Bureau of Energy Efficiency

सत्यमेव जयते
Government of India
Ministry of Power

german cooperation
DEUTSCHE ZUSAMMENARBEIT

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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THIS PRESENTATION WAS SHARED BY

Sameer Kwatra

Natural Resources Defense Council

FOR THE SESSION:

"Integration of Renewable Energy in Buildings in India

DURING ANGAN 2019

Knowledge Partner

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Integration of Renewable Energy in Buildings in India

Sameer Kwatra

ANGAN Conference September 10, 2019 - New Delhi

NRDC India Program

RENEWABLE ENERGY: ACCESS, FINANCE AND JOBS

COOLING AND ENERGY EFFICIENCY

CLIMATE RESILIENCE: AIR POLLUTION AND HEAT HEALTH

It is simple. Really.

1. Design, construct, and equip for efficiency
2. Operate optimally
3. Run on renewables

Aim for zero net emissions by managing demand, adding storage and integrating mobility. Build smart from the start.

Technologies exist: Rooftop.

1. Rooftop: solar photovoltaic and water heating

Image credits: NRDC, Wikimedia Commons

Technologies exist: Integrated.

1. Rooftop: solar photovoltaic and water heating
2. Integrated: Thin film solar, Building Integrated Photo Voltaic (BIPV), solar roofs, solar tiles

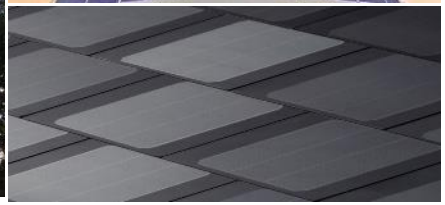


Image credits: Wikimedia Commons

Technologies exist: At or near site.

1. Rooftop: solar photovoltaic and water heating
2. Integrated: Thin film solar, Building Integrated Photo Voltaic (BIPV), solar roofs, solar tiles
3. At site: micro-wind, community solar, bioenergy etc.

Image credits: Wikipedia

It has started happening in India

Telangana State
Energy Conservation Building Code
Compliance Certificate

Application/File Number:

TPA License Number:
X/TPA-ECBC/GHMC/2017

Name of the Building,

Address

has successfully achieved following level of certification established by Government of Telangana for Energy Conservation Building Code compliance

Month, Year of Construction

3 STAR RATING AT DESIGN STAGE

METHOD OF COMPLIANCE

PRESCRIPTIVE | WHOLE BUILDING PERFORMANCE | BUILDING ENVELOPE TRADEOFF

GENERAL INFORMATION

Applicant Name: Mr. XXXXXX
Address: XXXX, Hyderabad.
Project Description: Office Building
Project Category : Daytime Building
Site Area: XXXXX m²
Built Up Area: XXXXX m²
Conditioned Area: XXXXX m²
Unconditioned Area: XXXX m²

TECHNICAL INFORMATION

Project Base case EPI* : XX
Project Existing EPI* : XX
Star Category Awarded: Three Star
(* EPI is in kWh/m²/yr)

Percentage of Savings
12 %

This certificate is issued on basis of analysis, compliance report & declaration duly signed by representative of Owner - Mr. XXXX, Architect - XXXX, XXXXXX , MEP Consultant - Mr. XXXXX, XXXXX Pvt. Ltd, and ECBC Consultant - Mr. XXXXX, XXXXX, of the proposed building.

Name of Licensee XXXX

Name of Firm: XXXXX

Signature of the Licensee

Hyderabad IKEA

- TS ECBC 4 Star rating
- 800 kWp solar PV
- Electric auto rickshaws

Image credits: IKEA, ASCI and NRDC

Policy Examples from India

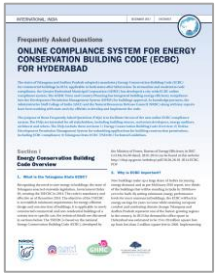
- ECBC 2017
  - Mandatory provision for installation of renewable energy systems
  - For buildings aiming for ECBC+ and SuperECBC 2%-6% of total electric load to be met through renewable energy
- TS ECBC 2019 (draft)
  - Same as ECBC 2017 for TS four and five star
  - Net zero site energy for TS six star
  - Electric charging: All buildings to be EV capable, and three star and above buildings to be EV ready for at least 20% of parking
- Rooftop solar phase II (August 2019)
  - Nodal role for discoms with incentives and goals

A lot more can be done

1. State and city governments
   - Implement building energy codes
2. Building and renewable energy stakeholders
   - Focus efforts towards RESCO+ESCO collaboration, knowledge exchange, business models
   - Advance Zero Net Emissions programs
   - Develop home/building asset rating and valuation systems
3. Policymakers
   - Enact or Amend policy to expand scope of Energy Conservation Act 2001 + (Draft Renewable Energy Act 2015)
   - Work with distribution companies to advance evolution to next generation business models
   - Establish institutional financing mechanisms such as “Green Windows” within financial institutions to bring requisite focus and capital

Thank You

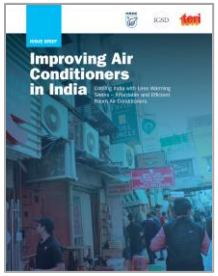
Getting Cities Climate Ready December 2018



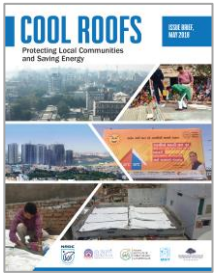
FAQs Online compliance system for ECBC for Hyderabad Dec 2017

ECBC Resource Guide Dec 2017

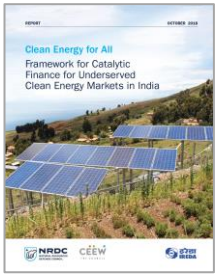
Keeping It Cool May 2018



Improving Air Conditioners in India April 2018



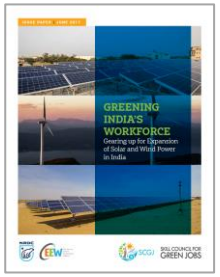
Cool Roofs May 2018



Clean Energy for All: October 2018

www.nrdc.org/india

Cooling With Less Warming: Improving Air Conditioners In India November 2018



Greening India's Workforce June 2017

Powering Jobs Growth with Green Energy July 2019