

**CMS Workshop on confronting Climate Change –  
Towards Carbon Neutral Indian Cities  
Oct 29-30, 2009**



**DELHI PLAN - LOW CARBON FUTURE  
ROAD MAP TO LOW CARBON WORLD  
BHARTIYA CLIMATE INDEX**

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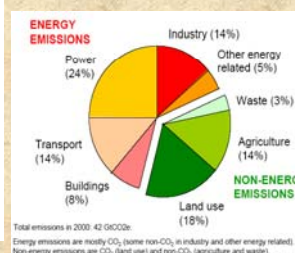
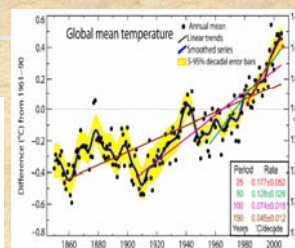
**Greenhouse Gases and Climate Change**

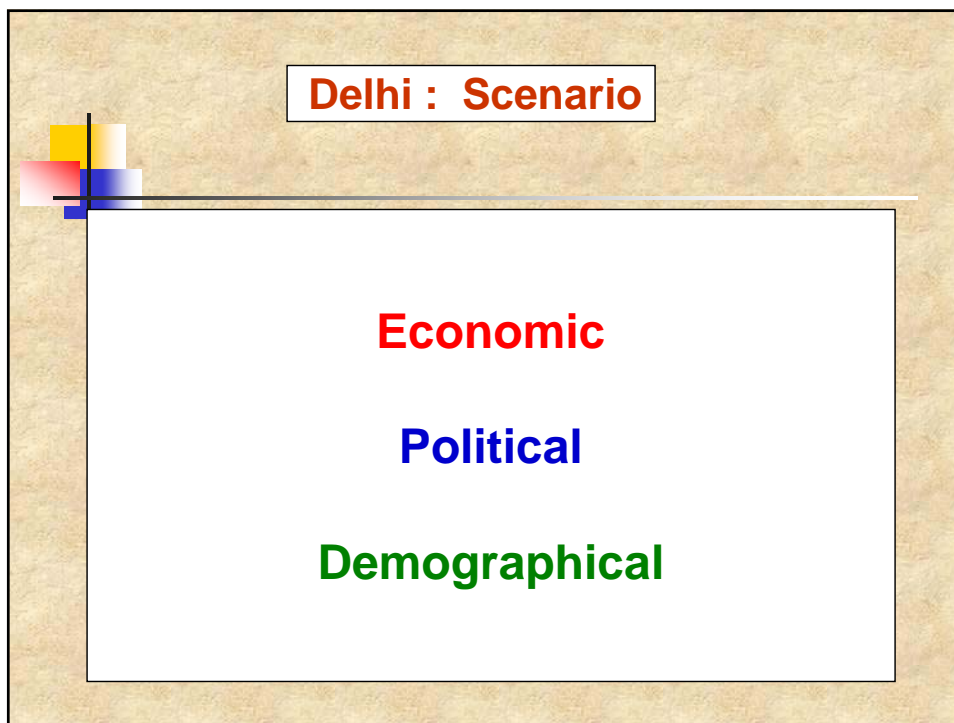
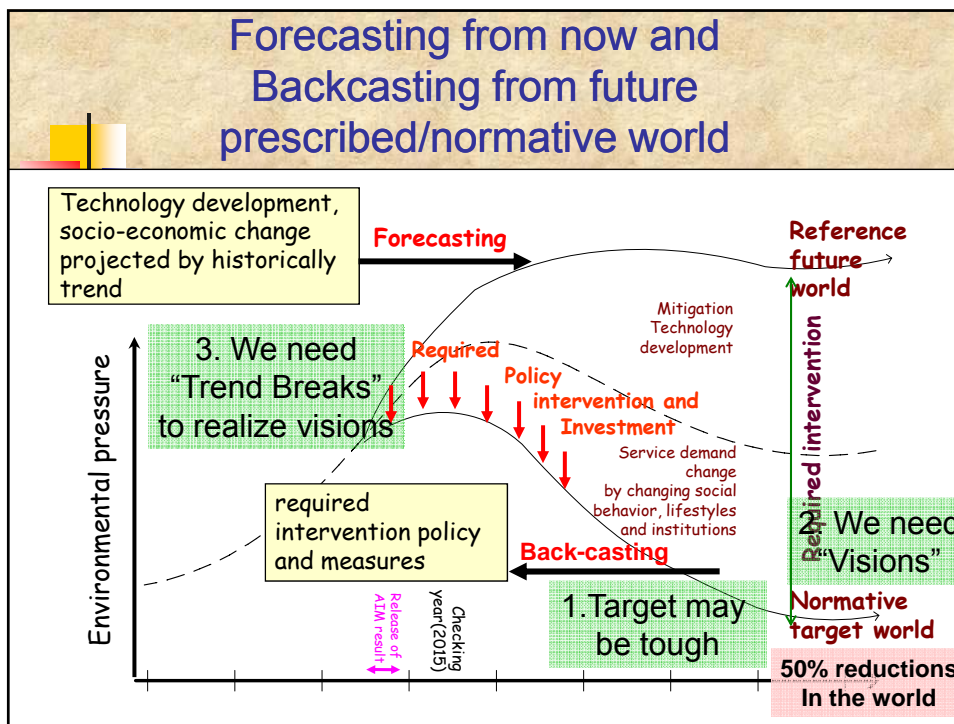


➤ Since the industrial revolution we have seen an increase in greenhouse gas emissions that has caused the global climate to change. In the case of carbon dioxide this is around 30% more than pre-industrial levels.

➤ This increase in greenhouse pollution is due to our continued reliance on energy technologies based on fossil fuels - a legacy of the industrial age.

➤ Alternative technologies that produce fewer greenhouse gases have, therefore, been at the forefront of the debate on climate change.





## Delhi: Economic Scenario

### Delhi is Capital of India, a Developing Economy

Country	GDP	Population Density (Person/Km <sup>2</sup> )	Per Capita Energy Consumption (Kgoe)	Electricity Consumption KWP/Person/Yr	Oil (bol/Pers/Yr)	CO <sub>2</sub> Emission (MT/Person/Yr)
US	7,247	31	7,795	12,211	25.5	19.5
UK	1,110	246	3,918	5,570	10.5	9.1
Japan	5,153	137	4,040	7,887	16.1	9.8
China	2,759	339	1,138	804	22.6	3.2
India	326	336	512	411	0.3	1.0

#### Conclusion: India for its economic independence -

- has to enhance its energy consumption for supporting its economic growth,
- it has justification (pessimistic) to use cost effective technology as compared to developed countries

## Delhi: Political Scenario

### India is a vibrant democracy

- Any policy change is regulated by its implication on its polity
- Delhi is a separate State in India and being capital has special position
- Delhi is sandwiched between two states
  - Uttar Pradesh
  - Haryana
- National Capital Region extending beyond Delhi has strong influence on its :
  - socio-economic, and
  - political dimensions

## Delhi: Demographic Scenario

- Area : 1483 Sq Km
- Population Density : 7,758 per sq km
- 16<sup>th</sup> Most Populated City in the World
- Population Projections:
  - 2001: 14 Millions
  - 2011: 18 Millions
  - 2021: 22 Millions
  - 2031: 30 Millions
- Floating population of Delhi has significant stressing effect on its:
  - Energy requirement,
  - Transport & Traffic,
  - Water and Sewage,
  - Climate

## Focus

- **Emission and climate are interactive in many dimensions:**
  - Industries,
  - Energy needs,
  - Transportation,
  - Water & Sewage,
  - Life style
- **This presentation picks up threads from**
  - Transportation,
  - Water & Sewage,
  - Information Technology
 evolving philosophy of “ **Bhartiya Climate Index**”

## Delhi : Transport

- 21% of City is Roads
- Major Initiatives
  - Delhi Metro
  - Vehicles
    - CNG in vehicles
    - Red light free roads
- Delhi Metro
  - Influence Zone: 31% of the area of the Metro,
    - within 500 Meter approach,
  - Feeder system inadequate
  - Transfer
    - Coordinated scheduling of feeder,
    - Combined ticketing,
    - Waiting time
  - Luggage permissibility,
  - Inadequate parking
- Despite good efforts on Metro, growing Metro Vehicular traffic and pollution has not been able to provide requisite relief

## Delhi : Vehicles

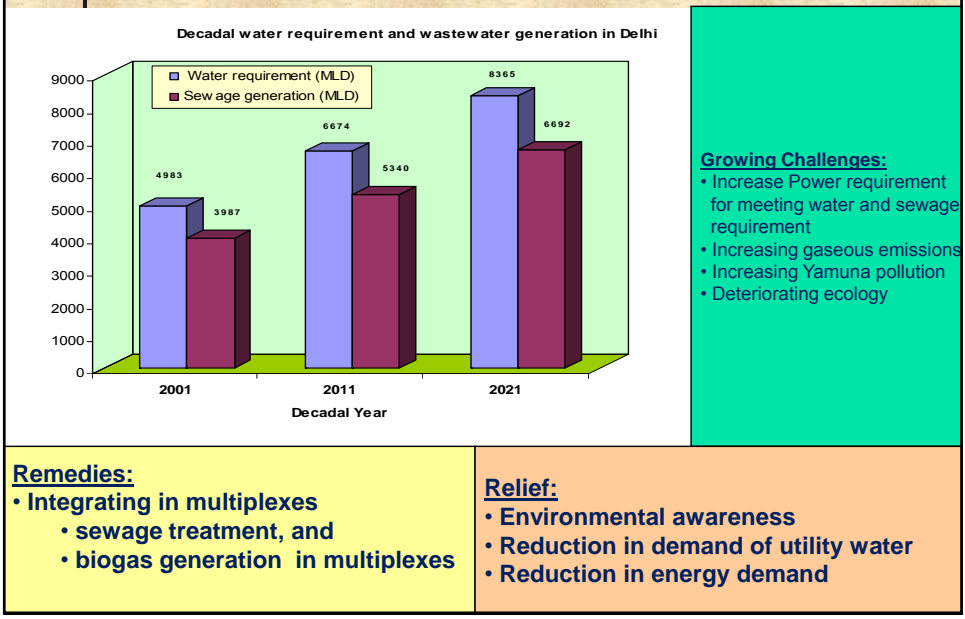
- CNG
  - Efficient fuel
  - Drastic reduction in gaseous emissions
  - Now Accepted as fuel in automobile
- Red Light Free Roads
  - Construction of flyovers
    - Increase in traffic speed,
    - Reduction in travel time

In spite of this, ineffective public transport has effected in increase of private vehicles. This has diminished upon the gains on Vehicular emissions .

#### Constraints:

- Floating population from NCR influences the traffic and vehicular conditions.
- Political environment preventing stringent measures

## Delhi : Water & Sewage



## Delhi: Information Technology

**Effect of IT intervention on anthropogenic emissions and climate:**

Not yet documented

But, :

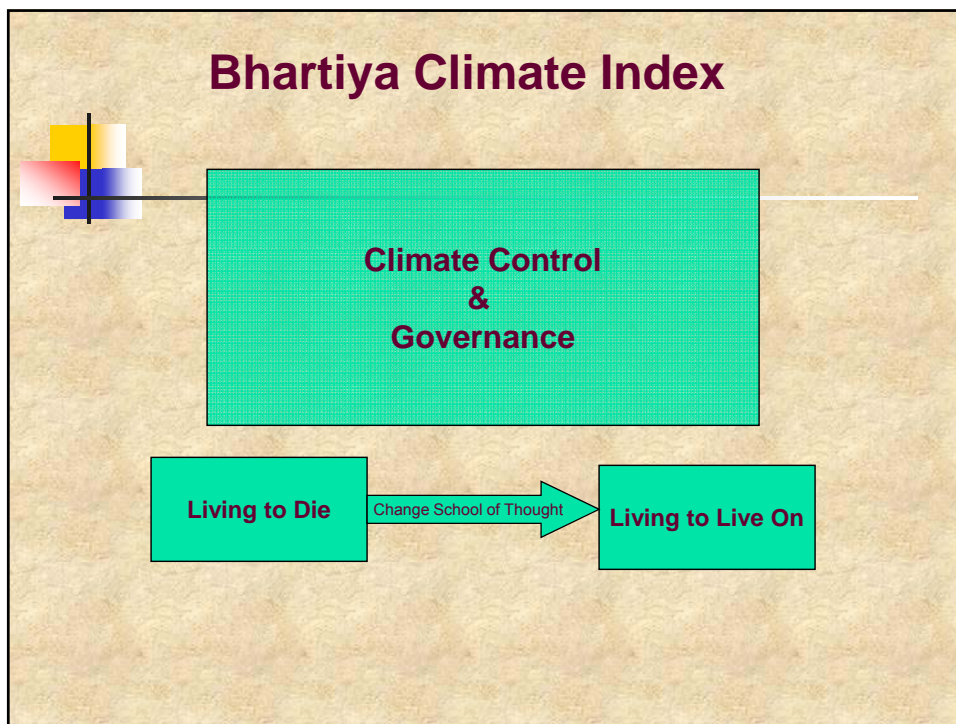
- Reduction of rush on reservation counters,
- Reduction of queue on Bill Payment counters,
- Reduction of queue on enquiry counters

is evidently result of popularity of IT initiatives.

This, certainly, has impact on people commuting to avail above facilities.

Technology has altered course of nature to adversities. However, it possesses latent potential of remedy, if used wisely.

This is an effort to think out of box for technological adventures for climate restoration. This out of Box thinking has further led the author to evolve **Bhartiya Climate Index**.



- ### Bhartiya Climate Index
- Premise: Technological Endeavour**
- Win over the vagaries of the nature
  - Discover nature to build safeguards
  - Make life comfortable and safe
  - Evolve systems which are self sustaining
  - Evolve systems which are climate corrective

## Bhartiya Climate Index



### Human Quest

- Causes variation in pattern of nature
- Essential for survival
- Survival in present, near future or distant future...????
- Climate damage unprecedented since technological advent

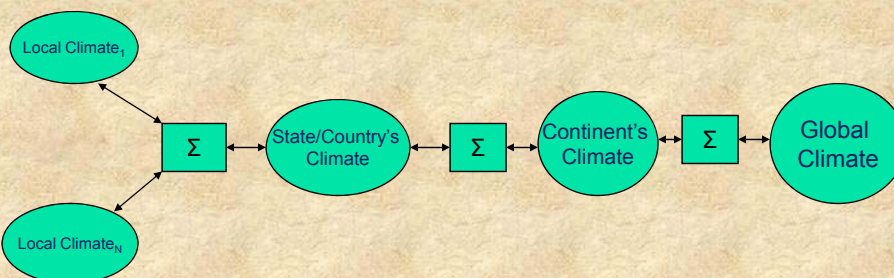
### Therefore

Needs governing mechanism for Climate control

## Bhartiya Climate Index



### Integrated View of Global Climate



## Bhartiya Climate Index



### Drivers to Climate Change

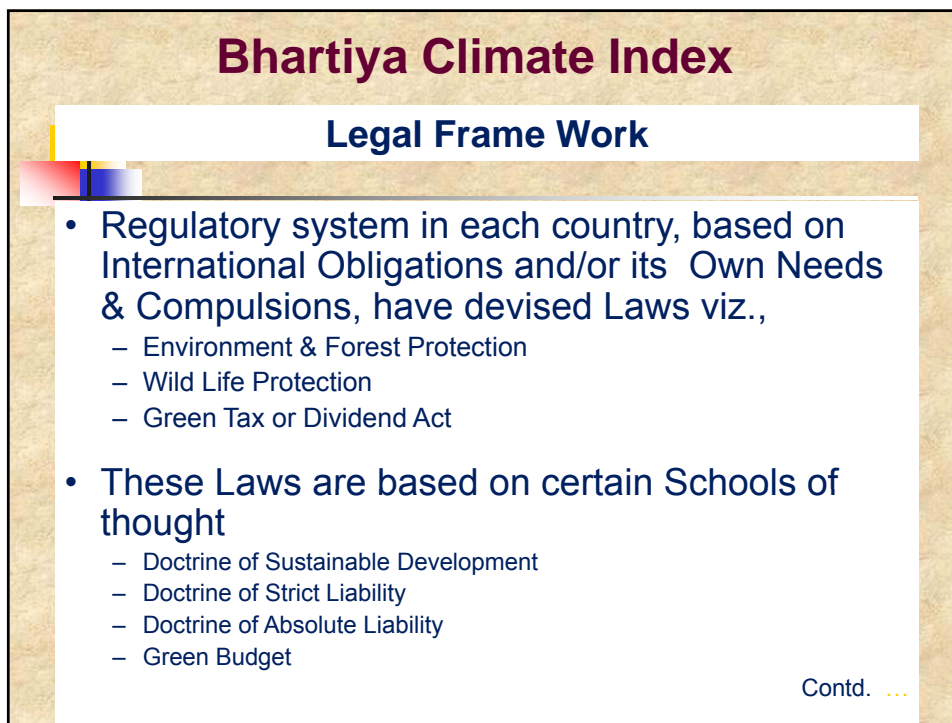
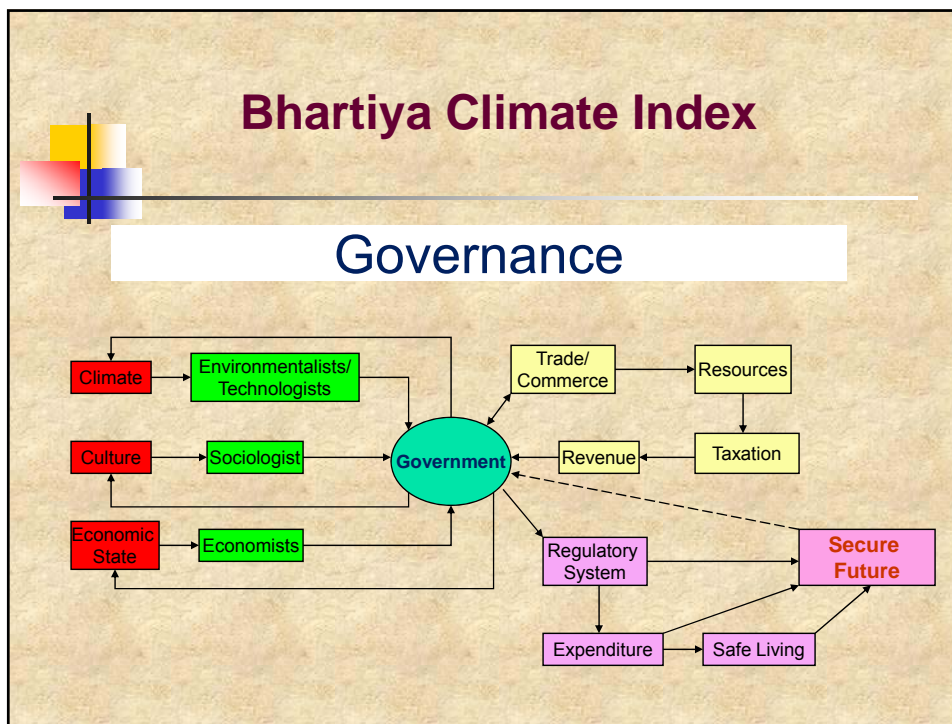
- Climate Change Drivers
  - Natural
  - Anthropogenic
- Characteristics of Drivers
  - Offensive
    - Efficiency
    - Evitable
    - Reversibility
    - Cost and Time Frame of Reverting Damage
  - Corrective
    - Efficiency
    - Expandability
    - Cost and Time Frame of Correction
  - Friendly

## Bhartiya Climate Index



### Insight into Drivers of Climate Change

- Distribution of Drivers
  - Concentric
  - Distributed
- Genesis of Human Drivers
  - Sociological
  - Cultural
  - Climatic
  - Economic



## Bhartiya Climate Index

....Contd.

### Legal Frame Work

- Most of the Laws are applicable to Bulk Industry/Service Providers
- Distributed Consumer and Services remain outside the Gamut of Regulatory Frame Work

>This provides motivation to review upon legal frame work on drivers of Climate Change applicable to:

- Manufacturers/Service Providers
- Consumers

In respect of their

- Roles and liabilities and
- Mutual regulatory effect

## Bhartiya Climate Index

### Proposition

- Devise an Index for all services/products based on their Climate Hostility/Savvy Nature
- Evaluate the Index on (+)N to (-)N Scale
  - (+)N : Index designates Degree of Hostility to Climate
  - (-)N : Index designates Degree of Climate Savvy
  - 0 : Index for Climate Savvy
- This Index is given the name as BHARTIYA Climate Index

## Bhartiya Climate Index

### Capitalization of Climate Effect

Development of **Bhartiya Climate Index** needs enormous ground work:

- Effect on Climate needs to be capitalized based on cost and time of correction
- Industrialized/Developed societies bear more hostility to Climate by way of intensity
- Tribal or un/under developed societies use practices more hostile to climate. It is attributed to :
  - Inefficient uses and
  - Inaccessibility to efficient practices

## Bhartiya Climate Index

### Environment Savvy Taxation

- Every Product or Service is Taxed distinctly for its Climate Effect using on **Bhartiya Climate Index**.
- The Resources generated from such taxation would in general be abundant
- Climate Control needs –
  - Resources
  - Organization
  - Commitment
- These Resources, discretely generated, would cause consciousness towards damages to the climate caused by consumer of Products/Services.
- Taxation of consumers of products/services has a potential of feedback control on manufacturers and/or service providers **as much as** threat in a democratic setup
- Resources so levied needs to be exclusively used for Climate Savvy
  - Education
  - Awareness
  - Promotion

## Bhartiya Climate Index

### Premise of Implementation

- Local Government is the Nucleus
- City, State, National Governments and Global Institution (government) are growing shells over the Nucleus Government
- Flow of Surplus funds is, bilateral, based on net contributions to Climate.
- Commitment has been placed at the last in Climate Savvy Needs. Why?
  - Commitment in wider cross section of Society , unlike individuals, can not grow on its own. It needs resource and organization.

## Bhartiya Climate Index

### CYCLE OF CLIMATE

- Mother Earth has been going through cyclic changes
- Human Endeavour to conquer nature has accelerated the cycle of destruction.
- Human efforts for reverting the nature's destruction. Why Not?
- Conserving Mother Nature is living necessity of globe, not only individual {Living to Live On}.
- Effort for retarding the prevalent pace of climate destruction from Centuries to Thousands & Millions of Years



## Bhartiya Climate Index

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### Conserving Mother Nature

- Sensitivity and responsiveness of All Sections of Societies, Nations and Globe, be it:
  - Developed, Under developed or Undeveloped,
  - Literate or Illiterate,
  - Environmentalists, Scientists, Technologists, Sociologists, Artists, Economists, Lawyer, ..... and last but not the least politicians



## Bhartiya Climate Index

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*Thanks*

It is the **beginning** of accelerating the debate on **Options to Live ON** for an onward implementation, and **not the end**

**WITHOUT**

Loosing faith in human wisdom and capability

## Bhartiya Climate Index



**Feedback and Comments  
are  
welcomed!**

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