Sri Ramakrishna

EE and RE Integration for Sustenance and Growth

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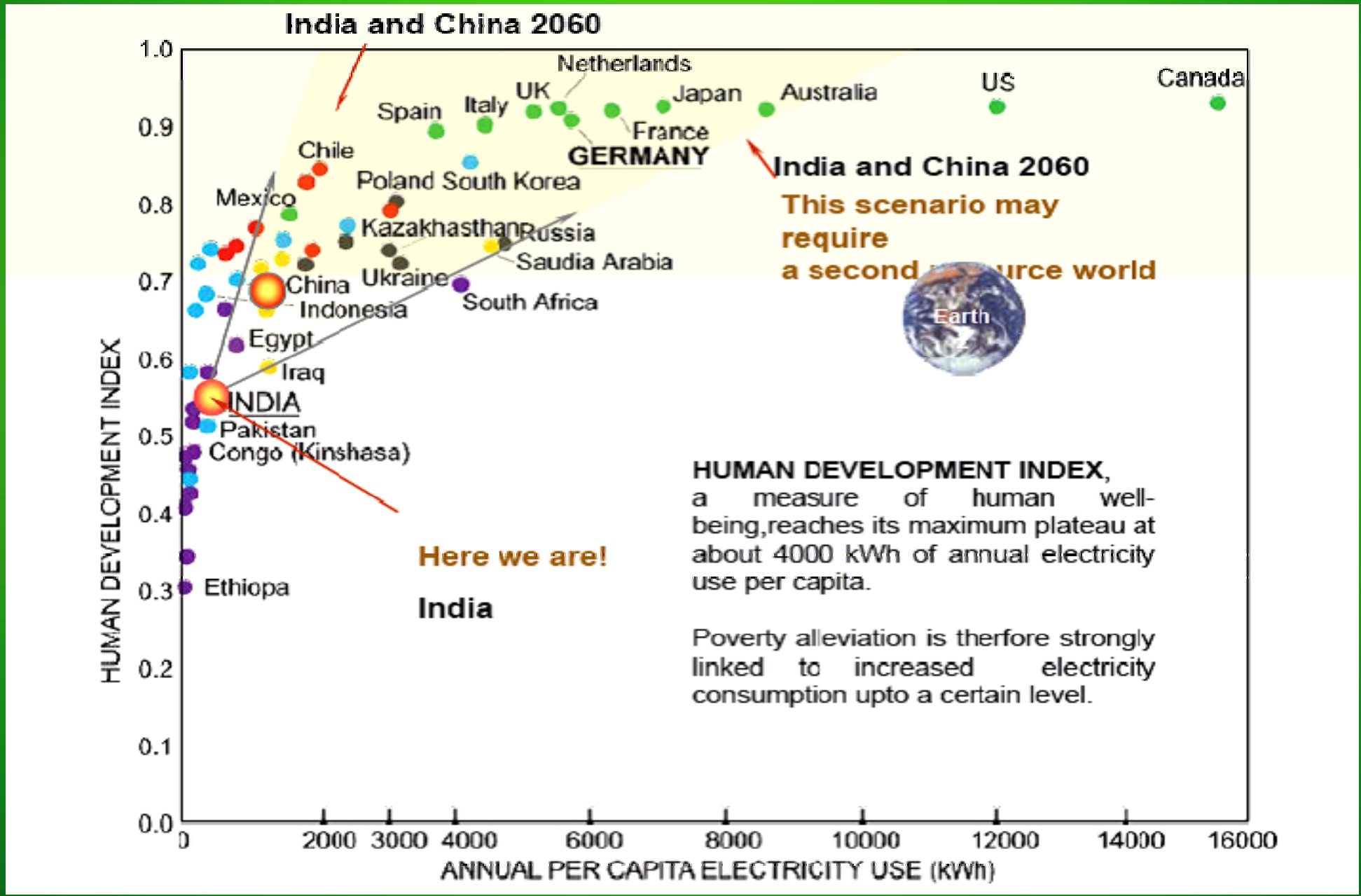
HIGHLIGHTS OF PRESENTATION

- Background - About the Energy Management Course
- Present Scenario About the Energy Usage and Need for Integration of RE and EE Applications
- Compliance of Renewable Energy and Energy Efficiency with future prospects
- One Case Study on Vapour Absorption Cooling System
- Way Forward and Acknowledgement

ENERGY MANAGEMENT INITIATIVES AT INDIA'S FIRST PREMIERE MANAGEMENT INSTITUTE

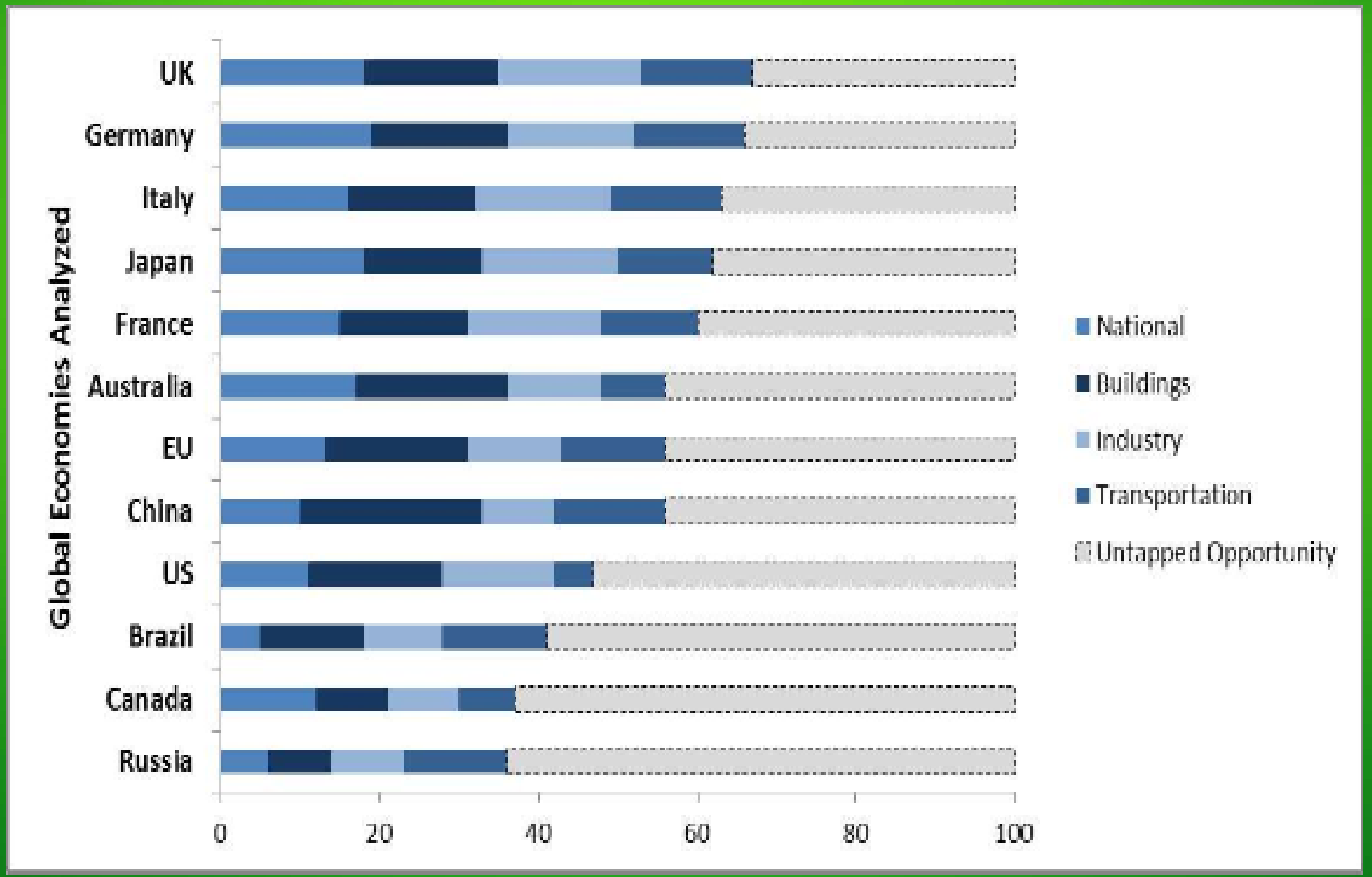
- Established in 1953, Energy Programmes since 1991, Rated A1+
- Full-time course – two years Master Degree in Energy Management under University of Calcutta
- Short-term course – Energy Management & Audit and ISO 50001
- Energy Club since 2000 - Facilitator
- AEE – Kolkata Chapter Since 2003
- Energy Research & Consultancy Projects, Ph D Programme
- ENERGY CONSERVATION DAY (since 2000) - the 16th observance with 8th Renewable Energy and Energy Efficiency Business Forum on 14th December 2015 Kolkata

Energy Modesty – An Inconvenient Truth

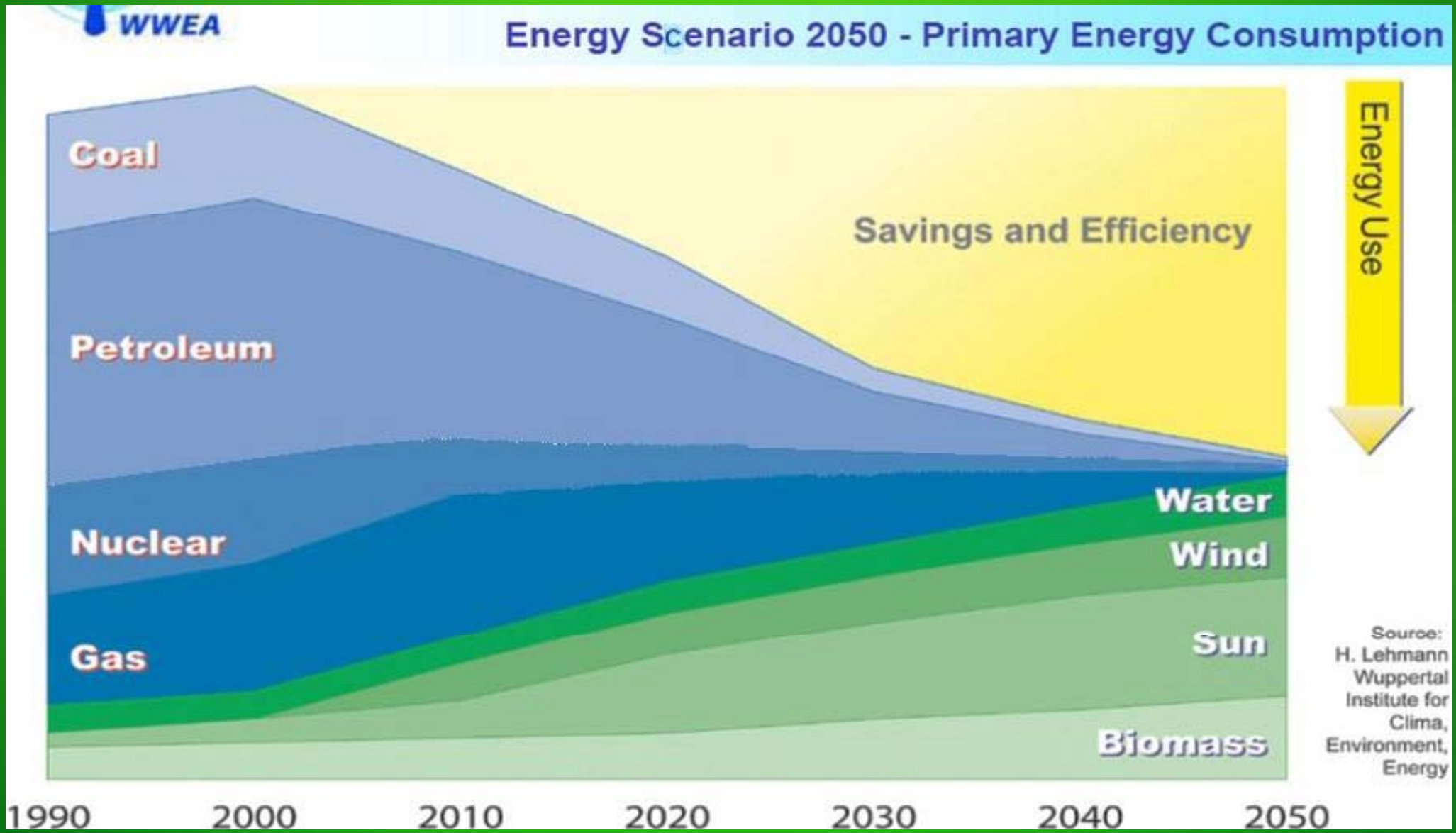


International Energy Efficiency Score Card

The American Council for Energy Efficient Economy (ACEEE) 2012



STRATEGIES



THE VIEWS OF WORLD WIND ENERGY ASSOCIATION MAY DIFFER FROM OURS

INVESTMENT	INR 30 Crore /MW (APPROX. EQUIVALENT COST OF SPV AT 60% PLF) Vs INR 5 Crore/MW in COAL BASED THERMAL POWER PLANTS
FUEL COST	ABSENT

CHALLENGES

HIGH INITIAL INVESTMENT; GRID-PARITY IS GOING TO BE ACHIEVED MAY BE IN NEAR FUTURE

MANUFACTURING THE SYSTEM STILL DEPENDS ON FOSSIL FUELS

Simple Pay Back Period	1.4 Years
Equivalent Capacity Avoided	3581 MW
Investment per Avoided Capacity	<INR ONE Crore/MW

2009	558	2377	3180	2451	359	5.65	12.4	4274
2008	368	1859	2493	2216	325	1.85	3.47	15729
2007	384	1843	2923	1620	308	1.25	5.86	15379
2006								044
2005								122
2004								585
2003								181
2002								588
2001								929
2000								07
1999	123	203	940	203	43	1.62	2.15	2444
Total 14 years		18675	26142	22133	3581	33.65	149.53	228709

CHALLENGES

FOSSIL FUEL CONSUMPTION IS REDUCED ONLY PARTLY

RE AND EE JOINING HANDS

- At Home and Offices ----------> ECBC, 2007
- In Transport------> Biodiesel & Ethanol in EE Vehicles
- In Industry----------> Vapour Absorption Cooling
  Driven by RE or
  Waste Heat

CASE STUDY: APPLICATION OF GREEN ENERGY FOR COOLING

(TO BE PRESENTED IN WORLD ENERGY ENGINEERING CONGRESS 2015, ORLANDO, USA)

BASELINE CASE

- INVESTMENT FOR 33 TR VAM = INR 2808853
- LIFE CYCLE COST = INR 20715685
- CO_2 EMISSION THROUGH LIFE IF ELECTRICITY IS TAKEN FROM GRID = 492480 kg

INTERVENTION CASE

- INVESTMENT WHEN RUN ON RE = INR 3821221
- LIFE CYCLE COST = INR 23431506
- WITH NO CO_2 EMISSION, REQUIRED CARBON PAYMENT = INR 3193/Ton CO_2
- AS GRID RELIABILITY REDUCES, THE INTERVENTION CASE BECOMES MARKET COMETITIVE TO BASELINE CASE

WAY FORWARD

Integrated Approaches towards Promotion of Energy Efficiency, Conservation and Renewable Energy Applications

Energy Audit

RE Assessments




"From the West we have to learn the sciences of physical nature, while on the other hand the West has to come to us to learn and assimilate religion and spiritual knowledge."

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THANK YOU