



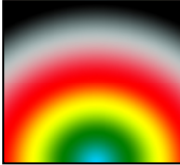


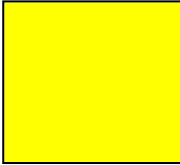

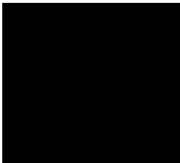
# What **color** should your energy supply be ? The case of India

By

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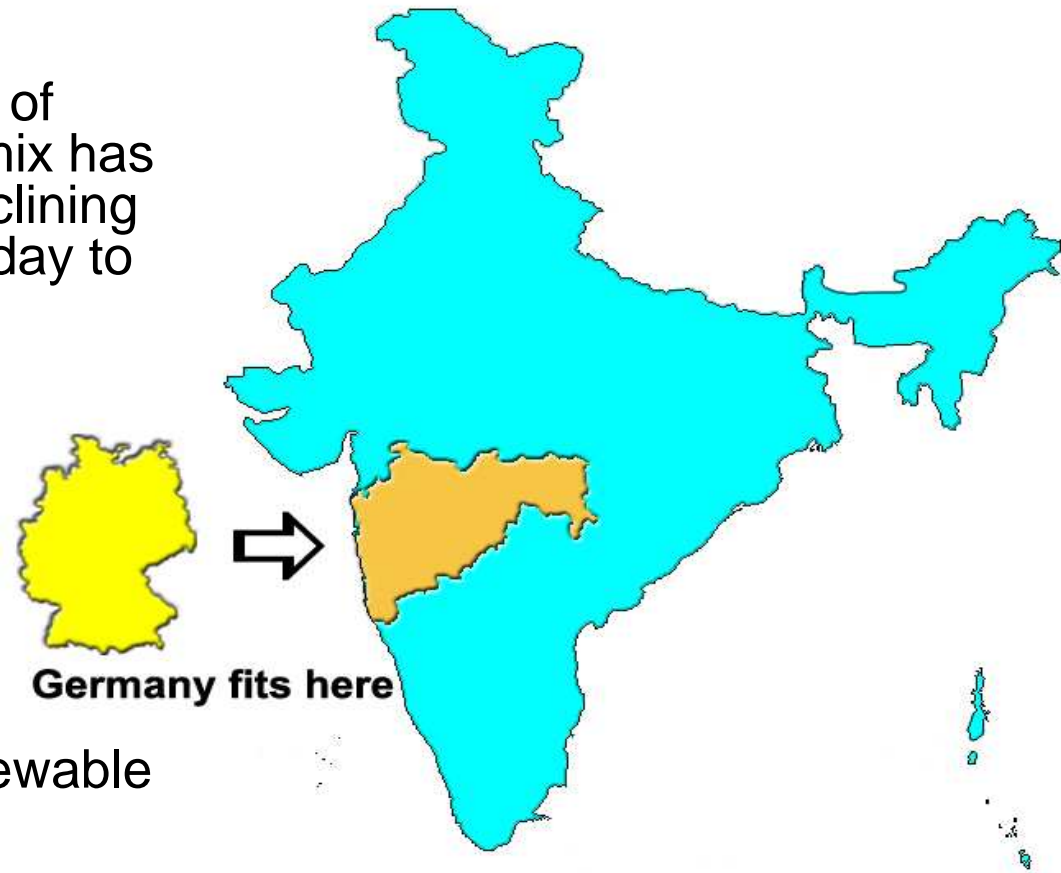
(rainbow)	<b>1</b>		Energy efficiency, energy conservation, demand side management, energy modesty
(blue)	<b>2</b>		Hydro power
(green)	<b>3</b>		Biomass, wind, solar
(yellow)	<b>4</b>		Nuclear power
(grey)	<b>5</b>		Gas and oil
(black)	<b>6</b>		Coal and tar sand

The “rainbow coalition” of energy efficiency, energy conservation, energy modesty and demand side management is the **Number 1** source of energy for power supply. It will save or replace a large fraction of at least 30% to 50% of renewable and fossil fuel energy demand in the next 30 years.



- Electricity supply scenario is the same at 680 TWh/annum
- Population 82 Million versus 1085 Million
- Germany fits area and population wise into the state of Maharashtra.

- The percentage contribution of “**green kWh**” to the power mix has been and will be steadily declining from 50% in 1950 to 16% today to 13% in 2035, in India



- DESPITE ALL efforts of renewable energy utilization for power generation.

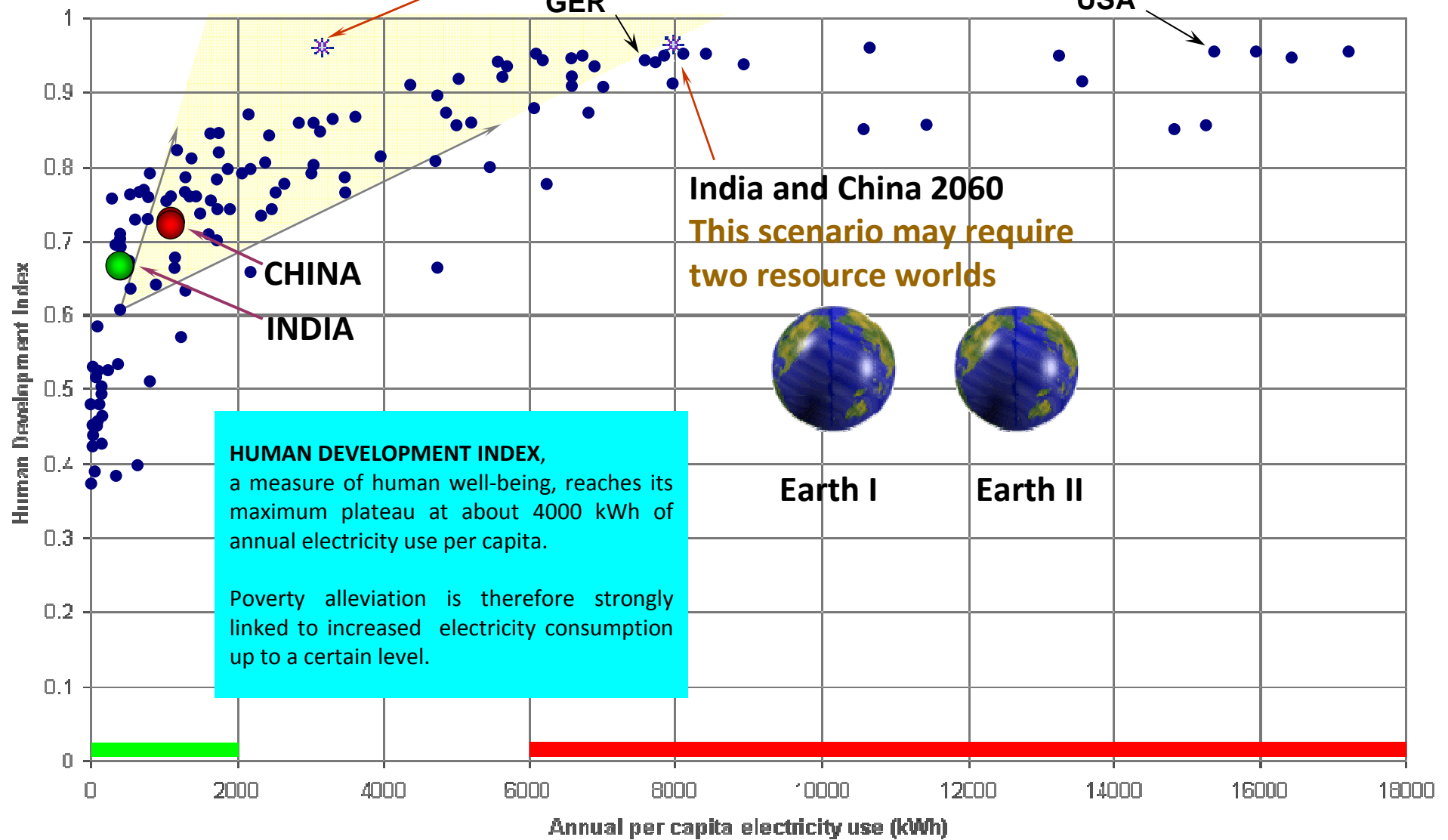


- India has never left the **renewable energy** age because 31% of the primary energy consumption is **carbon neutral** and 60% of the population i.e. 600 Million people use only “biomass” as a source of energy. It will also never leave it.
- Europe has rediscovered **renewable energy** 30 years ago
- However India is also moving deeper into **the coal age**, increasing its coal consumption four fold over the next 25 years in support of industrialization, urbanization and becoming a consumer society that grows at 8% per year.

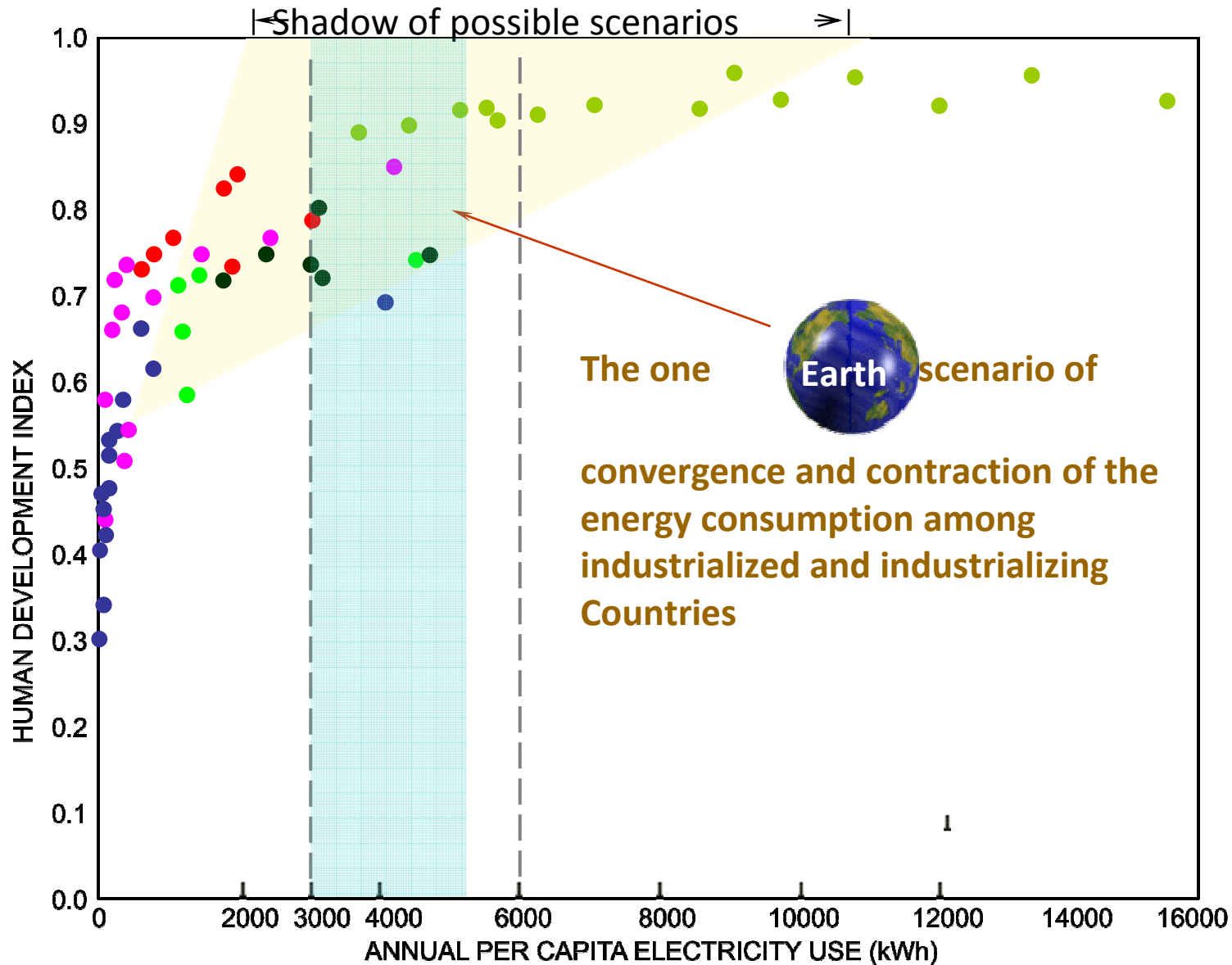


**Best case future scenario !**

**India and China 2060**



# Convergence and Contraction by ALL





- “We cannot blindly ape the west and pursue a highly resource intensive development or for that matter, resource intensive consumption patterns.”
- “We must be under no illusion that we can in fact approximate consumption levels as we see them in the affluent western society. “
- “Indeed, in the interest of humanity and the sustainability of our life support system on this planet, it is the West that must bring its energy consumption level closer to ours rather than the other way round”.
- “India’s promise is that it will never exceed the per capita energy consumption of the developed countries”



1. Strong national Energy Conservation Act prescribing upper limits of energy consumption for energy intensive industries.
2. Mandatory employment of “energy managers”. About 11,000 took the exam in 2003 – 2006.
3. Mandatory “energy audit” by accredited energy auditors. There are at least 100 professional firms
4. Mandatory “star” labeling of appliances.
5. Mandatory energy efficiency norms for new buildings with more than 500 kVA load.



## Energy Consuming Equipment

Increase energy efficiency of appliances and remove from the market inefficient ones



Energy managers employed by firms

Energy auditors to prepare report

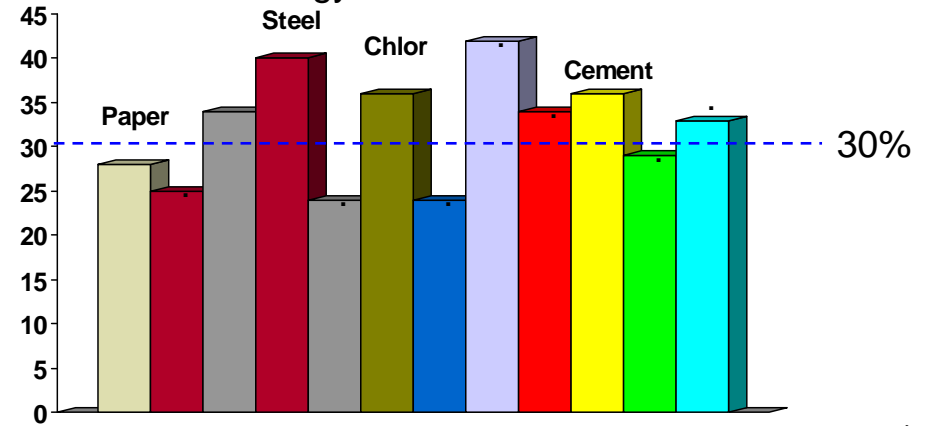


Mandatory energy audit report and business plan to reduce energy losses

## Human Resource Development

## Industry

Reduce energy losses in 14 sectors



Introducing energy conservation and climate protection schemes in school curriculum



## School Education



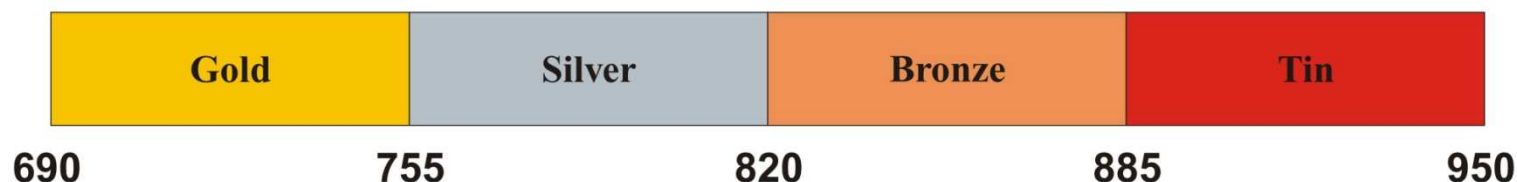
### “Speak softly and carry a big stick”

**YES !** Annual investment in energy efficient technology and energy conservation measures are about 400 Million Euro.

**BUT !** The market investment potential is much higher at 2 Billion € per year. Survey of 1500 EnEFF investments show short pay back periods of < 2 years and are therefore financially attractive !

**AND !** There is a performance bandwidth issue not seen in industrialized countries with a more competitive market.

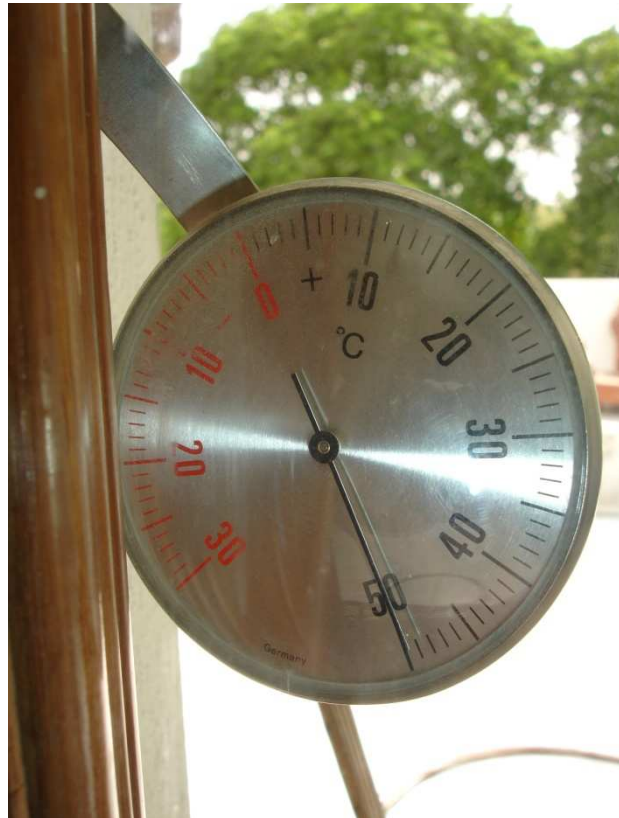
## Go for Energy Efficiency Gold Don't be a Tin Company





# Unsure about the difference between ADAPTATION and MITIGATION to manage Climate Change?

June 17, 2007 - 3 PM  
New Delhi, shady place and no wind  
Outside temperature **50°C**



## **ADAPTATION:**

**Tell the dial thermometer manufacturer to extend the scale to 60° C.**

## **MITIGATION:**

**Tell all your friends and the world to practice energy efficiency and contact the Bureau for advice.**

**Bureau of Energy Efficiency**  
4<sup>th</sup> Floor, SEWA Bhawan , R. K.Puram New Delhi - 110 066  
Tel: +91-11-26179699 Fax: +91-11-26178352

# Hydro Power Potential (MW) – INDIA , 2007





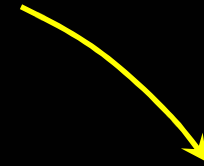
Latest 2005 survey of investments in energy efficiency and 1<sup>st</sup> year effect in 2006. About 15,000 firms were approached and 388 selected for verification.

### Statistik

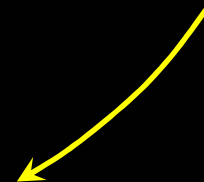
Total Investment US\$	US\$ 316 Million
First year energy cost savings	US\$ 283 Million
Pay back period average 1.1 year and spread	0.1 year to 4.5 years
tCO <sub>2</sub> savings 1 <sup>st</sup> year	10 Million tons
Life cycle tCO <sub>2</sub> savings (estimated)	100 Million tons
Average investment per tCO <sub>2</sub> mitigated	US\$ 3/ tCO <sub>2</sub>

# We all have our personal doomsday scenarios with respect to an extremely “energy hungry” world

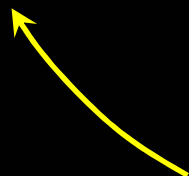
Year 1900



Year 2000  
CFL



Year 2020, LED



Year 1800  
Year 2050



*History repeats itself scenario*





## **A final word of wisdom**

**“I have never learned anything from  
a person who has agreed with me”**