

Cities And Climate Change





Getting to 2 Tonnes – Some Low Hanging Fruit

Global GHG abatement cost curve beyond business-as-usual - 2030



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO₂e if each lever was pursued accressively. It is not a forecast of what role different abatement measures and technologies will play.

Source: Mckinsey (2009)



Urban sustainability a major contributor

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Green Buildings







Use regulation to manage vehicle emissions









Cities as inkblots on biodiversity landscape

Effect of fragmentation, forest degradation and climate change on mean species abundance of India.



RED means 0% species present

2068

Source: GIST India, NEAA (2008)



Cities versus Villages

Why is India currently a low carbon economy?

Is it because we carpool? GJ.9.B.717 B Dhiren Thakar







Or is it because over 400 million Indians are living in the dark?



Indian Poor vs Indian Rich–CO₂ Emission

India's average per capita CO₂ emission – 1.67 Tonnes



- India's Poor (Income less than Rs. 3,000 a month)
- Per capita -1.11 Tonnes a year

Source: Greenpeace- Hiding Behind The Poor, 2008



- India's Upper Class (Income more than Rs. 30,000 a month)
- Per capita -4.97 Tonnes a year





All the water in the world





The Sunderbans mangroves have decreased by 20% in the last 40 years...



Why are mangroves so important?

6%

20%

Photo: Gertrud & Helmut Denzau/Sanctuary Photolibrary

India already suffers from water scarcity

Average River Flows and Groundwater Recharge



Warmer temperatures also change our Monsoon weather patterns...





Over the last 30 years there has been A decrease in annual rainfall in 68% of our country.

Indian Institute of Tropical Meteorology

Recent Rainfall Tendency (1813-2006)





India June 2003 Temperature: -50 °C - More than 1400 deaths



Source: Center for Health and the Global Environment Harvard Medical School





-94 centimeters

seven feet

1,000





Global warming raises ocean temperatures, which leads to increase in storm intensity.





\$4.4 billion

4.1 Lakh

. 28

12 lakh tonnes

40%

Super Cyclone Sidr CATEGORY 5 November 15, 2007

8.9 Million



- 1. Glaciers Melt & Sea Level Rise
- 2. Unpredictable Weather Patterns
- 3. Biodiversity & Agricultural Losses
- 4. Diseases Flourish

Climate Change and Food Security





Source: Peterson Institute / UNEP / GRID-Arendal, 2007

Agriculture: core to employment & security



Agriculture is the largest economic sector and plays a significant role in the overall socioeconomic development of India.

"Around 46 % of the India's geographical area is used for Agricultural Activities."



Agriculture and allied sectors like forestry, logging and fishing accounted for 16.6% of the GDP in 2007 and employed 60% of the country's population.



Climatic changes will reduce agricultural yields significantly

India may lose up to 17% of its farming income from increases in temperature

Mendolsohn, Yale University Study, 2008

Wheat yields would fall by 5-10% with every increase of 1 degree celsius

Dr R.K. Pachauri, 2008



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Vectors for Emerging Infectious Diseases




30 "New" diseases have emerged since 1976

Resurgent and Redistributing Diseases





Adaptation

India spends approximately 2.5% of its GDP on climate variability adaptation measures. This figure is likely to rise.

- •Drought Proofing
- •Crop Improvement
- •Water Harvesting and Conservation
- •Forestry
- •Coastal Regions
- •Health
- •Risk Financing
- •Disaster Management



These consequences of global warming disproportionally affect India's poor.



The average Indian produces very little carbon dioxide compared with International levels

25 2004 C0² per capita figures (tonnes C0² per person) 20 Developed country average 15 10 Developing country average 5 0 USA Japan China Australia EU European Unic India

Total Greenhouse Emissions (per person)



Historical picture shows an even greater divide in responsibility

Historical CO2 Emissions Per Person: 1751 -2007 350.0 300.0 250.0 200.0 150.0 100.0 50.0 0.0 China USA India Germany United Canada Russia Japan Kingdom

Source: James Hansen, 2008, 'Tipping Points Near'



Is it Possible to be Rich and Efficient?

GDP vs. Energy Efficiency (Top 40 Economies by GDP)



Source: Peter Corless (2005) Analysis of top 40 largest national economies (GDP) by plotting GDP per capita vs. 'energy efficiency'

THE CLIMATE PROJECT - INDIA Human development indicators correlate strongly with increased electricity consumption

P.C.





But beyond a certain level, energy usage does not correlate with further development





India can push for a more efficient electricity target...





The Power To Change



"Speed is a sufficiency in the world for man's need but not for "Speed is irrelevant if you are going in the wrong direction." man's greed"



Making the links

•Idea of being part of a Civil Society is to be able not only to co-exist peaceful, but also to be able to work together with members of that society towards its betterment.

•Participants will be divided into two groups

•Aim - Network within your group and try to strike a deal with people whereby you get something you want that will help you combat climate change and you give someone something that they want that also helps combat climate change-You can strike a deal with more than one person.

•Example 1 - House wife agrees to volunteer for 5 hours a week for tree-planting NGO. A wet waste recycling consultant agrees to help her setup a recycling system in her building society.

•The idea is that everybody benefits when everybody co-operates



The Global Scientific Consensus

To avoid catastrophic impacts of climate change we need to keep the earth's average temperature rise within 2 degrees celsius.

For this, our global emissions in 2050 should be 50% of our 1990 emissions.

In per capita terms, this amounts to approximately 2 tonnes per person.



A Global Challenge- Cut Emissions By 66%







Rio 1992	Kyoto 1997	Hague 2000	Bonn 2001	Bali 2007	Copenhagen 2009
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The Road to Copenhagen – Meeting The Global Challenge



India's Position: Copenhagen

- Founded on the principle of equity each individual has equal right to the atmosphere.
- Will keep per capita emissions below developed country average (thus pressure to lower emissions on developed countries).
- Will not set aggregate global targets as is waiting for developed nations to sign on to much bolder interim targets which also take in account historical responsibilities

Many initiatives can be incorporated into our development rather than retrofitted

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Others hold strong mitigation potential today

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To get to 2 tonnes we cannot afford to follow the same energy path as others

Total GigaWatts of Installed Power Capacity



Source: CEA (2008), IEA 2007



India's Solar Energy Potential



Proposed solar programs will reduce carbon emissions by 23 million metric tons per year by 2030.





"Enhanced geothermal systems could be the 'killer app' of the energy world."

Dan Reicher, Google.org, August 19, 2008

The total power of waves breaking around the world's coastlines is estimated at 2–3 million megawatts

- US Department of Energy





Urbanization in India: A chance to incorporate latest thinking

% of Indian population living in urban areas

India is one of the least urbanized countries in the world

Source: UNICEF

Case Study: CleanStar's bioenergy production system for meeting rural energy needs with low-carbon fuels







Energy 'SMART' Schools





An important solution is raising awareness!

This affects the choices we make



If you have to use a car, make it an efficient one

Maruti is first Indian car company to publish its fuel efficiency standards

Rated Fuel Economy of Maruti Suzuki Vehicles, 2009

Model	Segment	Fuel	Km/L	L/100km	mpg US
M800	A1	gasoline	16.1	6.2	37.9
Omni	С	gasoline	16.9	5.9	39.8
VERSA	С	gasoline	12.7	7.9	29.9
Alto	A2	gasoline	18.1	5.5	42.6
Zen Estilo	A2	gasoline	17.3	5.8	40.7
Wagon R	A2	gasoline	17	5.9	40
A Star	A2	gasoline	19.6	5.1	46.1
Swift diesel	A2	diesel	21	4.8	49.4
Swift gasoline	A2	gasoline	15.9	6.3	37.4
Dzire gasoline	A3	gasoline	15.9	6.3	37.4
Dzire diesel	A3	diesel	21	4.8	49.4
SX4	A3	gasoline	15	6.7	35.3
Gypsy	MUV	gasoline	11.3	8.6	26.6
Grand Vitara	MUV	gasoline	11.2	8.9	26.3



Buy 5 star rated appliances





Green Tips 1: WATER



- Take short showers! Continue to take a bucket shower if it is your habit.
- Keep your water heater on for 5-7 minutes only (and only when you really need warm water) as heating water takes a significant amount of energy.
- Study your water bill and set goals to reduce your water consumption by 5% more every month for the next 6 months. See how low you can go.
- If there is a garden near your building, ask that the groundkeeper only water during the early morning or evening to avoid extra water needed to compensate evaporation.
- Fix a water leak as soon as you see one.
- Look into rainwater harvesting for your buildings water resource needs.
- Wash dishes in a tub instead of under a running tap.
- Reuse the water used to wash veggies and fruits for watering your plants.
Green Tips 2: ENERGY



- Turn off lights and fans when you leave a room.
- Completely shut down your TV and computer from the power point when you are not using it.
- Ask your building society to change the outdoor, building and hall lights to LEDs and CFLs. CFLs will save up to 66% in energy consumption. LEDs require even less energy!
- Use task lighting; instead of brightly lighting an entire room, focus the light where you need it.
- Don't use the AC, if you do, set it at a higher temperature. On cool evenings leave your windows open instead of switching on the AC.
- Read through your energy bill and find out the amount of electricity you are consuming. Then make a goal to reduce your consumption by 5% next month, 5% the following month, and see how much lower you can go.
- Implement solar thermal heating in your building and you will actually start saving money very quickly.
- Allow hot food to cool off before putting it in the refrigerator.
- Do not put uncovered liquids in the refrigerator. The liquids give off vapours that add to the compressor workload. Check to make sure your refrigerator door seals when closes so that you don't consume extra energy to keep things cool.
- Heat the water in a kettle not in open pot. If you need two cups water for tea fill your kettle with only two cups. A lot of energy will be wasted heating up a full kettle full of water.

Green Tips 3: WASTE



- Only print if it is absolutely necessary and use use both sides of the paper.
- Avoid using disposable cups and plates
- Always buy ice cream in a cone so as not to add to the garbage created from the spoon and cup.
- Keep and reuse all your rubber bands, paper clips, boxes and packaging material.
- Create innovative décor and cards from recycled materials for weddings and special occasions instead of high-energy consuming materials.
- Ask for birthday presents to be eco-friendly and wrapped in old newspaper.
- Do not ask for a plastic bag from a shopkeeper if the items are few enough to carry by hand. Reuse the plastic bags you already have. Carry a cloth bag for shopping.
- Do not accept free promotional materials that are being handed out with lots of packaging.
- Eat unprocessed and unpackaged food whenever possible.
- If you have a choice, look for items sold in glass jars or easily reusable materials rather than plastic.
- Pack lunches in reusable lunch bags and washable containers instead of plastic wrap and bags.
- When ordering food in, ask in advance for them not to include the napkins and plastic utensils.
- Create the habit of taking only what you need in every situation.



Green Tips 4: AWARENESS

- Develop an awareness chart in your office or home where everyone can see a list of ways they can reduce their carbon footprint.
- At the next family gathering, ask for ten minutes to give a presentation about global warming and what needs to be done to mitigate it. Use the statistics and tips you have learned in this diary to give them ways to get involved.
- Check the internet for a Carbon Calculator website so you are conscious of your carbon footprint.
- If you see anyone littering or wasting water or food, sit them down and explain to them how this adversely affects our climate.





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We need your help to find and spread solutions...

Join us at www.climateprojectindia.org contact us on info@climateprojectindia.org

Our thanks to British Council, CERE, Sanctuary Asia, Nature First and all our solution providers...and to you