

Training Workshop for Financial Institutions on Energy Efficiency (EE) Financing in India















1. ABBREVIATIONS

SL. No	Abbreviation	Extended Form			
1.	BEE	Bureau of Energy Efficiency			
2.	СС	Climate Change			
3.	DPR	Detailed Project Report			
4.	EE	Energy Efficiency			
5.	EEFP	Energy Efficiency Financing Platform			
6.	ESCO	Energy Service Company			
7.	ESPC	Energy Savings Performance Contract			
8.	EU	European Union			
9.	FI	Financial Institution			
10.	GHG	Green House Gases			
11.	Gol	Government of India			
12.	IBA	Indian Banks Association			
13.	IFC	International Finance Corporation			
14.	IREDA	Indian Renewable Energy Development Agency			
15.	IRR	Internal Rate of Return			
16.	M&V	Measurement and Verification			
17.	NBFC	Non-Banking Financial Corporation			
18.	NDC	Nationally Determined Contribution			
19.	PRGFEE	Partial Risk Guarantee Fund for Energy Efficiency			
20.	RE	Renewable Energy			
21.	RRECL	Rajasthan Renewable Energy Corporation Limited			
22.	SDA	State Designated Agency			
23.	SME	Small and Medium Enterprises			
24.	ТоТ	Training of Trainers			
25.	VCFEE	Venture Capital Fund for Energy Efficiency			
26.	WBG	World Bank Group			





2. OVERVIEW

Energy Efficiency (EE) has emerged as one of the major resources, a viable and the most cost effective solution to meet escalating energy demand in India. EE measures helps in meeting the energy demand without further addition of generation capacities but instead exploring opportunities of doing demand side management. EE measures have three-fold benefits – they are cost-effective, increase energy security and mitigate greenhouse gas emissions.

In India, the Industries (Large and Small and Medium Enterprises (SMEs)), the Buildings (Commercial and Government) and the Municipalities consume around 50% of the total electricity consumption. There exists substantial energy saving potential in these sectors by adopting EE technologies. The Bureau of Energy Efficiency (BEE) estimates that more than INR 1,50,000 crores investment potential exists in EE implementation out of which INR 56000 crore of investment potential exists with the Industries, Buildings and Municipality sectors alone.

In spite of a substantial potential of investment in EE sector, the growth in EE financing has been mild. One of the major barriers to EE implementation is the perceived risk (on EE projects) by Financial Institutions (FIs) due to limited understanding of the sector. In order to a create awareness among the FIs on the financing needs for EE implementation, BEE has taken several initiatives. BEE had launched training programs for commercial banks under its Energy Efficiency Financing Platform (EEFP) in June 2015. With the objective to "build greater knowledge and confidence through training programme within the financial sector on Energy Efficiency financing", in Phase I (June 2015 to June 2017) BEE had successfully completed 4 Training of Trainers (ToT) workshops and also supported Canara Bank and South Indian Bank in organizing workshops on EE financing. More than 100 Bank/ Non-Banking Financial Corporations (NBFC) officials were trained in Phase I.

Taking this initiative further, under the Phase II program, BEE in partnership with State Designated Agencies (SDAs), Indian Banks Association (IBA) and with the technical support from International Finance Corporation (IFC) plans to conduct twenty Training Workshops for FIs on EE Financing by September 2018 spread across India. These direct training workshops are designed to create awareness amongst the loan officers / risk managers / credit managers towards technical/financial appraisal of EE projects.

As of date, under the Phase II program, six training workshops have already been conducted in Mumbai, Thane, Pune, Bangalore, Mangalore and New Delhi. These workshops addressed the need to bring upon the awareness among the financial institutions towards the EE projects and their potential. The workshops also made the FIs aware of the ESCO business model which is backed by various Gol schemes











3. Training Workshop In Jaipur

BEE in collaboration with the Rajasthan Renewable Energy Corporation Limited (RRECL) and IBA

organized "Training Workshop for FIs on EE Financing" on 16th February 2018 in Jaipur. IFC extended the technical support to the workshops, as part of IFC's Eco-Cities program in India, supported by the European Union (EU).

The one-day training workshop provided a broader perspective of the technical and economic characteristics of EE projects, business models, financing requirements, and risk management approaches. The workshop provided a platform for the participants from Banks and other financial institutions to interact with EE experts/ Energy









Service Companies (ESCOs) on areas

such as market opportunities, business models, technical and financial appraisal of projects and measurement and verification (M&V). The workshop also included quiz and activity sessions for the participants to test their knowledge of the subject. The following modules were covered as part of the workshop –

- Module 1: Introduction to EE Financing and Market Opportunity
- Module 2: Introduction to ESCO and various business models
- Module 3: Financial Appraisal of EE Projects
- Module 4: Technical Appraisal of EE Projects
- Module 5: Introduction to Measurement and Verification (M&V)

The workshop conducted in Jaipur was attended by 28 participants from 10 different Financial Institutions, represented mostly by chief managers, credit officers, risk officers, and/or project appraisal officers.

BEE has previously conducted 6 similar workshops in Maharashtra, Karnataka and New Delhi during September, November and December 2017 and will conduct 13 workshops in different cities in India over the period of next seven months.









4. JAIPUR - WORKSHOP PROCEEDINGS













4.1. INAUGURAL SESSION



The workshop was inaugurated by Mr. K P Philip, Assistant General Manager, Indian Renewable Energy Development Agency (IREDA) in the presence of Ms. Mandeep Kaur, Project Engineer, BEE; Mr. Hari Govindarajan, Consultant, International Finance Corporation (IFC), World Bank Group (WBG) and Mr. Sunit Mathur, General Manager, RRECL.



Ms. Mandeep Kaur, Project Engineer, BEE welcomed the distinguished guests, speakers and the participants to the training workshop. She highlighted the importance of EE and discussed about the various financing options available for the EE based projects. She mentioned about various initiatives taken by BEE in promoting EE financing and discussed in detail the objective of the workshop. She acknowledged RRECL for organizing the workshop. She added that six workshops have already been successfully conducted in Mumbai, Thane, Pune, Bangalore, Mangalore and New Delhi where 162 participants were trained and 13 more

workshops will be conducted in various cities across India in the next seven months.











Mr. Hari Govindarajan, WBG, mentioned about the climate change programs carried out by IFC and WB. He discussed about the WBG investments in Climate Change (CC) and their future plans. He highlighted about IFC's Eco-Cities program that is been implemented in partnership with European Union (EU). He also listed various initiatives taken by IFC on EE financing. He highlighted the challenges FIs face in EE financing and discussed about the ESCO markets and available business models for assessing the projects. He assured the bankers and attendees that they will have a better

understanding of EE market and its financing mechanism from the workshop and will be able to bring the benefit to their respective organizations.



Mr. K P Philip, Assistant General Manager, IREDA, appreciated the initiatives taken by BEE in promoting EE in the country through regular interventions like the workshops and seminars and introduction of various schemes. He mentioned that going forward EE is going to be a very important driver in limiting the carbon footprint in the environment. He added that it is also in the interest of banks to finance EE projects as substantial risk coverage is undertaken by the government itself. He invited the participants to take the benefit of the workshop and reach out to the stakeholders through this unique platform.



Mr. Sunit Mathur, General Manager, RRECL, acknowledged the participants from various organizations and delivered the vote of thanks.









4.2. PRELIMINARY QUIZ

Post the Inaugural Session, the participants were provided with a preliminary quiz questionnaire to understand their awareness levels on EE and its financing aspects. This was followed by the technical session.

4.3. TECHNICAL SESSION

Module 1: Introduction to Energy Efficiency Financing & Market Opportunity By – Ms. Mandeep Kaur, Project Engineer, BEE



The first technical session was on "Introduction to Energy Efficiency Financing and Market Opportunity presented by Ms. Mandeep Kaur, Project Engineer, BEE. Ms. Kaur presented an overview on the importance of Energy Efficiency Financing and how EE is helping to mitigate climate change related issues. Ms. Kaur briefed the participants about the Paris Climate Agreement and India's commitment under the agreement.

She discussed in detail the various policy initiatives such as Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE),

Venture Capital Fund for Energy Efficiency (VCFEE) of BEE to promote EE financing. She pointed out that more than INR 1,50,000 Crore of investment potential exists for EE implementation. She also discussed about various elements of BEE's EEFP and shared the initiatives taken under EEFP such as training and capacity building of FIs, preparing reports and publications related to EE financing. The session by Ms. Kaur was concluded by apprising the participants about Banks perspective on EE projects and also discussing on the barriers for implementing EE project despite the huge market size.

Module 2: Introduction to ESCOs and various Business Models for Implementation of EE projects

By - Mr. Manish Kansal, Sr. Manager, CARE Rating



Mr. Manish Kansal started the session by providing an overview of ESCO and the current scenario of energy services market in India. He discussed in detail the key characteristics of ESCO and also explained about the methodology adopted for ESCO Grading Assessment. He explained in detail about the EE value chain and the various stakeholders involved (especially ESCO) and their roles and responsibilities. He discussed about various services offered by ESCOs such as installation, commissioning, M&V, design, engineering, and construction etc.

He explained in detail the different ESCO models such as shared savings, guaranteed savings, deemed savings etc., their key features, implementation method and advantages of various ESCO models. He discussed in detail about Energy Savings Performance Contract (ESPC) and its importance. He concluded the session by discussing the major barriers of the ESCO market and its remedy.



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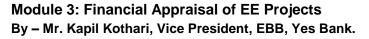






EE Case Studies- ESCO Experience By- Mr. Akash Jain, Director, Pranat Engineers Pvt. Ltd.

Mr. Akash Jain shared his more than 20 years of experience of executing various ESCO projects in various locations across the country wherein substantial savings of energy were achieved. He discussed about various successful case studies while sharing live projects for financing.







In this session, Mr. Kapil Kothari, VP, EBB, Yes Bank presented the important elements in financial appraisal like project costs, financial parameters, financial structure, ESPC etc., of EE projects. Mr. Kothari gave specific importance to the contracts between host and ESCO and mentioned that for financial well-being of the project, it is important to have strong and binding contract. He discussed in detail the various financials risks and the mitigation measures that can be undertaken. He also shared the different types of loans (technology based and project based) available for EE projects.

Module 4: Technical Appraisal of EE Projects



By - Mr. K P Philip, AGM, IREDA

The session on "Technical Appraisal of EE projects" was presented by Mr. K P Philip, AGM, IREDA. He shared about the various technical aspects of EE project appraisal. Mr. Philip elaborated about the possible EE projects in different sectors such as Industries (Large, SMEs), Buildings, Municipalities etc.; He also discussed in detail the key characteristics of EE projects. He discussed in detail about the various documents/information sources like DPR, Investment Grade Audit Report (IGAR), Technology/Equipment specifications, and Operations and Maintenance manuals, which should be referred for carrying out technical appraisal. He further explained about the environmental and legal appraisal

process of EE projects. EE technologies, risk assessment and risk mitigation of EE projects were the other important aspects of consideration mentioned by Mr. Philip. He reiterated that it was important to comply with legal and environmental regulations. Mr. Philip concluded the session by showing actual case studies where the EE projects were successfully implemented. In a thoroughly interactive session, he mentioned the challenges faced during technical appraisal and how to address them going forward. He also mentioned that the industry is nascent and invited the bankers to take active participation in growth of the sector.











4.4. ACTIVITY SESSION

Post the completion of technical and financial appraisal session, an activity session was conducted. The participants were divided into teams and were provided with different EE case studies, in order to understand, analyze and appraise the projects both on technical and financial aspects and select one project for financing. One member from each team then presented to the audience on the selected project and provided reasons for selection.















TECHNICAL SESSION (CONTINUED)

Module 5: Introduction to Measurement & Verification (M&V) By – Mr. Joseph Prakash, Associate Director, Meghraj Capital Advisors Pvt. Ltd.

The last session was on "Introduction to Measurement & Verification" and was presented by Mr. Joseph Prakash, Meghraj Capital Advisors Pvt. Ltd. Mr. Joseph explained in detail about M&V including definition, importance and purpose of M&V, various stakeholders involved in M&V their roles and responsibilities, and how it is useful for FIs.

He explained in detail about the four options for carrying out M&V which are deemed/stipulated savings, bill data analysis, metering, and building/process modeling. He explained the key features, advantages and



disadvantages of each M&V option. He also provided case studies for each M&V option. He also highlighted that the M&V costs are generally between 5 to 10 percent of the project investment and there is a trade-off between accuracy and cost of the M&V. At the end of the session, a M&V case study of a lighting project was discussed.

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4.5. FINAL QUIZ

All the participants actively participated in the final quiz round. The quiz questionnaires covered the learning on overall session and modules presented during the workshop. All the participants performed well in the quiz. The quiz results were announced at the end of the workshop and the top performers were honored with prizes.











4.6. CONCLUDING SESSION

Distribution of Certificates

The workshop concluded with certificate distribution to all the participants.



Vote of Thanks

Mr. Sunit Mathur thanked the participants for sparing their time to be part of the workshop, and speakers for taking the time to share their experiences with the trainees. Mr. Mathur also thanked BEE for conducting the workshop in Jaipur and IFC for their technical support to the BEE in organizing the training workshops. He hoped that the workshop would have helped the participants in understanding the EE sector better and going forward banks would be better equipped in providing finance to EE projects.











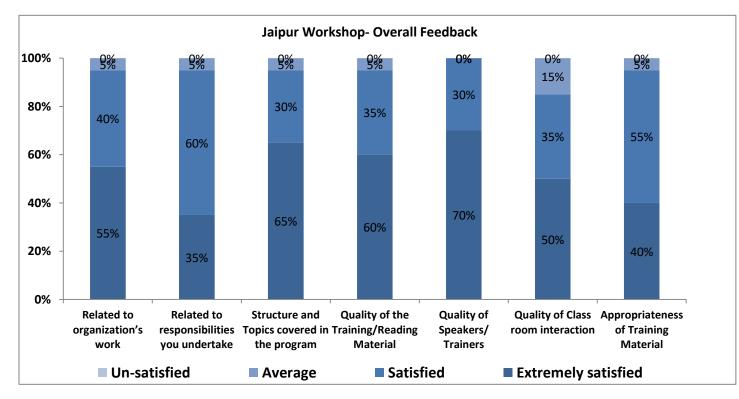
ANNEX A - JAIPUR WORKSHOP - FEEDBACK EVALUATION

The workshop in Jaipur was attended by 28 participants from 10 different banks/NBFCs, mostly represented by credit officers, risk officers, and/or project appraisal officers.

The summary of the overall feedback of the workshop provided by the participants is given below:

- ⇒ 95% of the participants rated the program high¹ on "Relevance of workshop to the organization"
- ⇒ 95% of the participants rated the program high on "Relevance of workshop to their work within the organization"
- ⇒ 95% of the participants rated the program high on "Structure of topics covered in the workshop"
- ⇒ 95% of the participants rated the program high on "Quality of training and reading materials"
- ⇒ 100% of the participants rated the program high on "Quality of Speakers/Trainers"
- ⇒ 85% of the participants rated the program high on "Quality of classroom interaction"
- ⇒ 95% of the participants rated the program high on "Appropriateness of training material"

A summary chart of the above parameters are presented below



¹ Either "extremely satisfied" or "satisfied"







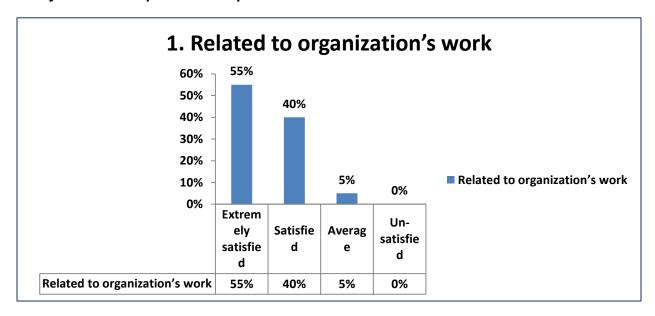


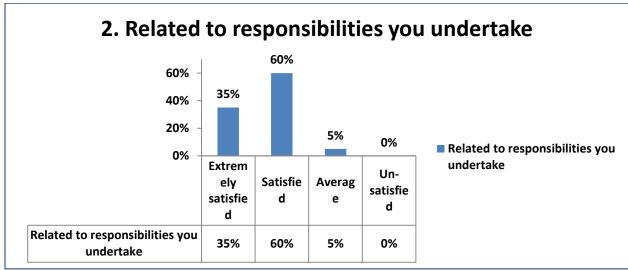


The analysis of the Jaipur workshop is presented below:

A summary chart of the above parameters are presented below

Analysis of the Jaipur Workshop







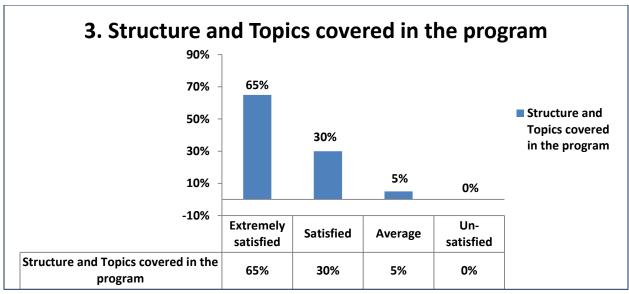
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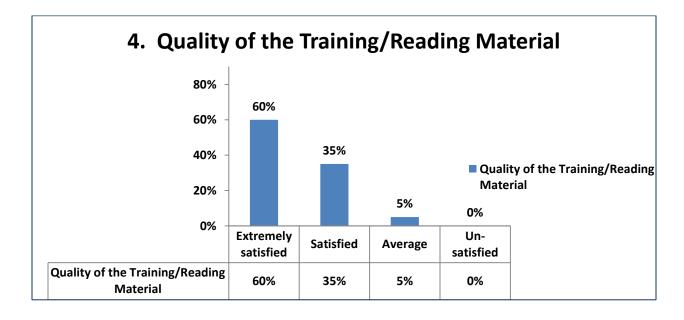












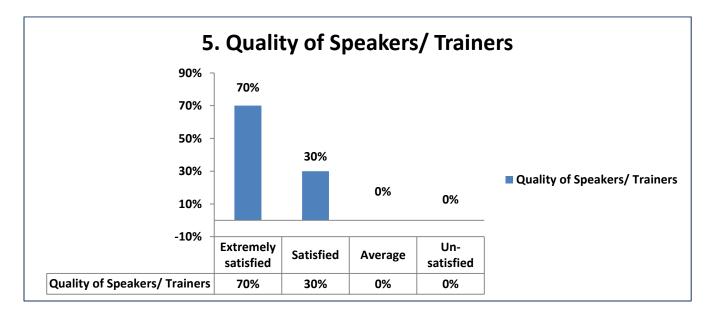
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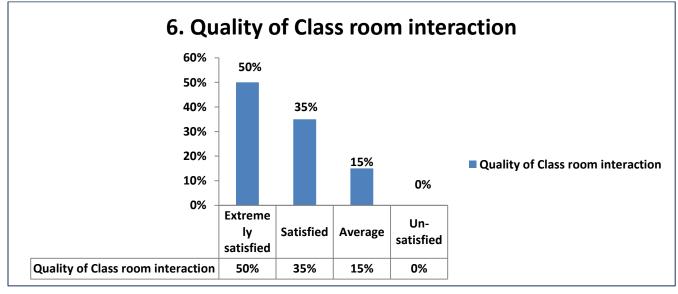










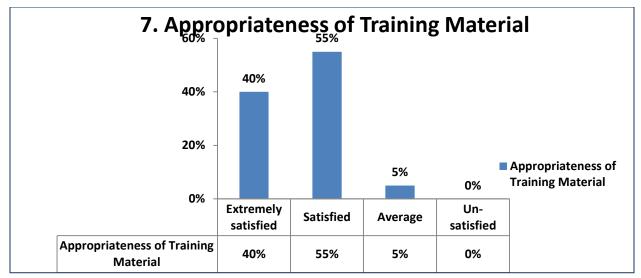












The workshop was imparted through 5 module sessions, covering -

- 1. Energy Efficiency Financing Market Opportunity
- 2. Introduction to ESCO and Business Models
- 3. Technical Appraisal of Projects
- 4. Financial Appraisal of Projects and
- 5. Introduction to Measurement & Verification

Apart from the 5 sessions, the participants were also involved and presented with case studies, activity session and quiz.

The summary chart of the feedback provided by the participants on all the training sessions delivered by the trainers / speakers is given below:

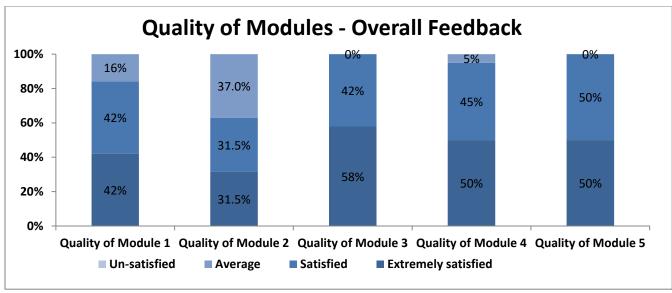


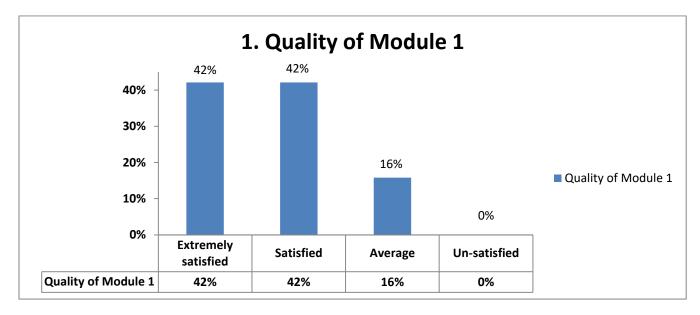












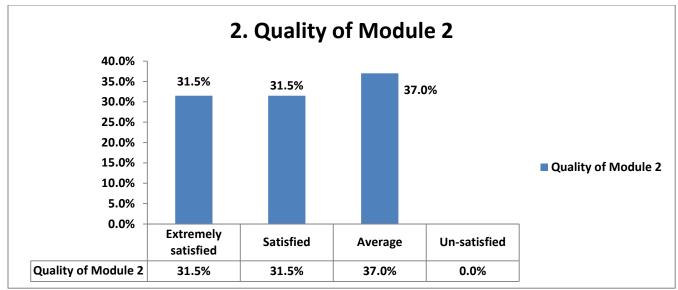


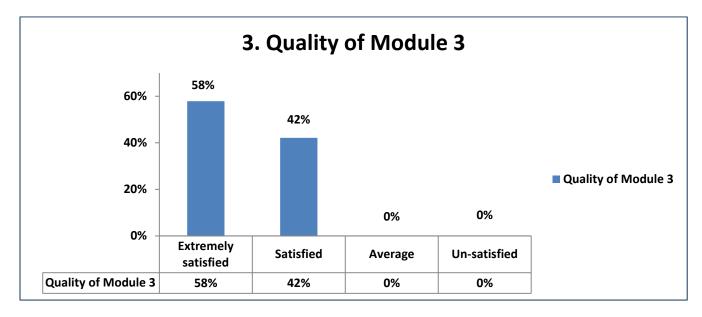












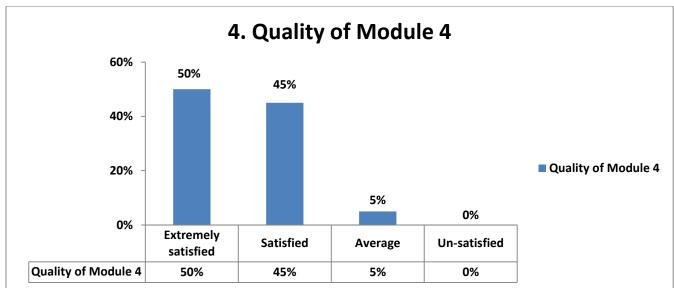










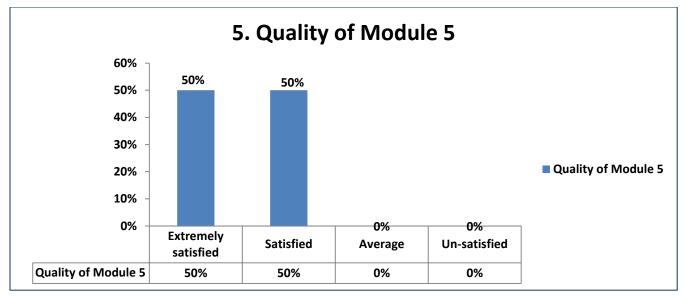












WHAT THE PARTICIPANTS LIKED THE MOST ABOUT THE WORKSHOP

- Workshop introduced very new and interesting topic and helped in enhancing knowledge
- Awareness created about the untapped investment opportunities on energy efficiency
- Session about financing and appraising of EE projects

WHAT THE PARTICIPANTS SUGGESTED FOR FURTHER IMPROVEMENT IN THE WORKSHOP

- The sessions can be more focused on financing and the technical aspects of EE can be covered little less
- It would be useful to have more session with ESCO companies











Annex B - JAIPUR WORKSHOP - AGENDA

"Training Workshop for Financial Institutions on Energy Efficiency financing"

Date: 16th February 2018

Venue: Hotel Park Prime, Jaipur					
Time	Topic	Speaker			
09:30 AM - 10:00 AM Registration					
WELCOME SESSION					
10:00 AM - 10:10 AM	Welcome Remarks	Ms. Mandeep Kaur, Project Engineer, Bureau of Energy Efficiency (BEE)			
10:10 AM - 10:15 AM	Address	Mr. Hari Govindarajan, Consultant, World Bank Group			
10.15 AM – 10.25 AM	Special Address	Mr .K.P. Philip, AGM, Indian Renewable Energy Development Agency (IREDA)			
10:25 AM – 10:30 AM	Vote of Thanks	Mr. Sunit Mathur, GM, Rajasthan Renewable Energy Corporation Limited (RRECL)			
10.30 AM - 10.45 AM	Group Photograph followe	d by Tea			
10:45 AM - 11:00 AM	10:45 AM - 11:00 AM Preliminary assessment of trainees on Energy Efficiency				
	TECHNICAL SESSION				
11:00 AM - 11:30 AM	Module 1: Introduction to Energy Efficiency (EE) and Market Opportunity	Ms. Mandeep Kaur, Project Engineer, BEE			
11.30 AM - 12:00 PM	Module 2: Introduction to ESCO and various business models for implementation of EE projects	Mr. Manish Kansal, Sr. Manager, CARE Rating			
12.00 PM - 12:30 PM	EE Case Studies – ESCO experience	Mr. Akash Jain, Director, Pranat Engineers Pvt. Ltd.			
12:30 PM - 01:30 PM	Lunch				
01:30 PM - 02:15 PM	Module 3: Financial Appraisal of EE project	Mr. Kapil Kothari, Vice President, EBB, Yes Bank			
02:15 PM - 03:00 PM	Module 4: Technical Appraisal of EE project	Mr .K.P. Philip, AGM, IREDA			
03:00 PM - 03:30 PM	Activity session for the participants	Coordinated by BEE & IFC			
03:30 PM - 04:00 PM	Module 5: Introduction to M&V	Mr. Joseph Prakash, Asso. Director, Meghraj Capital			
04:00 PM - 04:30 PM	Quiz	Coordinated by BEE & IFC			
04:30 PM - 04:45 PM	High Tea				
04:45 PM – 04:55 PM	Distribution of Certificates & Quiz Prizes	BEE and RRECL			
04:55 PM – 05:00 PM	4:55 PM – 05:00 PM Vote of Thanks				











Annex C - Jaipur Workshop - Participants- Fls

SI.	Name	Designation	Organization	Email ID	Mobile No
No	Mr.				
1	Pradeep Kumar Mehar	Chief Manager	Andhra Bank	bm0269@andhrabank.co.in	7791865577
2	Mr. N Sudhakar Rao	Chief Manager	Andhra Bank	zojai@andhrabank.co.in	8985681081
3	Mr. Rituraj Shrimali	AVP-BB	Yes Bank	rituraj.shrimali@yesbank.co.in	9950567555
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5	Mr. Sujit Tiwari	Manager-BB	Yes Bank	sujit.tiwari@yesbank.in	8094887779
6	Mr. Anil Kumar Sharma	AM-BB	Yes Bank	anil.sharma3@yesbank.in	9928146233
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9	Mr. Ashish Patni		Yes Bank	ashish.patni@yesbank.in	9983080642
10	Mr. Rahul Mishra		Yes Bank	rahul.mishra4@yesbank.in	8890370819
11	Mr. Rachcha Shrinivas Radhakisan	Chief Manager	State Bank of India	shrinivas@sbi.co.in	9413396683
12	Mr. Sushant Kumar		State Bank of India	sbi.11298@sbi.co.in	8696918428
13	Mr. Ajay Kumar Gupta		State Bank of India	ajay.gupta76@sbi.co.in	8107333300
14	Mr. B.S. Meena		State Bank of India	sbi.31929@sbi.co.in	9801998027
15	Mr. Jitesh Meena		State Bank of India	jitesh.meena@sbi.co.in	9799393835
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18	Mr. Badri Prasad Sharma	Chief Manager	Oriental Bank of Commerce	msme_7034@obc.co.in	9672071807
19	Mr. R.K. Meena		Oriental Bank of Commerce	rag_7235@obc.co.in	9819779686







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21	Mr. Parag Sharma	AGM	Bank of India	paragbi@gmail.com	8744035425
22	Ms. Ritu Yadav		Allahabad Bank	zo.jaipur@allahabadbank.in	7023390170
23	Mr. Ravi Kumar Chetani		Punjab National Bank	ravi.chetani@pnb.co.in	8003693635
24	Mrs. Monika Joshi		Punjab National Bank	monika.joshi@pnb.co.in	9001917999
25	Mr. Vyom Gupta		Bank of Baroda	vyom.gupta@bankofbaroda.com	9660198339
26	Mr. Ronak Godara		Bank of Baroda	godara.ronak52@gmail.com	8460897841
27	Mr. Shishir Saxena		Bank of Baroda	shishir.saxena@bankofbaroda.com	9721467673
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Annex D – Jaipur Workshop – List of Organizers

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6.	S C Gupta	ТМ	RREC	scgsop@gmail.com	
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Indian Banks' Association









Annex E – Jaipur Workshop –List of Speakers

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1	IIMANABAN	,	Bureau of Energy Efficiency	mkaur@beenet.in	
1 ')	Mr. Hari Govindarajan	Consultant	World Bank Group	hgovindarajan@ifc.com	
3	Mr. Kapil Kothari	VP, EBB	Yes Bank	kapil.kothari@yesbank.in	
4	Mr. Manish Kansal	Sr. Manager	CARE Ratings	manish.kansal@careratings.com	
5	Jain	Director	Lia.	akash2316@gmail.com	
h	Mr. K P Philip	Asst. General Manager	IREDA	kpphilip@ireda.in	
. /			Meghraj Capital Advisors Pvt. Ltd.	joseph@meghrajindia.com	
1 X	Mr. Sunit Mathur	General Manager	RRECL	Sunitmathur2000@yahoo.co.in	

Indian Banks' Association





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