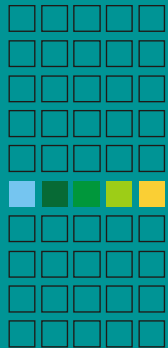




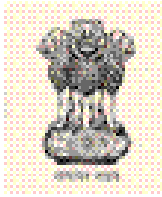
# The Highest Need: Devising and Implementing the Regulatory Framework



*UNEP-IEA-IFC Workshop on  
Scaling Up Energy Efficiency: Bridging the Action Gap  
IEA, Paris, 2<sup>nd</sup> April, 2007*

**Gireesh B. Pradhan**

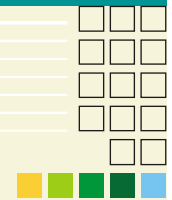
Joint Secretary  
Ministry of Power  
Government of India

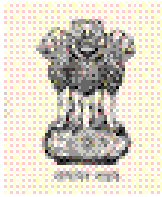


# INDIAN POWER SECTOR



- Power in concurrent list of Constitution
- Both Central and State can legislate - Central law prevails in the event of conflicting provisions
- India has been able to achieve an economic growth rate of 8% per annum during last few years.
- Targeting an economic growth rate of 9-10% per annum.

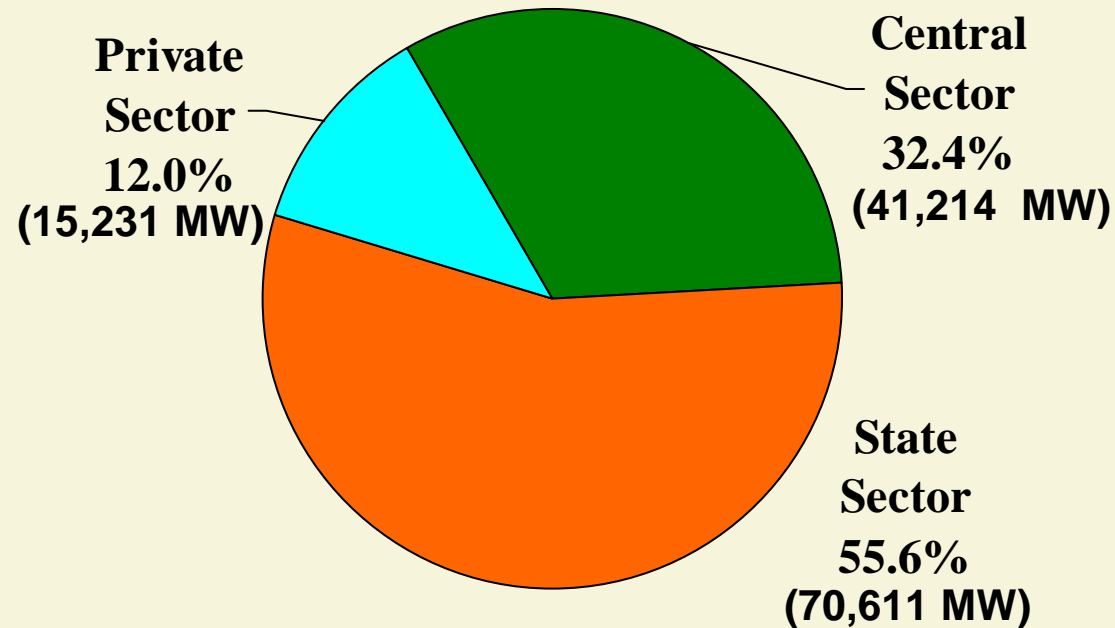




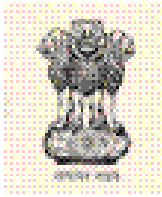
## Generating Capacity

Hydro	33,193 MW (26%)
Thermal	83,772 MW (66%)
Coal	68,989 MW
Gas	13,582 MW
Nuclear	3,900 MW (3%)
Renewables	6,191 MW (5%)






**TOTAL 1,27,056 MW**



**In addition captive generation capacity of appx. 41,000 MW.**

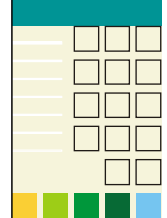
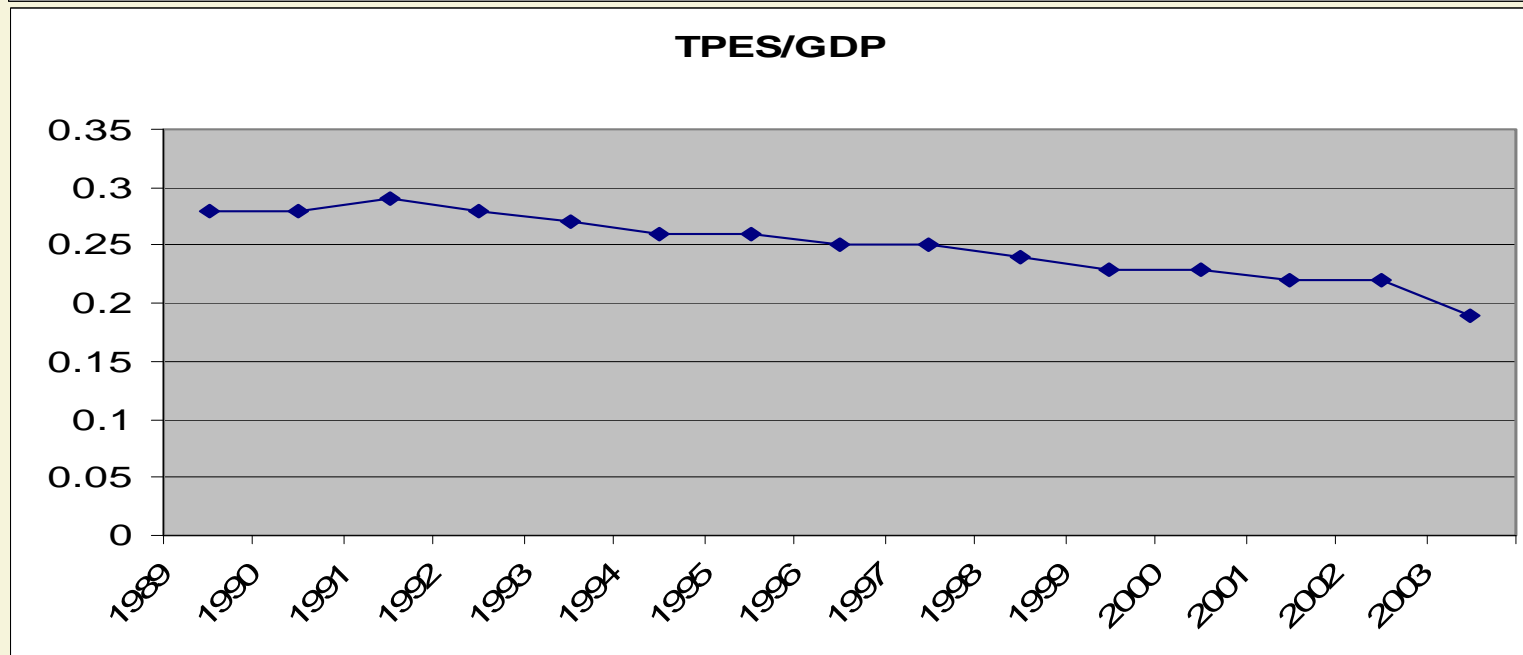
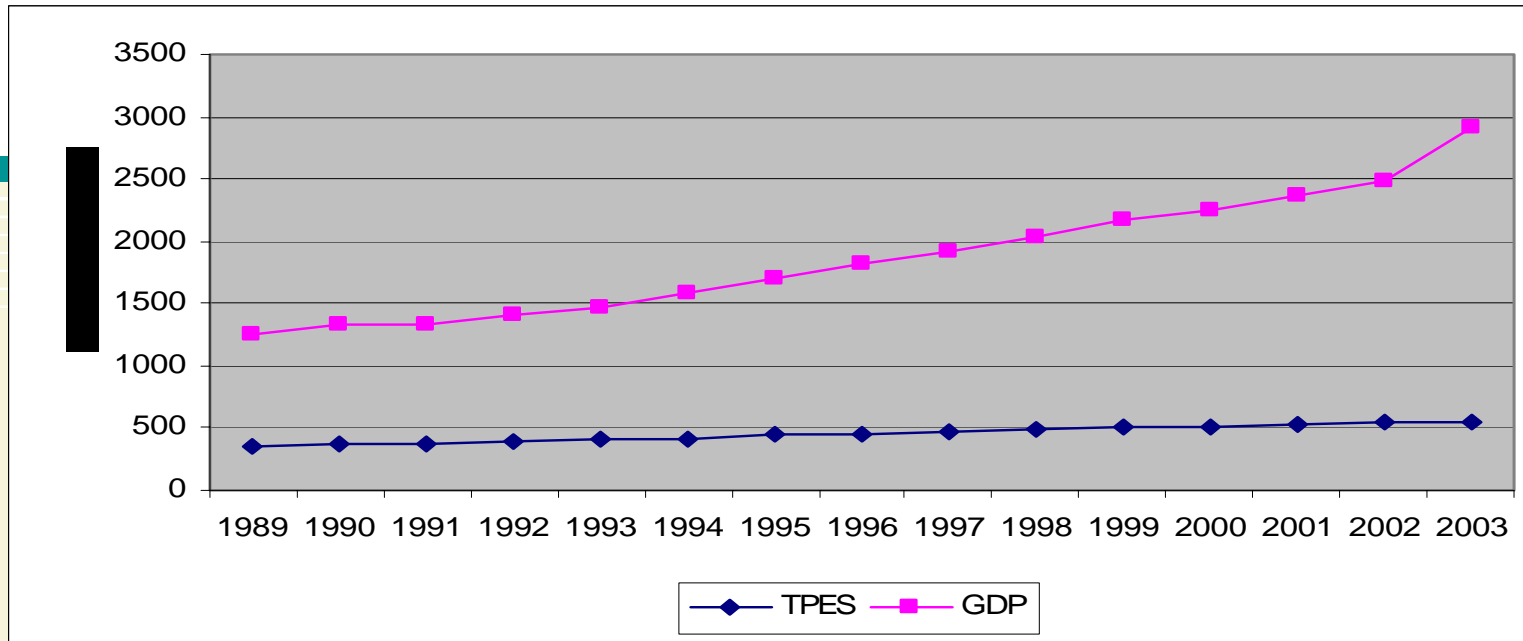


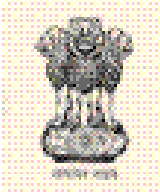
# GROWTH OF POWER SECTOR

	<u>1996-97</u>	<u>2006-07*</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 PLF (%)	64.4	76.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Energy Shortage (%)	11.5	9.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Peaking Shortage (%)	18.0	14.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Households Access to Electricity (%)	42.0	56.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Rural Households Coverage (%)	31.0	43.8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>* Upto February, 2007</i>					



# INCREASING ENERGY EFFICIENCY

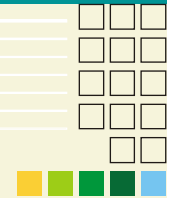


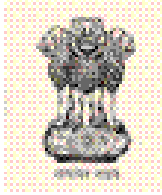


# Energy use transitions hold key to future trajectory

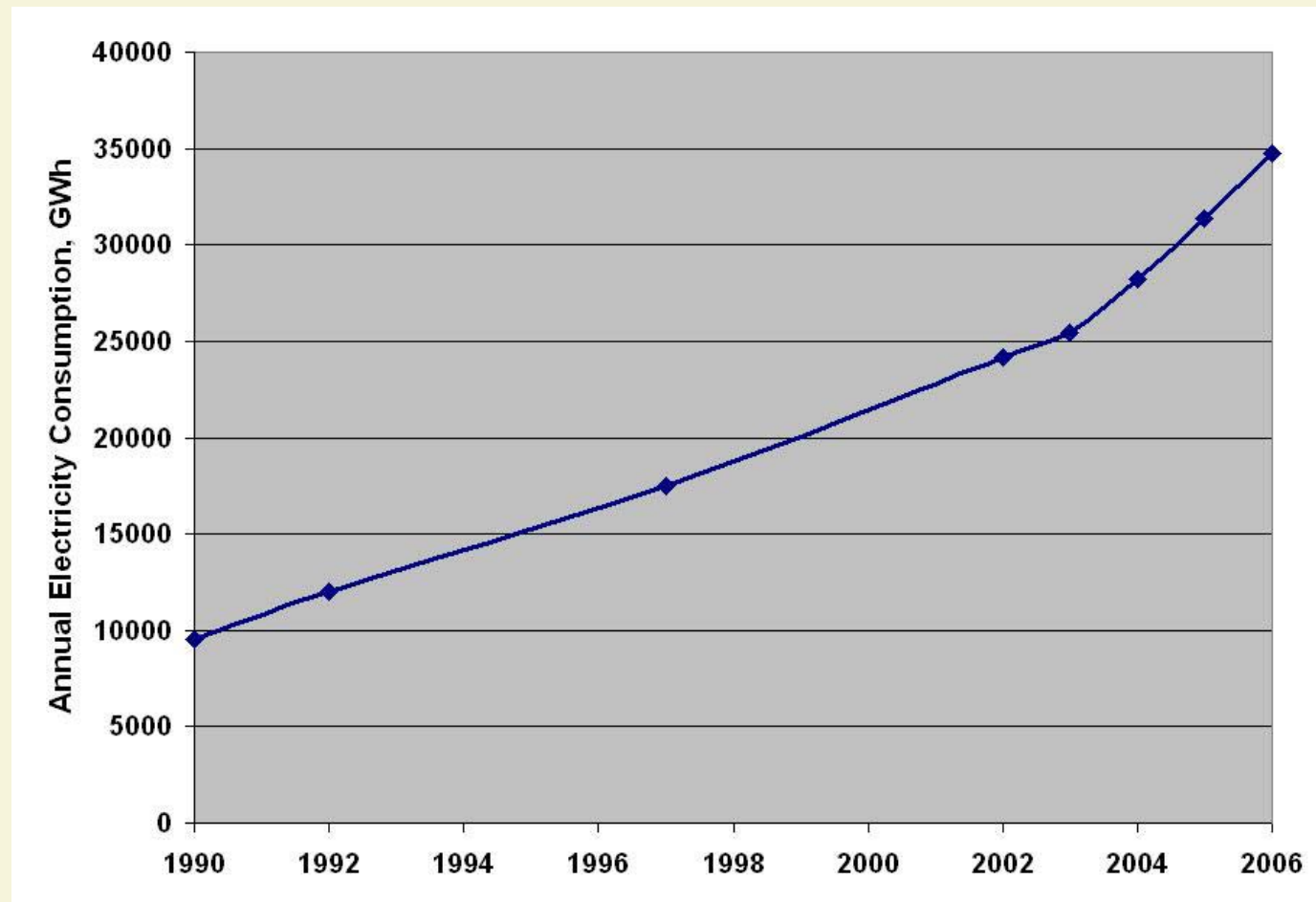


- Household energy mix is rapidly moving from inefficiently-utilized biomass to gas and electricity
- Commercial space is increasing; and energy use in commercial space is increasing at a faster pace
- Industrial energy intensity is declining, but there is a wide bandwidth of specific energy consumption within industrial sectors



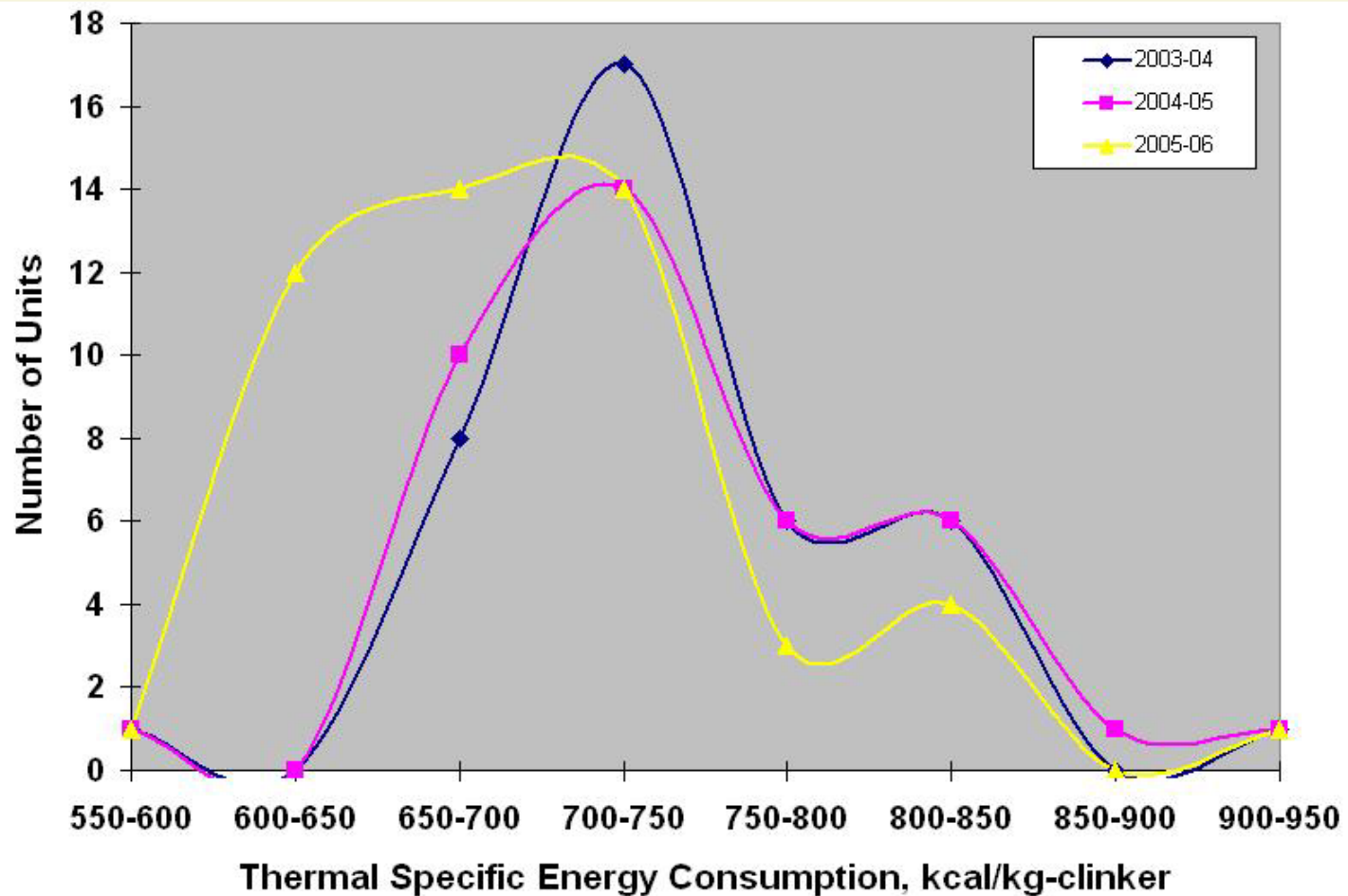


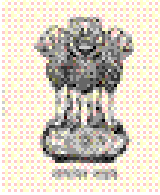
# Electricity Use in the Commercial Sector is increasing





# Energy Intensity in Cement Sector



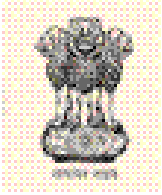


# Barriers to Energy Efficiency



- Lack of information about comparative energy use – especially of appliances bought by retail consumers
- Perceived risk due to lack of confidence in performance of new technologies – in appliances, building design, industrial technologies
- Higher cost of energy-efficient technologies
- Asymmetry in sharing of costs and benefits – especially in the buildings sector

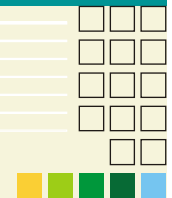


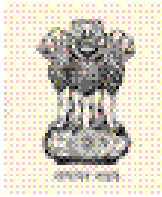


# Key regulatory interventions



- Provide energy use information
  - Labeling of appliances
  - Energy use information by units within industrial sectors
- Reduce perceived risk
  - Bulk procurement
  - Utility-driven Demand side management
  - Performance guarantee contracting, through ESCOs
- Mandate standards
  - Building Codes
  - Sectoral energy consumption norms in industry





# The Indian regulatory framework



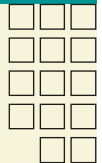
- Energy Conservation Act, 2001
  - Provides mandates for: labeling of appliances; notification of energy conservation building codes; energy consumption norms for energy intensive users; & auditing of and reporting by energy intensive users
  - Creates the Bureau of Energy Efficiency, and provides powers to the federal and state governments and to the BEE to implement the mandates

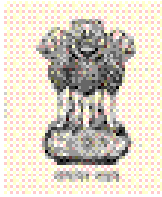


- Electricity Act, 2003
  - Restructures the electricity sector through the unbundling of vertically integrated utilities, and creation of independent regulators in each state to regulate electricity transmission, distribution and prices
  - Provides mandates, inter alia, for the efficient generation and distribution of electricity, including promotion of DSM and cogeneration



- National Electricity Policy, 2005
  - Calls for use of energy efficient devices
  - Requires ERCs to lay down energy efficiency standards for Utilities

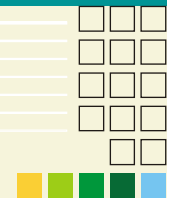


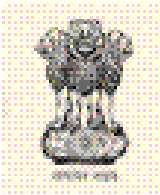


# Major regulatory interventions



- Labeling Scheme launched
  - Fluorescent tubelights, refrigerators and air conditioners are currently covered
  - Labels for motors, transformers, fans, LPG burners, standby power under preparation
- Energy Conservation Building Code prepared
  - Design of ECBC-compliant buildings being encouraged
  - Training of architects, designers and certifiers underway
- Market for ESCOs being created
  - Government buildings being upgraded through ESCOs
  - Risk-guarantee fund being considered to promote lending to ESCOs
- DSM interventions being launched
  - Several regulators have approved programmes to promote CFLs, solar hot-water systems, and efficient street lighting

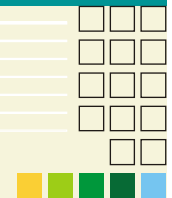


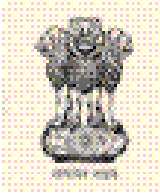


# Implementation approach



- Inclusive and consultative
  - Technical committees of manufacturers and consumers for appliance labeling
  - Initial label requirements promote inclusiveness, but stepwise tightening of standards is built into the programme
  - Technical committees of manufacturers and experts for industrial energy consumption standards; promote larger increases in energy efficiency by least-efficient units
- Based on self certification, accompanied by independent third-party verification
  - Independent test labs verify appliance label claims
  - Building designs to be checked by accredited certifiers





# Lessons



- Regulatory frameworks are often essential to promote energy efficiency where market barriers impede it
- Design of regulatory framework should build on existing institutional and legal framework
- Inclusiveness in design, at least initially, is important to achieve widespread buy-in ... and reduce non compliance
- Self certification reduces transaction costs and time, but must be accompanied by a credible verification system
- Must be accompanied by strong experience sharing programs

