



**Low carbon Strategies for
inclusive growth: Industry
perspective
Green IT forum 2011**



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MAIT
Manufacturers' Association
for Information Technology

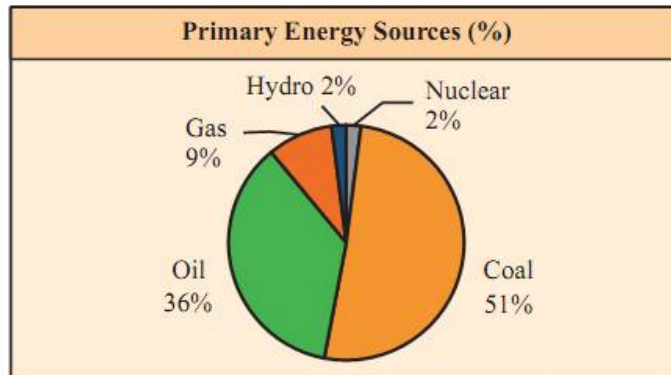
**The Earth has enough resources to meet
people's needs, but will never have enough to
satisfy people's greed.**

M. K. Gandhi



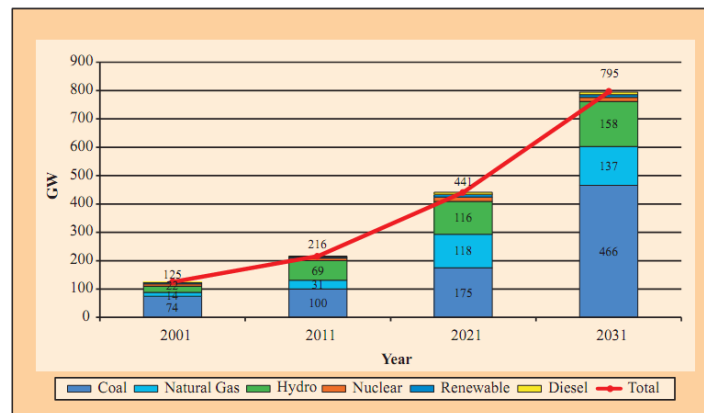
India Energy statistics at a glance

Figure 3.4.3: Primary Energy Sources of India



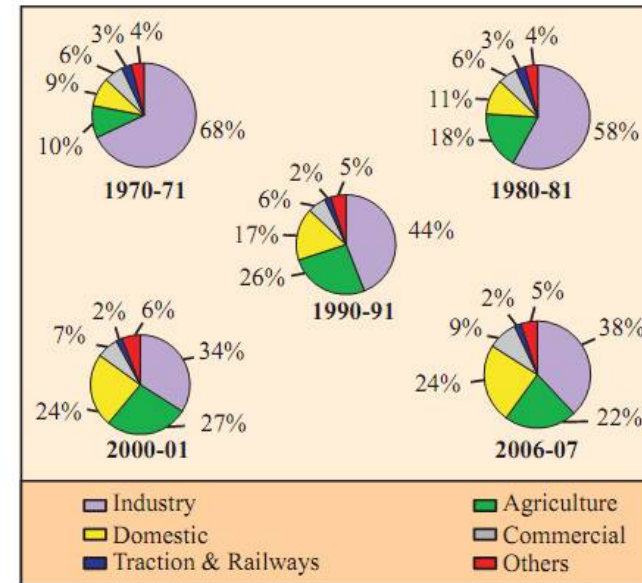
Source: Planning

Figure 3.4.6: Projected Electricity Generation Capacity



Source: TERI, 2003

Figure 3.4.5: Sector-wise Consumption of Electricity in India



Source: Energy Statistics 2007, Ministry of Statistics and Programme Implementation

Projections of Climate Change for India in 21st Century

- Annual mean surface temperature increase ranging from 3 to 5 degrees C under A2 scenario and 2.5 to 4 degrees C under B2 scenario of IPCC
- Indian Summer monsoon (ISAM) intensity may increase beginning from 2040 and by 10% by 2100 under A2 scenario of IPCC
- Changes in frequency and/or magnitude of extreme temperature and precipitation events

Source : Report from Indian Institute of Tropical Meteorology ,Pune, India

The projected Climate Change impacts water resources, agriculture , industry, food production, forests and health

India and climate change- key milestones

- India signed the UNFCCC (1992)
- Acceded to Kyoto Protocol (2002)
- Establishment of Technology Information Forecasting and Assessment council
- National Action Plan on Climate Change (NAPCC) (2008)
- Participation in Major Economies Forum (2009)
- Cancun Conference (2010)
- BASIC experts meeting (2011)
- Delhi Ministerial Dialogue (2011)
- Ministerial dialogue on Green Economy and Inclusive growth

National Action Plan on Climate Change

- **Protecting the poor and vulnerable sections of the society through an inclusive and sustainable development strategy, sensitive to climate change**
- **Achieving national growth objectives through a qualitative change in direction that enhances ecological sustainability, leading to further mitigation of greenhouse gas emissions**
- **Achieving national growth objectives through a qualitative change in direction that enhances ecological sustainability, leading to further mitigation of greenhouse gas emissions.**
- **Deploying appropriate technologies for both adaptation and mitigation of greenhouse gases emissions extensively as well as at an accelerated pace.**
- **Engineering new and innovative forms of market, regulatory and voluntary mechanisms to promote**

Source : Report from India Prime Minister's council on climate change

National Action Plan on Climate Change - Missions

- National Solar Mission
- National Mission for Enhanced Energy Efficiency
- National Mission on Sustainable Habitat
- National Water Mission
- National Mission for Sustaining the Himalayan Ecosystem
- National Mission for a Green India
- National Mission for Sustainable Agriculture
- National Mission on Strategic Knowledge for Climate Change

Source : Report from India Prime Minister's council on climate change

India's energy needs for Inclusive Growth

- Coal will remain a primary energy source up until 2031-32
- Power sector reforms to control AT&C losses
- Rationalise fuel prices through the Integrated Energy Policy. Promote efficient fuel choices and facilitate substitution
- Improve energy efficiency, reduce energy intensity
- Augment fossil-fuel resources by increased exploration for coal, oil and natural gas
- Augment the role of hydro and nuclear power in India
- Push for increased renewable energy in the energy mix

Source: Integrated Energy Policy, 2008

India's actions on Climate Change

- Energy Conservation Act 2001
- December 2009: Announcement of reduction of emission intensity of its GDP by 20-25 percent from 2005 levels by 2020
- Low carbon Inclusive Growth
 - poverty alleviation
 - improvement in quality of life
 - distributional justice
 - job creation
 - competitiveness
 - industrial growth
 - improvement of the quality of local environment
 - policies differentiated across sectors based on national priority
 - policy choices taking into consideration the differentiated responsibilities (burden sharing)

Source : *Interim report of the expert group on low carbon strategies for inclusive growth*

Low carbon strategies for industry

- **Determined Effort Scenario (lower end of emissions intensity reduction range)**
 - **vigorous implementation of existing policies**
 - **Technology upgradation**
 - **financial model**
 - **coordination between different stakeholders**
- **Aggressive Effort Scenario (higher level of reduction in emissions)**
 - **design and implementation of new policies**
 - **New technologies**
 - **large funding requirements**
 - **innovation**
- *Source : Interim report of the expert group on low carbon strategies for inclusive growth*

Key initiatives of low carbon strategies

- Energy Conservation Building code
- Green Buildings Rating system for new and existing buildings
- dedicated freight corridors in cities
- investment in urban public transport system – Metro rail in Delhi and other cities
- fuel efficient vehicles
- imposition of congestion tax
- introduction of CNG in Delhi and other cities
- comprehensive Green India mission
- renewable energy technologies
- introduction of labeling programs for appliances
- energy audits of large industrial consumers
- promotion of energy saving devices
- promotion of bio-fuels – 5% blending of Ethanol with gasoline
- *Source : Interim report of the expert group on low carbon strategies for inclusive growth*

Opportunities Abound for Green IT



The magnitude of the problem is huge...

- Data Centers consumed 31GW kwh in 2010 —doubling in next 5 yrs.
 - Some industries doubling consumption annually
 - Over \$29B in power & cooling industry wide in 2007
- U.S. Energy Information Administration, IDC



...the inefficiency needs to be addressed;

- 100 units of energy production \Rightarrow 3 units for productive IT
 - Resource utilization <10%=\$140B excess server capacity
- U.S Dept. of Energy, IDC



...and e-waste can no longer be ignored.

- 1 billion computers will become potential scrap by 2011
 - Only 45% US companies have eco-friendly disposal plans
 - The potential toxic risks of improper disposal are huge
- IDC, National Safety Council

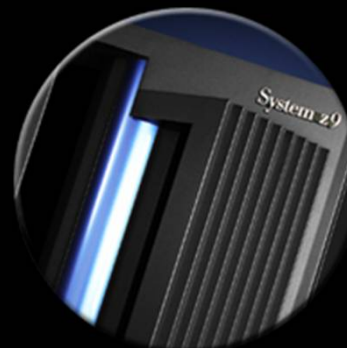
Holistic Green Data Center Approach



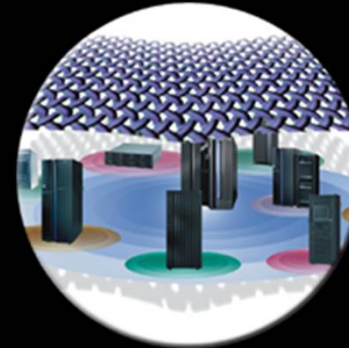
Diagnose



Facilities



Compute Resources



Virtualization



Active Energy Management

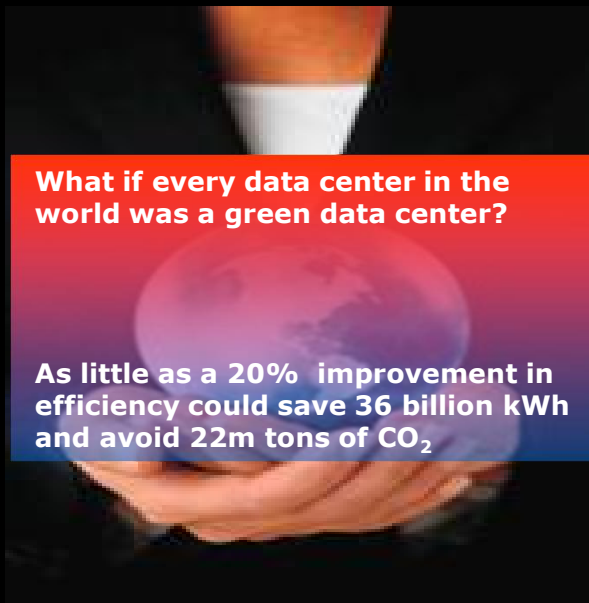


Cooling Innovations



Responsible Disposal

Green IT vs. Other Abatement Options



...or you could remove 3,505,401 cars and light trucks from the company fleet.
...or you could plant 502,440,757 tree seedling and grow them for 10 years.
...or you could manage and preserve 16,329,325 acres of pine or fir forest per year.
..or you could recycle 6,597,707 tons of company waste instead of sending to landfills.

Data source: <http://www.usctcgateway.net/tool/>



IBM's Voluntary Environmental Goals and Objectives

- Materials evaluation and selection for use in products and processes
- Use of environmentally preferable materials and finishes
- Product end-of-life management

- CO2 emissions reduction
- PFC emissions reduction
- Employee commute programs
- Transportation of products
- Produce energy efficiency
- Data center energy efficiency



Single global ISO 14001 registration
Supplier evaluation

Energy conservation
Water conservation
Sustainable sourcing of paper & paper / wood-based packaging

Reduction in hazardous waste generation
Reduction in chemical releases to environment
Recycling of nonhazardous waste



Thank
YOU

