



Sustainability and Energy

PROFESSIONAL DEVELOPMENT PROGRAM

By

GREEN TREE
GLOBAL

ENERGY EFFICIENCY SCENARIO IN INDIA



BACKGROUND

As India's paces towards economic transformation, it also stands committed to its sustainability vision, as well as various international accords on reducing country's overall energy consumption. It would be a daunting challenge, though, to meet country's US\$ 5 Tn economy target while keeping its contribution to climate change in check.

Energy Efficiency (EE) will play a key role to help meet India its developmental goals, as it remains the most efficient way to minimize carbon emissions, and deliver optimum electricity-service needs, especially under severe resource and environmental constraints,

BARRIERS FOR EE IN INDIA

TOWARDS CAPACITY BUILDING

Policy and Institutional

Technical and Managerial Capacity

Materials and Technology

Finance Based

Lack of technical and managerial skills to remain one of the key barriers for EE growth in India (BEE, UNDP, 2015)

To make professionals future ready in the EE and sustainability domain, **GreenTree Professional Development Program** provides human resource capacity building training, centered around the concept of renewables, energy and resource efficiency for end-sectors - **buildings, industry, and utilities** (e.g. DISCOMS, municipalities, etc.). The service portfolio includes:

- Mandatory Policies and Regulatory Environment
- Green Finance
- Research and Assessment
- Greening of Designs
- Project Implementation
- Compliance
- Monitoring and Verification

TRAINING REQUIRED VIS-À-VIS PROJECT LIFE-STAGE

BENEFICIARIES: BUILDINGS | INDUSTRIES | MUNICIPALITY AND DISCOMS

1 Conceptualization and Planning Stage

- EE technologies
- EE policies and updates
- Feasibility assessment
- EE practices

How This is Useful

- Business strategy integration
- Risk assessment and mitigation

2 Design Stage

- EE simulation & modelling
- DPR preparation
- Benefits-cost analysis

How This is Useful

- Efficient design
- Project branding

3 Construction Stage

- EE compliance checks
- Commissioning checks

How This is Useful

- Effective project management and coordinated execution

New Facility

4 O&M Stage

- Energy auditing
- Energy benchmarking
- Feasibility assessment
- EE policies and updates
- MRV
- EE implementation models

How This is Useful

- Energy bill management
- Risk assessment and mitigation

Existing Facility

5 Expansion/ End-cycle Stage

- EE technologies
- Feasibility assessment
- DPR preparation

How This is Useful

- Strategic integration
- Risk assessment and mitigation
- CSR Planning

Note: List non-exhaustive and indicative in nature

Sample Policy Training Required vis-à-vis Beneficiary and Facility Type

Facility Type	Buildings	Industries	Municipalities and DISCOMS
New Facility	<ul style="list-style-type: none"> • NBC • ECBC • GDCR • Municipal Bye Laws • Green building rating 	<ul style="list-style-type: none"> • BIS • ECBC • Green building ratings 	<ul style="list-style-type: none"> • DSM regulation • PAT • ECBC • RPO
Existing Facility	<ul style="list-style-type: none"> • PAT • Green building ratings • RPO 	<ul style="list-style-type: none"> • PAT • Green building ratings • RPO • GHG inventory and reporting 	

Note: List non-exhaustive and indicative in nature



Need for capacity building is paramount in energy context in our country. Many times, even well qualified professionals are not aware of simple policies and government programs that could benefit them immeasurably, let alone the simulation and technological capabilities.

- Regional Director, National Productivity Council

1 ENERGY & DAY LIGHT SIMULATION TRAINING

- Overview of eQuest user interface
- Introduction to schematic design wizard
- Building model development in design development wizard (Case Study)
- Exploration in detailed design mode
- Assignments and discussion
- Simulation and result analysis
- eQuest simulation insights
- Q.A. session

DURATION: 2 DAYS (6 HR EACH)
TG: SENIOR/MIDDLE MANAGEMENT, PRACTICING ENGINEERS/ ARCHITECTS, AND STUDENTS

GREEN BUILDING TRAINING PROGRAMS

- Advantages of green buildings
- Introduction to green building certification and its variants
- Process and requirements for achieving green building certification
- Government policy and incentive for green building certification
- Introduction to energy conservation building codes (ECBC)
- Case studies for green buildings (Water, Energy, Site & Construction Waste Management)
- Q.A session

DURATION: 1 DAY (6 HR)
TG: ARCHITECTS, DESIGNERS, PRACTICING DEVELOPERS, STAKE HOLDERS IN INFRA- SECTOR, AND GOVERNMENT AGENCIES

3 MEASUREMENT & VERIFICATION TRAINING PROGRAM

- Overview of M&V protocols and methodologies
- Compliance to IPMVP
- M&V planning activities
- Definition of energy efficiency savings
- Typical M&V issues and baseline adjustments
- Energy audit of thermal insulation system
- Case studies and examples

DURATION: 2 DAYS (6 HR EACH)
TG: SENIOR/ MIDDLE MANAGEMENT ENGINEERS & ARCHITECTS

RENEWABLE ENERGY TRAINING

- Renewable energy basics
- Assessment & latest developments in wind power, Solar thermal systems, photovoltaic generation, geothermal heating, biofuels, & waste-to-energy, energy storage, fuel cells, hydroelectric power, ocean thermal energy
- Cases and usage of renewable energy solutions in building applications
- Economic issues, financial methodologies and incentives
- Approval processes

DURATION: 1 DAY (6 HR)
TG: SENIOR/ MIDDLE MANAGEMENT FROM MAINTENANCE AND PRODUCTION DEPARTMENT

4

CARBON REDUCTION TRAINING

- Introduction, executive briefing & high-level strategies
- Introduction to carbon emissions management (why you may need to report GHGs)
- Carbon measurement & monitoring
- Practical strategies to reduce carbon footprint
- Carbon credits, GHG trading and new revenue tactics
- Financing / selling / program approval

DURATION: 1 DAY (6 HR)
TG: SENIOR/ MIDDLE MANAGEMENT PRACTICING ENGINEERS

5

FUNDAMENTALS OF DEMAND-SIDE MANAGEMENT (DSM)

- Defining DSM and key drivers
- Designing the DSM/EE portfolio
- Program vs. Portfolio - pros/cons
- Market research - what to collect and how much data is enough?
- Sampling: the critical element
- Evaluation methodologies
- Estimating DSM potential
- Program implementation
- Pros/cons of internal management
- Benefit-cost calculations
- What data utilities should provide to regulators and how often?

DURATION: 2 DAY (6 HR EACH)
TG: SENIOR/ MIDDLE MANAGEMENT IN REGULATORY PRACTICES, UTILITIES AND DISCOM IN POWER INDUSTRY

6

7 PERFORM, ACHIEVE & TRADE (PAT) COMPLIANCE MANAGEMENT: WHO, HOW, WHAT, & WHEN

- PAT in Energy Conservation Act, 2001
- Understanding mandatory activities & timelines
- Baseline, data monitoring and record keeping
- Preparation of PAT assessment documents
- How to select a verifier
- Procedure of submission of various documents to BEE/SDA
- Understanding and trading of energy saving certificates
- Q.A session

DURATION: 1 DAY (6 HR)
TARGET GROUP (TG) : ENERGY AUDITOR/ MANAGER, SENIOR/ MIDDLE MANAGEMENT

FUNDAMENTALS OF ENERGY MANAGEMENT FOR INDUSTRIAL, COMMERCIAL, AND RESIDENTIAL SECTOR

- Total energy management: concepts and methodology
- Energy conservation policy models
- Energy management through retrofit, new energy efficient technologies
- Energy conservation case studies
- Energy saving opportunities in electrical utilities (fans, blowers, pumps, air compressors, HVAC systems etc.)

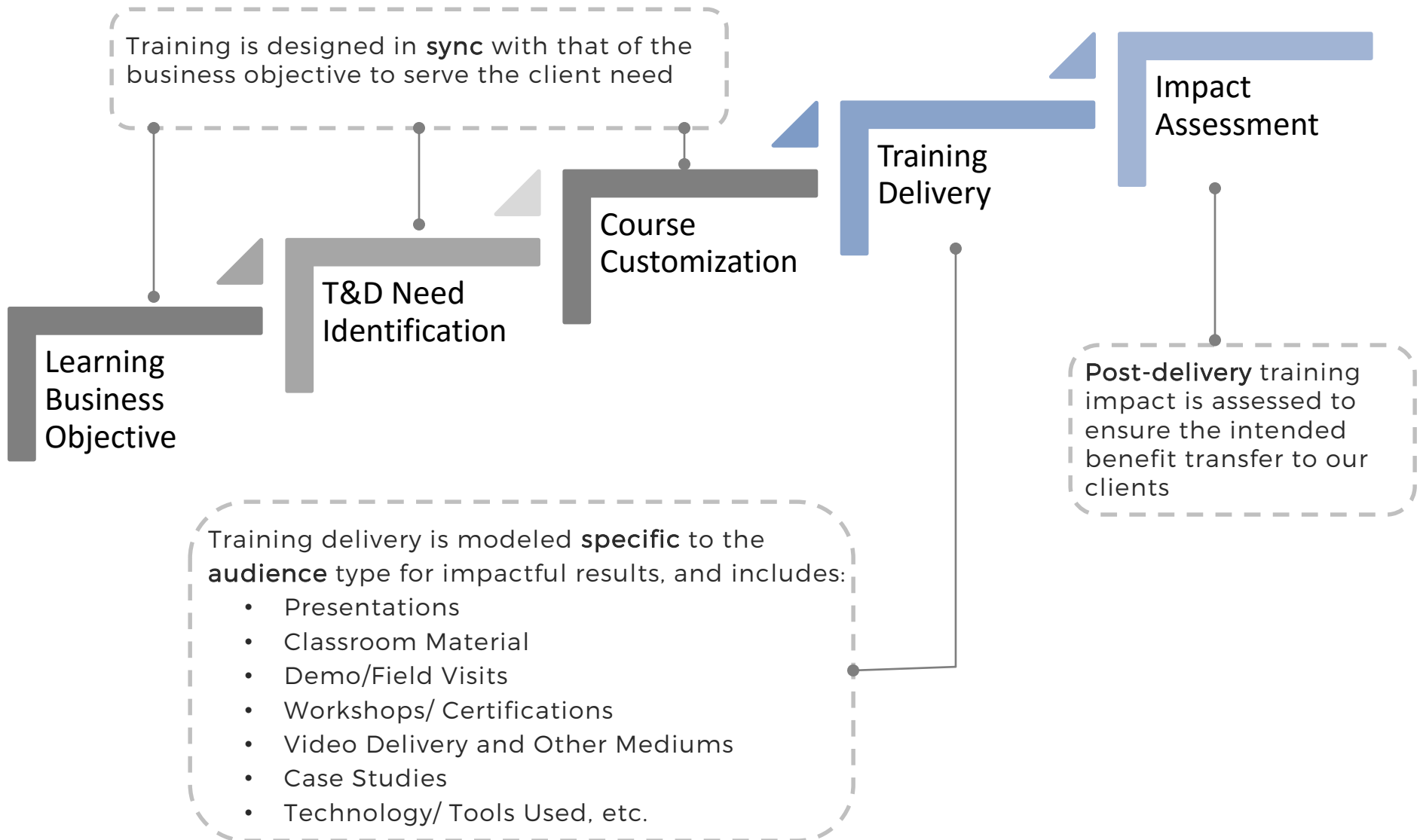
DURATION: 1 DAY (6 HR)
TG: ENERGY AUDITOR/ MANAGER, SENIOR/ MIDDLE MANAGEMENT, PRACTICING ENGINEERS

9 ECBC (BUILDING CODES) TRAINING PROGRAMME/ WORKSHOPS BY ECBC MASTER TRAINER

- One day training program: overview and concepts of energy conservation and role of ECBC in achieving the same
- Two day training program: concepts and simulation of ECBC compliant buildings
- ECBC guidelines of BEE
- Real life case studies
- Awareness regarding energy efficient material required for ECBC compliant building
- Q.A session

DURATION: 1/2 DAY (6 HR EACH)
TG: ENERGY AUDITOR/ MANAGER, SENIOR/ MIDDLE MANAGEMENT, PRACTICING ENGINEERS

PROGRAM DELIVERY MECHANISM



OUR DELIVERY & PROGRAM EXECUTION STRENGTH

- In-house team of technical experts and trainers
- Roster of **40+** expert trainers and speakers
- Collaboration with government and non-government institutions (E.g. National Productivity Council (NPC), Society of Energy Engineers and Managers (SEEM), etc.)
- Academic collaborations (E.g. University of Petroleum and Energy Studies (UPES), etc.)

50+

**Strong In-house
Technical Team**

Advisors
& Think-Tank

30+ Certified
Professionals

03 ECBC Master
Trainer

03 Certified M&V
Professionals

02 Energy
Auditors

12 IGBC APs

03 LEED APs

07 GRIHA CP &
Evaluators

02 EDGE &
WELL APs

01 ESTIDAMA /
Pearl PQP



Pradeep Kumar
International
Consultant on EE &
Climate Change
20+ Yrs



Anurag Bajpai
IIT Roorkee
Green Building
Design
12+ Yrs



Dhruv Jain
IIM Ahmedabad
Energy Metering,
Analytics & AI Solution
10+ Yrs



Pramod Singh
IIT Roorkee
EE, RE Integration
& Advisory Services
12+ Yrs



Samvedana
IIT Roorkee
Dev. Energy
Tools
9+ Yrs

Our Experience – Professional Development Program

Training Program	Duration	Client	No of Programs Conducted	Total No. of Training days	No of Participants Trained
Refresher Training Program for CEM and CEA	2019	BEE	90	180	2,700
ECBC Training Program	2019	MEDA, HAREDA, UREDA, WBSEDCL, UPNEDA, OSDA	95	75	3,000
ECBC Training Program, Exhibition & Debate	2018-19	PEDA	10	20	400
EE Awareness Program for School Children	2019	UPNEDA	250	250	25,000
In-house Training Programs	2015-19	Several Commercial Clients (GDA, Textile Association, etc.)	50	75	2,500

Note: List non-exhaustive and indicative in nature

Our Clients: Skill Development



ABOUT GREENTREE: PORTFOLIO



Advisory Services

- ✦ Energy Efficiency
- ✦ Renewable & Storage
- ✦ Demand Side Management
- ✦ Energy Access
- ✦ EV Charging Infrastructure Advisory
- ✦ Corporate Social Responsibility



Sustainable Design & Implementation

- ✦ Green Building Design & Certification
- ✦ Sustainability Audits & ESCO
- ✦ Building Commissioning Services
- ✦ Renewable Integration
- ✦ STP, RWH, Waste Management & Disposal



Products & Solutions

- ✦ Dual Source Prepaid Energy Metering & Billing
- ✦ Energy Monitoring & Analytics
- ✦ Energy Management Solution (EMS) for Residential, Commercial, & Industries



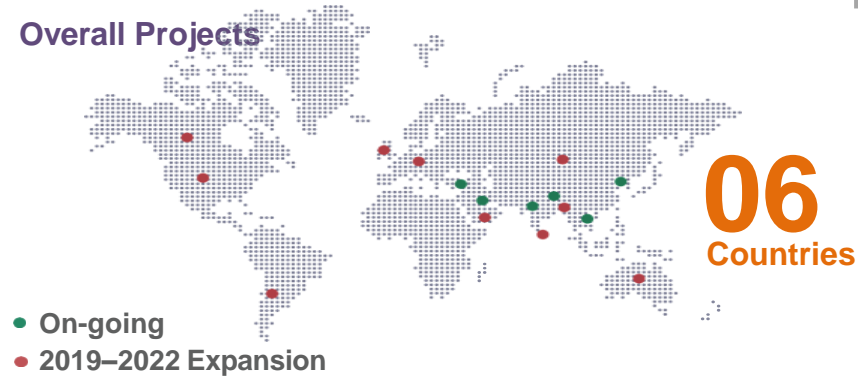
Skill Development

- ✦ Customize in-house training programs
- ✦ ECBC & Green Building Workshops
- ✦ E-learning through webinars
- ✦ Refresher Course for AEA, CEA, CEM
- ✦ Demand Side Management

550+

Overall Projects

Projects Overview



45%

Sustainable Design Implementation

30%

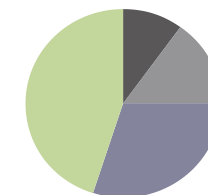
Advisory Services

15%

Skill Development

10%

Products & Solutions



Sectorwise Overview

40%

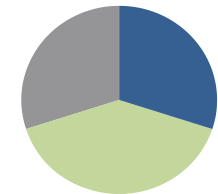
Residential

30%

Commercial

30%

Miscellaneous



Domain Overview



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Locations:

*Delhi-NCR | Mumbai | Kolkata | Chennai |
Dehradun | Dhaka*

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