazaar for Energy Efficiency"
23rd November, 2022
Delphin Hotel, Visakhapatnam


One-Day Conference
on


One-Day Conference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One-Day Conference
on
Bazaar for Energy Efficiency"
Sri. Peddireddy Ramachandra Reddy
Hon'ble Minister for Energy, Forest,
Environment, Science & Technology
Mines & Geology
Dr. A V V Su Pratap
Director

Photos of the presentation of souvenirs to the delegates & Industries showcasing their projects and products

One-Day Conference on
Investment Bazaar for Energy Efficiency

BACKGROUND NOTE

Energy Efficiency Financing Platform (EEFP) was launched as one of the initiatives under National Mission for Enhanced Energy Efficiency (NMEEE) to provide a platform to interact with Financial Institutions (FIs) and project developers for implementation of energy efficiency projects.

To accelerate and facilitate financing of Energy Efficiency projects/technologies, BEE is focusing on conducting "Investment Bazaar for Energy Efficiency" in various states/UTs through State Designated Agencies (SDAs).

Investment Bazaar: A conference which will bring together all the stakeholders viz., ESCOs, Financial Institutes, OEMs, Industry and Government officials under one platform to deliberate and share best practices in Energy Efficiency and financing options for Energy Efficiency Projects.

- The objective of this event is to provide the necessary platform in which bankable energy efficiency projects can be showcased in presence of Financial Institutions, OEMs, industries, ESCOs etc.
- This event shall facilitate in creating the awareness among industry stakeholders on different financing schemes, Energy Efficiency products/services, ESCO mode of implementation of Energy Efficiency projects.

In addition, the Investment Bazaar for Energy Efficiency serves the following objectives:

1. To disseminate the knowledge on latest available technologies, best practices and advancements in the field of Energy Efficiency pertaining to various industries.
2. To demonstrate the Energy Efficiency Financing schemes as applicable to Industries.
3. Discussion with Financial Institutions on financing options for various energy efficiency projects in Industries.
4. Showcase Energy Efficiency Products and Services.
5. Discussion with ESCOs regarding implementation of Energy Efficiency Projects in ESCO mode.

BEE's Initiatives on Energy Efficiency financing

1. Energy Efficiency Financing Platform (EEFP)

The objective of EEFP is to upscale energy efficiency financing in India by providing a platform where Financial Institutions (FIs) can interact with industries for financing and implementation of energy efficiency projects, technologies and appliances.

1.1 Investment Bazaar

Till date six Investment Bazaar events have been organized by SDAs i.e.in Andhra Pradesh, Punjab, Maharashtra, Telangana, Arunachal Pradesh and Karnataka in which more than Rs. 300 Crore investment potential has been identified. The First Investment Bazaar event was held in March 2021 by APSECM in Visakhapatnam.

These 'Investment Bazaars' showcase Viable Energy Efficiency (EE) projects/ technologies in presence of representatives of FIs and industries, with the aim of bringing in good deals to finance those EE projects. EE technologies will also be showcased by manufacturers during these conferences.

1.2 Training Program for Financial Institutes (FIs) on Energy Efficiency Financing

BEE has recently engaged NPTI for conducting six training workshops across India for FIs on EE financing. These six training workshops shall be organized by NPTI till March 2023. These training workshops shall help banking officials in financial & technical evaluation of Energy Efficiency projects and shall also make them aware about BEE financing schemes.

S. No	Venue	Tentative Date
1.	NPTI Faridabad (Haryana)	17-18/11/2022
2.	NPTI Durgapur (West Bengal)	15-16/12/2022
3.	NPTI, PSTI, Bengaluru (Karnataka)	05-06/01/2023
4.	NPTI Alappuzha (Kerala)	19-20/01/2023
5.	NPTI Nagpur (Maharashtra)	16-17/02/2023
6.	NPTI Guwahati (Assam)	16-17/03/2023

1.3 Programme for Grading of Energy Efficiency Projects

Programme for Grading of Energy Efficiency Projects was launched in July 2021. The project will reimburse grading fee of graded as well as financed Energy Efficient project.

BEE is in process of empanelling two grading agencies - CRISIL Ltd; and SMERA. These agencies shall undertake the grading of the EE projects according to the well-defined evaluation criteria. The graded projects by these agencies can be financed from the registered financial institutions with BEE's Facilitation Centre (the list may increase over time). BEE will reimburse the grading fee max of Rs. 2.90 Lakh per project/loan to these banks. The bank will further adjust the amount in the loan account of the borrower within the 12 months' instalments.

Grade	Score	Repayment capability of Project debt
Grade1	90 –100	Excellent
Grade2	80– 89	Very Good
Grade3	70– 79	Good
Grade4	60– 69	Above Average
Grade5	50– 59	Average
Grade6	30 – 49	Weak
Grade7	0 -29	Weakest

1.4 Committee of financial institutions at state level

SDAs have constituted committee of financial institutions at state level for facilitating financing of EE projects at local level. Till date following states have constituted these committees:

Sl. No	States
1.	Andhra Pradesh
2.	Arunachal Pradesh
3.	Himachal Pradesh
4.	Madhya Pradesh
5.	Uttar Pradesh
6.	Maharashtra
7.	Rajasthan

2. Energy Efficiency Financing Facility (EEFF)

In June 2021, PFC has been identified by MoP as Nodal Agency for energy efficiency financing. PFC shall be the champion organization for Energy Efficiency financing. In this regard, it was proposed to create Energy Efficiency Financing Department (EEFD) and Appraisal unit for Energy Efficiency project in PFC. In July 2022, PFC established Energy Efficiency Financing Department under the name of "Energy Efficiency Cell" with six members who have expertise in technical and financial matters.

2.1 Facilitation Centre for BEE's financing schemes:

Bureau of Energy Efficiency has set-up a Facilitation Centre for encouraging and up scaling Energy Efficiency Financing in the country. The objective of the Facilitation Centre is as follows:

(i) To develop an online platform for connecting FIs with potential borrowers to mobilize energy efficiency financing;

(ii) To collect the willingness forms and spread awareness of BEE's financing schemes among various beneficiaries like large industries /DCs under the Perform, Achieve and Trade Scheme of BEE, MSMEs, commercial and institutional buildings, Municipalities, Corporations, and commercial establishments; and,

(iii) To prepare the list of energy efficiency technologies that will be uploaded on new IT platform and BEE's website.

Till date this Facilitation Centre has identified more than 73 EE Projects with investment potential of over 2500 Crore. BEE has released a list of 92 EE technologies for financing. Till date 22 FIs are registered with the Facilitation Centre for accelerating energy efficiency financing in India.

3. Memorandum of Agreement with Central Bank of India

In its feat to work along with the major financial institutions of India, BEE has signed a MoU with the Central Bank of India on 14th Oct 2022 to set up EE Financing Cell within its central office, Mumbai. The bank has deputed one technical expert and one financial expert for the Cell to execute the tasks to accelerate EE financing.

4. Memorandum of Understanding with SIDBI

BEE has signed MoU with SIDBI on 3rd Nov 2022 to create a conducive policy environment that stimulates market transformation in favour of EE products, services and technologies for MSMEs. The MoU focuses upon promotion of energy efficiency in MSMEs and exploring IoT based solutions, greening MSMEs, capacity building of various stakeholders, among other things.

SIDBI acts as a principal financial institution for all aspects of MSME financing, besides direct financing it is also a project executing agency for Partial Risk Sharing Facility (PRSF) that guarantees EE projects.

Andhra Pradesh state Initiatives on Energy Efficiency Financing

- APSECM successfully organized Investment Bazaar conference on 18th March 2021 in Vizag with the support of BEE, GoI to encourage energy efficiency investments in the industrial sector.
- In the conference numerous new EE technologies and intervention such as E-Pumps, Screw Vacuum Pumps, True 12 Pulse, Drive Sync, Active Front End Solution etc, were exhibited to the audience. OEMs received more than 3 proposals from industries for implementing EE technology in their units. It was also identified investment requirement of more than Rs. 95crore in various industries that can be funded by Financial Institutions.

One-Day Conference on
Investment Bazaar for Energy Efficiency

- To encourage the implementation of energy efficiency projects in the state of Andhra Pradesh by eliminating barriers in Energy Efficient financing,
  APSECM (SDA of AP) constituted a financial committee with members of financial institutions (Banks, NBFCs) within the state as per the guidelines of BEE, Government of India.
- The members of the committee are Union bank Of India, SBI, Central Bank of India, Bank of India, Punjab national Bank, HDFC Bank, YES bank, Indian Overseas Bank, NABARD, Power Finance Corporation, IIFL Home Loans.
- The state has identified 16 energy efficiency projects and is ready to extend all assistance to implement them at the earliest.
- APSECM in association with BEE, GoI has organized capacity building programs for industry on Energy Efficiency and encouraged them to bring in and focus on EE technology.

Glimpses of Investment Bazaar conference, Visakhapatnam, 18-03-2021

Bureau of Energy Efficiency
Ministry of Power, Government of India

Andhra Pradesh State Energy Conservation Mission
Energy Department, Govt. of AP

BEE's Facilitation Centre

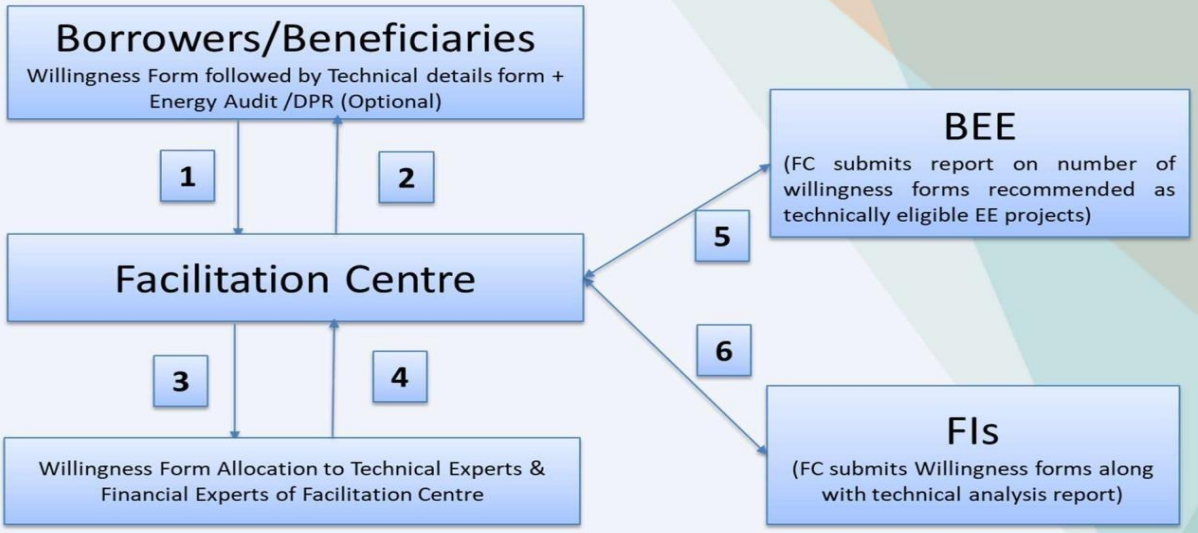
Brochure for Energy Efficient Technologies

Bureau of Energy Efficiency (BEE), has initiated a number of **Energy Efficiency (EE)** initiatives in the areas of household lighting, commercial buildings, standards and labelling of appliances, demand sidemanagement in agriculture/ municipalities, SME's and large industries including the initiation of the process for the development of energy consumption norms for industrial sub-sectors, capacity building ofState Designated Agencies (SDA), etc.

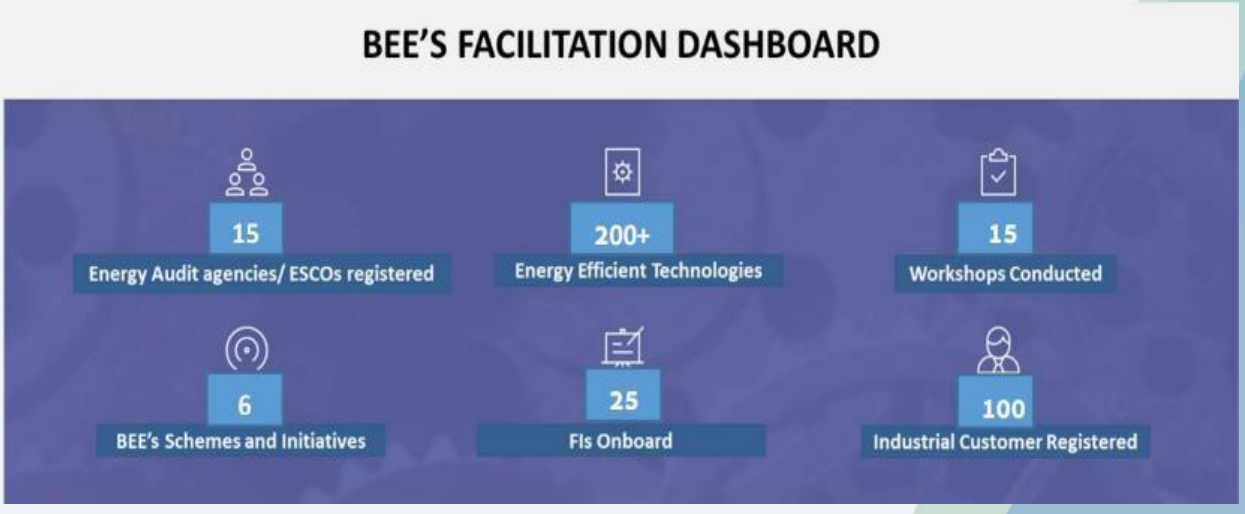
BEE has set up a **Facilitation Centre** for encouraging and up-scaling Energy Efficiency Financing in the country. The **objective of the Facilitation Centre** is to collect the willingness forms and spread awareness of BEE's financing schemes among **various beneficiaries** like large industries /DCs under the PAT Scheme of BEE, MSMEs, Commercial and Institutional buildings, Municipalities, Corporations, and Commercial establishments, **prepare the list of Energy Efficient (EE) Technologies;** and **develop an Online Platform** for mobilizing EE financing in the country. BEE has on boarded **M/s Darashaw and Company Private Limited** as consultant for setting up this Facilitation Centre.

In order to achieve the objective, the Facilitation Centre is closely working with SDAs, Municipalities, DISCOMs, and other nodal agencies to organize a series of webinars/ workshops to reach out to hosts,beneficiaries, and borrowers for their willingness to invest in EE projects.

Potential beneficiaries can fill in project-related information in the Willingness Form. These forms will be evaluated by the Facilitation Centre for Energy Efficiency loan/project. The Facilitation Centre may approach the potential borrower /applicant for any shortfall or additional information needed to prepare the recommendation report. The Willingness Form along with the recommendation report shall be submitted to BEE before being forwarded to the Financial Institutions (FIs) for further processing. FIs may coordinate with the potential borrowers for EE financing. The Facilitation center will track the status of loan financing with support from concerned FIs for each energy efficiency project.



The Facilitation Centre has developed a dedicated Web-portal which will be vital in up scaling the efforts and ensuring maximum outreach across all industrial segments in the country. A dashboard would be provided to track the status of EE project financing. Login access is provided to FIs, beneficiaries and SDA.



A comprehensive list of EE Technology has been prepared by Facilitation Centre in consultation with BEEand experts of the technical committee formed by BEE. This technical committee is headed by Deputy Director General, BEE and the members of this technical committee are from prestigious organizations such as AEEE, EESL, SIDBI, TATA Power, Foundation of MSME Cluster, Energy Audit Services, and Independent senior experts. The technical committee members meet every month at the BEE office to discuss and update the technology list.

The list of EE technologies includes the basic parameters which FIs take into consideration, such as proposed Energy Savings in percentage as well as in Monetary Terms, Average cost of Investment, and Payback Period.This will also help potential borrowers to take decisions regarding the implementation of EE projects. This list shall be continuously reviewed and updated by the Expert Committee formed by BEE on a regular basis.

BEE's List of Energy-Efficient Technologies

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
Electrical					
1	Automation and Control System	5-15 %	20-25	25-30	8-10
2	Electrical Servo Drives	20-30%	10-15	10-20	10-12
3	Energy Efficient Pumps - 5 Star Rating Pumps	15-30%	0.7-4.5	0.25 - 5	20-25
4	Energy Efficient Screw Compressor	25-40%	2.5-6.5	1.5 - 7.5	20-25
5	Energy Efficient Turbo Blower	30-45%	30-40	20-25	18-24
6	Gasifier for Electrical Application	15-25%	20-25	9-12	20-24
7	Hanger Shot blast Machine	30-40%	18-20	8-10	24-30
8	Harmonic filter	3-8%	8-10	5-7	15-18
9	IGBT based Induction furnace	20-30%	20-25	15-20	15-18
10	IGBT based temperature control	10-15%	18-20	5-6	38-40
11	Infrared (IR) Heaters	10-20%	3.5-10	1.8-2.0	18-24
12	Light emitting diode (LED) Lighting	35-50%	13-15	30-35	3-5
13	Micro Turbine	15-30%	40-45	25-40	14-20
14	Motors (IE3 or IE4 or IE5)	25-40%	5-7	2-3	20-25
15	Screw Compressor with Permanent Magnet (PM) moto	15-20%	6-7	3.5-4	18-24
16	Static Reactive Power Generator with Harmonics Filter	4-5%	5	6	11-12

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
17	Temperature controller for cooling tower fan	10-25%	0.2-0.3	0.2-0.3	12-15
18	Tri-generation	20-25%	2500-3000	700-1000	36-40
19	Variable Frequency Drives (VFD)	30-40%	2.5-3	3.5-4	8-10
20	Variable Refrigerant flow (VRF) in HVAC	15-20%	45-50	15-20	36-48
21	Vertical Roller Mill (VRM)	6-10 KWH per MT raw material	20-24	5-6	36-48
Thermal					
22	Cogeneration	30-50%	1000-1200	200-250	50-60
23	Condensate recovery system in boiler/jet dying machine	10-15%	12-15	7-8	18-20
24	Energy Efficient Boilers	10-15%	25-30	5-6	55-60
25	Energy efficient Refrigeration Compressor	10-15%	3.5-5	2-3	18-24
26	Gas fired Annealing furnace	20-30%	14-15	5-6	30-36
27	Heat Pump	30-40%	30-35	20-25	15-18
28	Hot Air Generator from Briquette	20-30%	50-55	35-40	18-20
29	Hot Water Generator	20-25%	2.5-3.5	1.68 - 1.85	19-23
30	PUF insulation	20-30%	3.5 - 4.0	0.6-0.7	60-72
Thermal - Waste Heat Recovery (Low Temperature)					
31	Heat Exchanger	10-15%	4-4.5	8-8.5	6-12
32	Hot water generation from cement kiln	20-25%	100-125	30-40	30-36

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
33	Low-Grade Waste Heat Recovery System (LGWHRS)	10-15%	10-15	5-7	30-36
34	Thermo Compression	20-25%	150-200	70-80	24-30
Thermal - Waste Heat Recovery (Medium Temperature)					
35	Air Pre Heater & Drying Bed in furnace	18-20%	5-5.5	5.5-6	12-14
36	Economiser in boiler/Thermic Fluid Heater	10-15%	3-3.5	4-4.25	6-8
37	Gas-fired Reheating Furnace with WHR System	15-45%	19-21	16 - 28	9-14
38	Waste Heat Recovery Boiler	10-15%	3.5-4	3-3.5	12-15
39	Waste Heat Recovery System for Coke Drying Quenching (CDQ)	20-25%	300-350	200-250	18-24
40	Waste Heat Recovery for power generation	10-15%	900-1100	230	54-60
Thermal - Waste Heat Recovery (High Temperature)					
41	Recuperators	20-25%	4.5-5	3.5-4	12-14
42	Recuperative burner for heat recovery for high medium temperature furnaces	25-30%	200-225	200-225	12-15
43	Regenerative burners for high temperature furnaces	15-20%	20-30	20-30	12-15
Sectoral					
44	Alternative Fuels & Raw Material (AFR) Utilization	Thermal Substitution rate of 5-10%	8000-10000	1600-2000	60-72
45	Adiabatic Pre-reformer	4-10%	1500-1600	600-900	20-30
46	BEE 5 Star Rated AC	20-45%	0.40-0.50	0.18-0.20	24-30
47	Bleached Chemi Thermo Mechanical Pulp (BCTMP)	15-20%	40000-45000	10000-12000	48-50

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
48	CNC Machine (Special Purpose Machine)	30-35%	35-40	25-30	17-20
49	Divided blast cupola	20-25%	6-8	3-4.5	20-24
50	Electrical Annealing Bogie Furnaces	25-30%	8-10	4-5	22-24
51	Energy Efficient Brushless Direct Current (BLDC) Fan	35-50%	4-6	1-2	24-36
52	Energy efficient cyclone	1.03 KWH & 7000 KCal/MT of Clinker	600-650	200-220	36-40
53	Energy efficient gas fired pot furnace	30-35%	10-15	10-15	10-12
54	Energy efficient impeller	1.08 KWH/MT Clinker	100-120	42-45	24-30
55	Energy Efficient Modulating Burner	10-15 %	5-7	8-10	9-12
56	Energy Efficient Tank furnace	15-20%	400-450	200-300	24-30
57	Energy Efficient technology for ECBC/Eco-niwas Samhita	15-25%	220-240	230-250	10-12
58	Energy Efficient Tray Dryer	15-20%	10-12	6-8	15-20
59	Exhaust humidity measurement & control system	5-15%	2-2.5	1-1.25	24-30
60	Fiberglass Reinforced Plastic (FRP) Fan in Withering Units	10 - 15 %	8-10	12-15	6-8
61	Fluidised Bed dryer system	10-15%	15-20	7-10	24-30
62	Forging Furnace	15-20%	20-25	20-25	10-12
63	Gas Engine based co-generation technology	30-40%	800-1000	320-350	30-35
64	Gas fired hot air generator system	20-25%	4-5	3.5-5	10-12
65	Gasifier For Kilns	30-35%	55-65	24-30	28-32
66	Gasifier for Melting And Reheating Process	20-25%	40-45	25-30	18-24
67	Induction Billet Heater	20-25%	38-42	37-42	10-12

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
68	Latest Generation High Efficiency Clinker Cooler	15-20%	1800-2000	400-500	48-60
69	Liquid Ring Compressor	10-15%	500-600	800-900	6-8
70	Louisiana State University (LSU) Port Dryer	25-40%	30-35	16-20	22-25
71	Low Thermal Mass cars in Tunnel Kiln	10-13%	0.55 per car	2.5-3	2-3
72	Medium frequency Induction Furnace	10-15%	30-35	13-15	24-30
73	Membrane Filter Press	30-40%	40-45	15-20	30-35
74	Nutsche Filtration and Drying Process	10-20%	25-30	20-25	15-18
75	Palletisation plant - Sponge Iron	10-15%	4000-5000	800-1000	48-60
76	Rapier or Auto Loom	15-20%	50-52	25-30	24-30
77	Recovery of BOF gas and sensible heat in Basic Oxygen Furnace	3-5%	3753.3	1003.8	45
78	Replacement of steam turbine drive with high speed motor drive	15000 Ton of NG per year	22500-25000	7500-8000	48-50
79	Screw washer	10-15%	45-50	18-20	24-30
80	Tube ice plant	10-15%	17-20	8-10	30-35
81	Ultra-High Power Electric Arc Furnace	10-15%	723.7	714	12
82	Veneering for Industrial furnaces	20-25%	6-7	6-7	11-12
83	Vertical Agitator System for Reaction Vessel	20-25%	2-2.5	1-1.5	20-24
84	Vertical shaft brick kilns	15-20%	10-15	5-7	24-30
85	Zig-Zag Firing	20-25%	30-50	15-20	24-36

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
Innovative decarburization technologies					
86	Aluminium pipe for distribution of compressed air system	10-20%	300-350	120-150	24-36
87	Electric Vehicles and Charging Infrastructure	1 Litre Diesel per 15 km	12-15	3-4	48-60
88	Fuel efficient industrial furnace burners specially for rotary kiln	5-7%	30-35	15-20	20-24
89	Nano composite surface treatment for condenser in power plant	13000 tons of coal/Yr.	250-300	250-300	12-15
90	Plasma Technology in steel melting shop	15-20%	8000-10000	3200-4000	30-36
91	Torrefaction Technology	Not applicable	15-20	15-20	12-15
92	XPLATE on FD Fan to improve boiler combustion efficiency	3-5%	50-60	20-25	36-40

Note: The complete list of EE technology with technology description, equipment capacity, sectorsetc. can be downloaded from website https://beeindia.gov.in/

Investment Bazaar:

BEE has launched one day conferences named as "**Investment Bazaar for Energy Efficiency**" to accelerate and facilitate financing of energy efficiency (EE) projects/ technologies through State designated Agencies (SDAs). It is one of the BEE's initiatives under Energy Efficiency Financing Platform (EEFP). The objective of this event is to provide the common platform to Original OEMs, ESCOs, Financial Institutions, and Industries to interact and discuss the investment as well as financial potential.

Till date, Six Investment Bazaar events have been organized in Vizag (APSECM), Chandigarh (PEDA) and Pune (MEDA), Telangana (TSREDCO), Arunachal Pradesh (APEDA) and Karnataka (KREDL) in which more than Rs. 300 crore of energy efficiency investment had been identified. BEE in association with APSECM (Andhra Pradesh's SDA) is organizing the seventh Investment Bazaar in Vizag on 23rd November 2022 in which the list of energy efficiency technologies is going to be launched in presence of Financial Institutions, OEMS, ESCOs and Large Industries.

Contact Details

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Disclaimer: The present list of EE technologies is based on secondary data published by credible organizations. We have tried to ensure that information provided here is accurate. However, informationprovided here may vary with capacity of technology, choice of vendor, change in baseline scenario andoperating scenario etc and we make no representation and give no warranty of any kind in respect of the information. We don't accept liability for any loss which may arisefrom reliance on information contained here or in respect of any error or omission. We encourage decision makers to conduct detailed study to ascertain savings from potential EE technologies before taking investment decision.

One-day conference on "Investment Bazaar" for Energy Efficiency

Registration Sheet

Date: 23rd November 2022 **Venue: Dolphin Hotel, Vishakhapatnam**

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14.	P. Raj Kumar	Dy. EE/E-C.	APEPDCL.	7382585245.	
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16.	Surathu Ramesh	SSE	EastCoast Rly	9912240537	
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22.	P. S. R. Vithal.	Asst. Manager	Poduri Plastics	9063874135	
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24.	P.V.SSS. RAMA RAJU	Manager	Aurobindo Pharma Pydhibheemavaram	9866825479	
25.	Ramjan	SM Engineering	Brandix Appeal	9959501007	
26.	A. SURYA RAO	Production. Engineer	Ramgopal Electrical Automotive	8187899234	
27.	M. Naga Raju	Manager - BD	KEC International	7288880072	
28.	S. Kumar	Sr Manager (EMS)	RINL/VSP	9959785844	
29.	N. K. Pastogi	Manager (O)	RINL/VSP	8330930791	
30.	A. Sudhakar	Deputy General Mgr	RINL/VSP	7702282666	

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57.	B M Sreeny	Asst Mgr	APPM	8498097926	
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