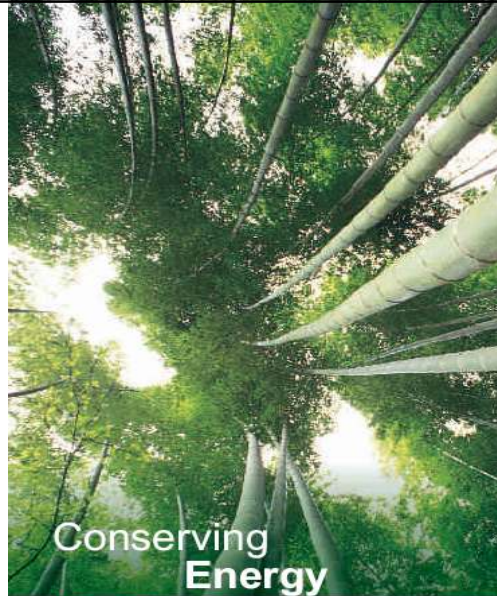




**Role and Potential of
Renewable in India
for Climate Change
Mitigation**



**Conserving
Energy
Preserving
Environment**

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We have Right to progress and develop

Thermax Vision for sustainable development

Thermax Renewable Story



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Thermax Renewable Story



- **Founded in 1966**
- **Leading Engineering Co. in the field of Energy & Environment**
 - **Boilers and Heaters**
 - **Water & Waste Water treatment plants**
 - **Power Plant**
 - **Air Pollution Control systems**
 - **Absorption Cooling**
 - **Chemicals**
- **Over 3500 employees of which more than 2100 are qualified engineers**
- **Customer base of over 25000**
- **One of Twenty Indian Companies in the Forbes list of Asian best under billion companies**
- **Won national Award for most innovative products for two consecutive years 2006 and 2007**
- **Sales turnover of approx \$ 800* million in FY 07-08**



* Estimated

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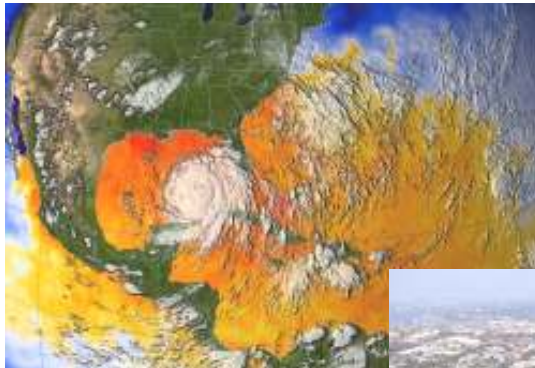
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Hurricane Katrina



**New Orleans
after Katrina**

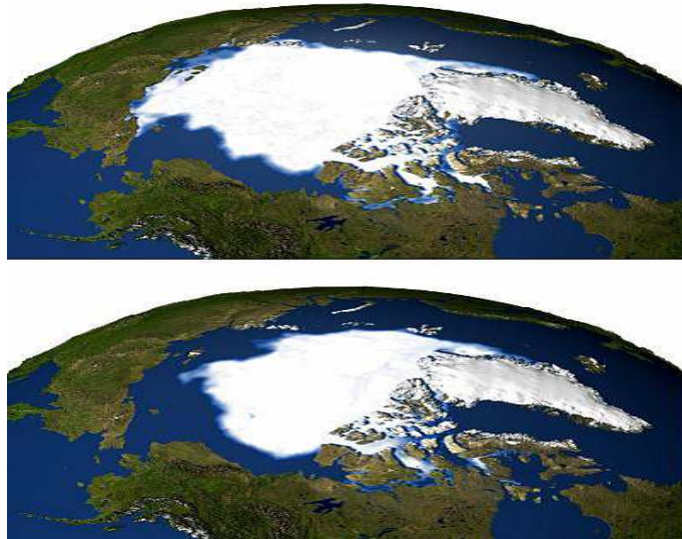


**Triftglacier,
Swiss 1990**

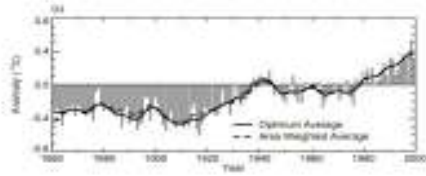
**Triftglacier,
Swiss 2001**



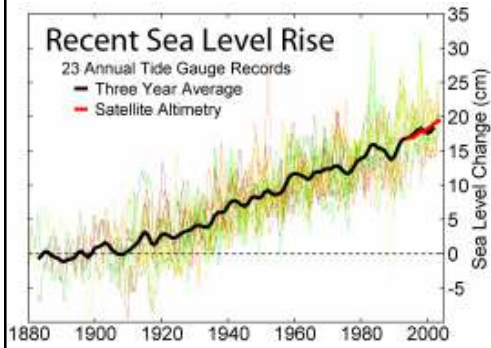
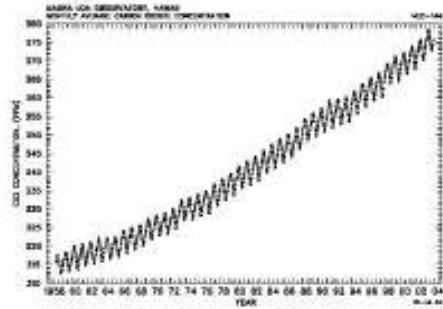
Melting of the Ice in the Arctic 1979 and 2005



Some Evidence



Global warming as measured by surface thermometers between 1960 and 2000



The Contributors



Power Generation



Emission by Industry

Emission by Traffic



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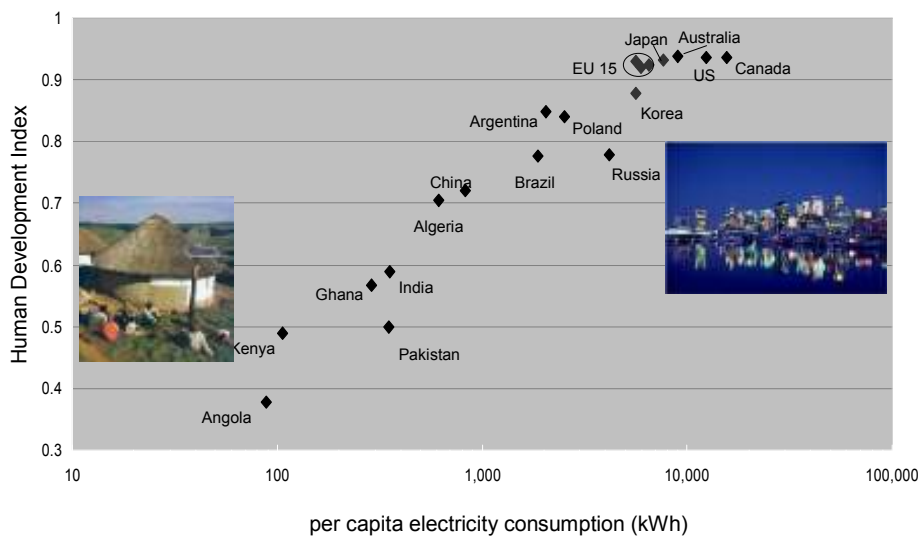
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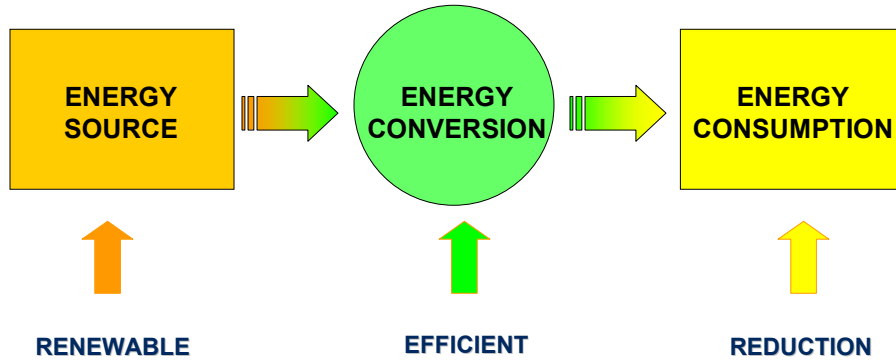
Thermax Renewable Story

India's energy supply still far from Global Average



Source: BP, 2004

Sustenance Cycle – A Thermax Vision



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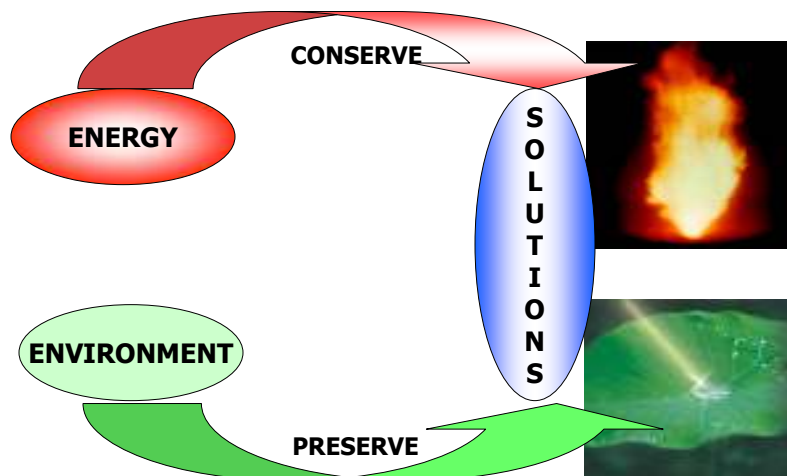
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Thermax Renewable Story

To be a globally respected high performance organisation offering sustainable solutions in energy & environment



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Thermax Renewable Story

Vandana Shiva - Lip service than action



Heat Recovery Division started in early 80's

- Glass Furnace Heat Recovery - 1982
- Carbon Monoxide Recovery - 1987
- Hydrogen Combustion for caustic soda - 1988
- Methanol Waste Conversion to Energy - 1988
- Heat Recovery from Medical Waste - 1989
- Microwave Disinfection - 2004

Absorption Chilling from Waste Energy

- 27 Chillers on Solar Energy
- Exhaust gas fired Chillers
- Engine Exhaust and jacket water heat to cooling



Geothermal energy extraction in Copenhagen

Thermax Experience in Renewable Energy



Energy from Waste

- Coffee Waste
- Spent Wash (Distillery)
- Rice Husk
- Rice Bran
- Mustard Stock
- Effluent Sludge
- Biogas from effluent (Starch/ Abattoir waste/ Dairy Waste)
- Chili Bran
- Palm fruit waste
- Pineapple waste

Capability to use over 100 types of biomass fuel



Thermax Experience in Renewable Energy (contd.)



- Exhaust Gas boilers generating **900 Tons per hour** of low pressure steam for various applications
- Heat Recovery steam generators behind gas turbines are producing approximately **1500 MW of power per hour**
- Our WHR boilers behind **sponge iron kiln** generate approximately **700 MW of fuel-free power per hour**
- Our WHR boilers behind **coke-oven** generate approximately **250 MW of fuel-free power per hour**
- Other process waster heat boiler generate approximately - **1000 tons of steam per hour**
- We have **bagasse fired boilers** generating about **1200 MW power per hour**
- Our **Absorption chillers** is providing more than **1,030,000 tons of environment friendly chilling**

Some exciting case studies



Matrix Power Ltd., Andhra Pradesh, India

Boiler Capacity	-	19.25 TPH,
Steam Pressure	-	65 kg/ cm2 (G)
Steam Temperature	-	485 Deg C
Combustion Technology	-	Traveling Grate, Spreader Stoker
Fuels	-	Cotton Stalk, Rice Husk
Commissioned	-	2002

PT South Pacific Viscose, Purwakarta, Indonesia

Boiler Capacity	-	3 nos of 22.5 TPH & 1 no of 45 TPH
Steam Pressure	-	45 kg/ cm2 (G)
Steam Temperature	-	450 Deg C
Combustion Technology	-	Atmospheric Fluidized Bed
Fuels	-	ETP Sludge Waste, Coal
Commissioned	-	1995 and 2006

Some exciting case studies



Areva A/c Bua Sommai, Thailand

Boiler Capacity	-	2 nos, 50 TPH,
Steam Pressure	-	66 kg/ cm2 (G)
Steam Temperature	-	485 Deg C
Combustion Technology	-	Traveling Grate, Spreader Stoker
Fuels	-	Rice Husk
Commissioned	-	Under Execution

Nestle Limited , Thailand

Boiler Capacity	-	15 TPH
Steam Pressure	-	18.5 kg/ cm2 (G)
Steam Temperature	-	Saturated
Combustion Technology	-	Atmospheric Fluidized Bed
Fuels	-	Spent Coffee Ground
Commissioned	-	2003

Our Solar Based Air-conditioning experience: Over 28 installations



Model: LT 03 * 1 Nos
Heat Source : Solar Panels



Model: LT 03 * 1 Nos
Heat Source : Solar Panels



Model: LT 03 * 1 Nos
Heat Source : Solar Panels



Thank you

