Making Energy Efficiency Happen in India

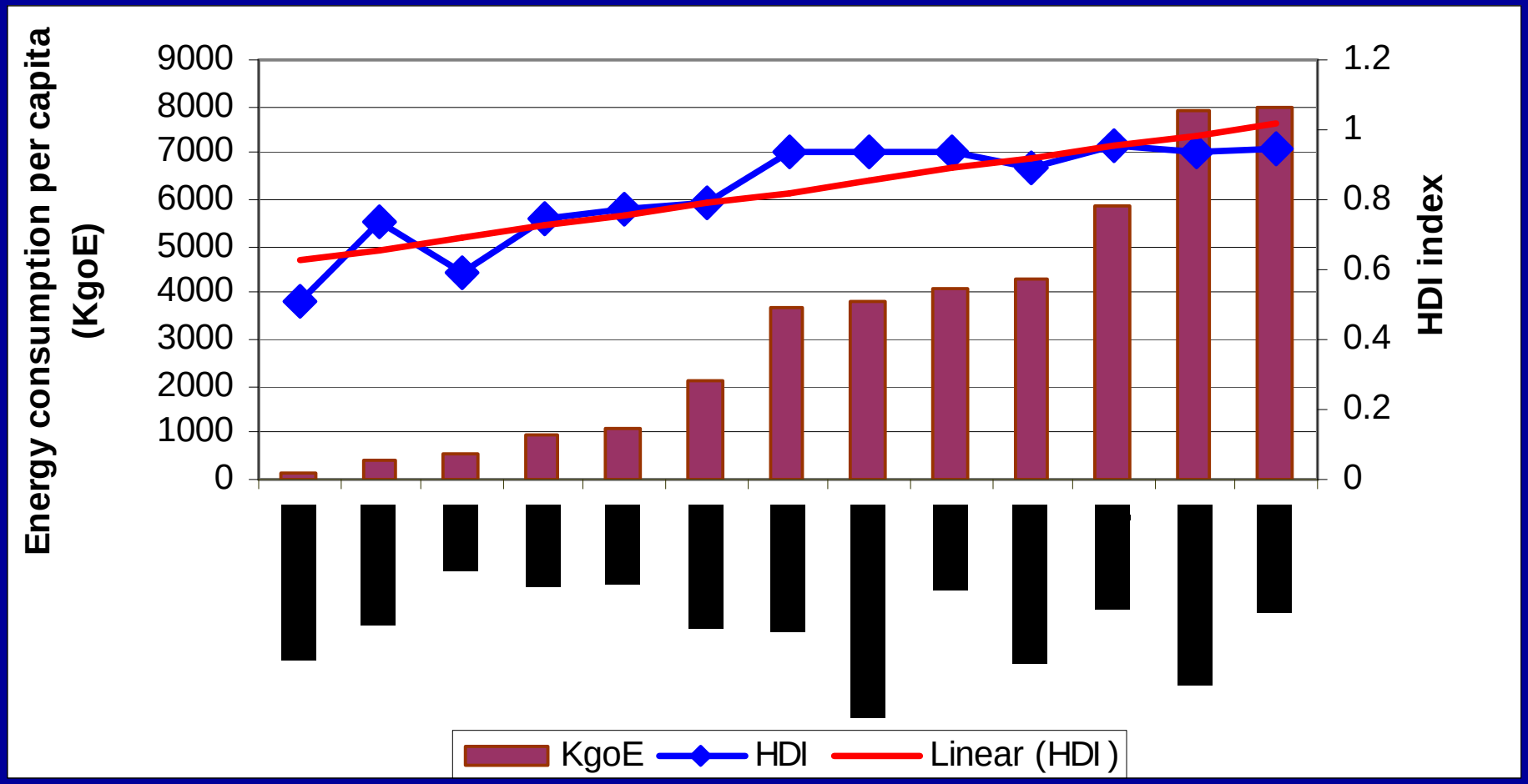
V Raghuraman
Principal Advisor & Chief Cordinator
Confederation of Indian Industry

Generation Scenario

	Target (MW)	Installed (MW)	% Achieved
VIIIth Plan	30538	16422	53.8
IXth Plan	40245	19015	47.5
Xth Plan	41110	21180	51.76
XIth Plan(*as projected)	78500		

Lacunae in planning and implementation – Defined project milestones and targets for energy in KWh units for each year matching GDP growth rate.

India Needs More Energy for its Development



India's per capita energy consumption remains low

Country	GDP per capita (PPP US $ 2002)	TPES per Capita (Kgoe)	TPES Kgoe/US $PPP
US	35750	7968	0.22
UK	26150	3826	0.15
Japan	26940	4056	0.15
China	4580	967	0.21
Saudi Arabia	12650	5774	0.46
India	**2670**	**513**	**0.19**
World	**7804**	**1651**	**0.21**

Trends in Total CO2 Emissions from fossil fuel combustion 2000-2005

Country	Change in Real GDP	Total CO2 Emissions
Germany	3.20%	-1.60%
United Kingdom	12.80%	1.00%
Russia	33.00%	2.00%
United States	**12.60%**	**2.00%**
France	7.70%	2.40%
Japan	5.20%	2.50%
Canada	15.20%	3.50%
European Union	10.80%	3.60%
Korea	24.70%	4.90%
Italy	5.50%	6.60%
Brazil	9.80%	7.90%
Mexico	9.50%	9.00%
South Africa	11.80%	10.50%
Australia	17.50%	11.00%
India	**37.00%**	**18.10%**
Indonesia	20.70%	25.90%
China	**58.10%**	**69.90%**

Most Improved

Least Improved

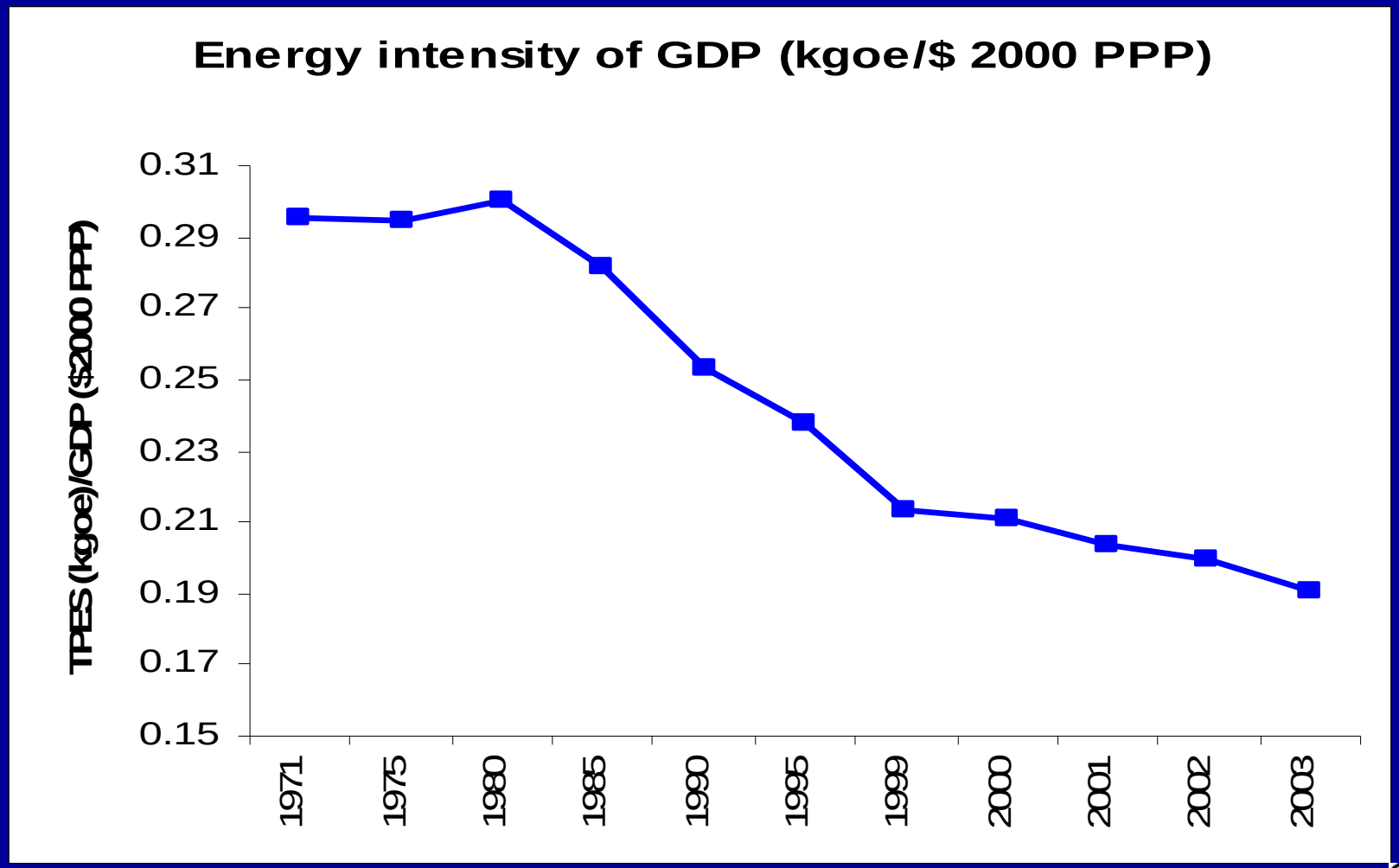
Source: IEA

Improvements in CO2 emissions from fossil fuel combustion Real GDP Intensity:2000-2005 (Real GDP (Kg CO2 per 2000 US $ PPP)

Country	Change in Real GDP	Energy Intensity
Russia	33.00%	23.20%
Korea	24.70%	15.60%
India	**37.00%**	**14.10%**
United Kingdom	**12.60%**	**11.00%**
Canada	15.20%	10.70%
United States	12.60%	9.20%
European Union	10.80%	8.10%
Germany	3.20%	6.00%
Australia	17.50%	5.70%
France	7.70%	4.40%
Japan	5.20%	2.50%
South Africa	11.80%	1.60%
Brazil	9.80%	0.20%
Mexico	9.50%	-0.40%
Italy	**5.50%**	**-1.70%**
Indonesia	20.70%	-3.80%
China	**58.10%**	**-8.30%**

Source: IEA

Decreasing Energy Intensity in India's Sustainable Development



Energy Efficiency and CDM

- 591 projects approved through CDM route
- Can generate CERs of around 379,249,970 units till 2011-12

Sector	No. of Projects	Investment (INR Billion)	CERs Expected till 2012
Energy Efficiency	171	156.48	113,830,347
Fuel Switching	34	102.74	50,683,375
Industrial Process	35	8.14	97,529,358
Municipal Solid Waste	8	2.81	3,988,041
Renewable	156	153.21	54,557,324
Renewable (Biomass)	187	75.11	58,661,525
Total	591	498.49	379,249,970

India: Strategies and Initiatives for Sustainable Growth

- **India is a responsible nation** and is committed to grow with environmental responsibility.
- India has delivered a GDP growth rate of 8 % with only 3.7 % growth in its TPES.
- India has achieved energy – GDP de-coupling at much earlier stage of its development cycle.
  - GDP growth rate has been higher than projected even through power capacity addition has been lower (only 50 %) than planned.
  - Industrial growth and profitability has been high even though oil prices have sky rocketed.

Energy Conservation and Efficiency

Energy Conservation potential assessed as at present - 20,000 MW

Potential harnessed :

- During Xth Plan period - 877 * MW
- Target for XIth Plan period - 10,000 MW

** as indicated by participating units in the National Energy Conservation award scheme, for the previous five years.*

- Energy Efficiency and Demand Side Management relevant for
  - Avoiding fresh generating capacity
  - Flatten the load curve
  - Savings of energy and cost
- Measures initiated :
  - CFL programmes in States
  - Standards and Labeling program.
  - Energy Efficiency programmes in existing buildings
  - Energy Conservation Building Codes (ECBC)
  - Capacity building of SDAs
  - Demand Side Management in Agriculture
  - Designated Consumers and implementation of EC Act

Issues to be addressed

- Barriers for EE & DSM to be removed.
- The State Regulatory Commissions and Utilities to be encouraged to implement the Conservation initiatives
- Engagement of Stakeholders

Industrial and Commercial users

- Time of use tariff for industrial and commercial users.
- Incentives to industry to adopt conservation/ efficiency measures

States

- Encourage implementation of DSM programmes in Agriculture/ Municipalities

Domestic consumers

- Ensuring availability at low cost and promoting use of low cost CFLs.
- Awareness

Targeted Savings in XI Plan

S.No	Name of the Scheme	Targeted Saved Capacity
1	Bachat Lamp Yojana(BLY)	4000MW
2	Standards & Labeling Programme	3000MW
3	Energy Savings in Existing Buildings	200MW
4	ECBC Implementation	500 MW
5	Agricultural DSM & Municipal DSM	2000 MW
6	Small & Medium Enterprises Scheme	500 MW

Source: BEE

Way Forward

- One unit of energy saved in consumption avoids nearly three units of fresh capacity addition.
- Estimated potential of 20,000 MW through Energy Efficiency and Demand Side Management.
- Saving potential of 30 - 35% each in industry & agriculture by retrofitting with efficient equipment / pump sets.
- Saving potential of 25 - 30% in commercial / government establishments & residential houses.

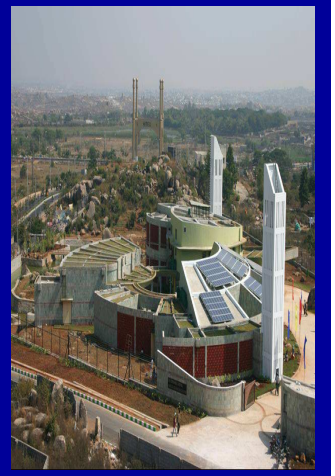
Way Forward

- Energy Efficiency in Public Procurement.
- Efficiency standards for power plants.
- Minimum standards for electricity T&D losses.
- India participating in Asia Pacific Partnership on Clean Development and Climate.
- 500 building being targeted for Energy Audits by 2010 under ECBC route.
- Nano Car as a climate wrecker despite being a “people’s car.” Worldwatch Researcher

Private Sector Initiatives

CII - Green Business Centre

- Set-up to serve as “Centre of Excellence” for Energy, Environment, Green Buildings, Renewable energy, Water & Climate change activities in India.
- Since inception, CII-GBC has been helping Indian companies to achieve world class energy efficiency standards.
- So far, CII-GBC has conducted 550 energy audits, which resulted into energy savings worth of around 1550 Million rupees.
- CII-GBC provides ‘National Award for Excellence in Energy Management’ every year to promote energy efficiency practices in the country



Conclusions

- India's per capita energy consumption among the lowest in the world
- Energy intensity of the Indian economy is decreasing steadily along with carbon intensity, ensuring country's sustainable development.
- Institutions created by Indian Government e.g. Bureau of Energy Efficiency have undertaken various measures to promote energy efficiency.
- Private sector initiatives (viz. CII - GBC) have also complimented energy efficiency improvements.

Energy Efficiency Happening in India