

India's National Action Plan on Climate Change and Its Implication Towards Development of Carbon Neutral Indian Cities



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NAPCC: Frame(*for*)work



What does it do?

Provides Over arching goal: to facilitate **Sustainability Transition**

National Mission on **Sustainable** Habitat National Mission on **Sustainable** Habitat

Mitigation Potential: Technology options

Climate Benefit Potential

Barriers: Technical, Financial, Policy

Climate benefits, Health benefit, Employment benefit, new business opportunity for private sector (SME,ESCO), local environmental benefits, re-investible fund generation

What needs to be done?

Provide action plan with measurable climate benefits and co-benefits

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Challenges and opportunities



- Urban growth has been accepted as goal
- How to make Development goals consistent with Climate and local environmental goals without compromising well being impact
- How can we minimise the **lock in effect by creating carbon neutral cities**

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NAPCC: Routes to CNC



- Energy Efficiency in Buildings-Building codes (30%-40% reduction potential)
- Management of Solid waste: recycling of liquid and solid waste
- Shift to Public Transport: new urban planning for new medium and small cities

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Additional agenda



- Resilience of infrastructure
- Community based disaster management
- Early warning systems

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Hotspots



- Residential sector accounts for 13.3 % commercial energy consumption
- LPG growth 11%
- Electricity growth 8%
- Space conditioning, lighting ,refrigeration major demand.
- Commercial building growth is high: lighting demand and space conditioning demand vary by building type.

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Buildings



- Additional cost
- 3-5%
- 10-15%
- Technology Transfer, Capacity Building, Decision tools, Policy and Regulation, BLY –CDM finance

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MSW



- Success and Failure Stories
- Low profitability
- Co benefits and incentive design
- R & D Need: Technology, Institution, incentive design, Upfront support for private investors
- Innovative policy design

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KEIP-Project Green



- Community participation for measurable benefits
- Coordination with stakeholders
- Innovative Financial Mechanism
- Institutional innovation
- Creating replicable solutions

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Raj Bhavan-Kolkata Climate Responsible Consumer



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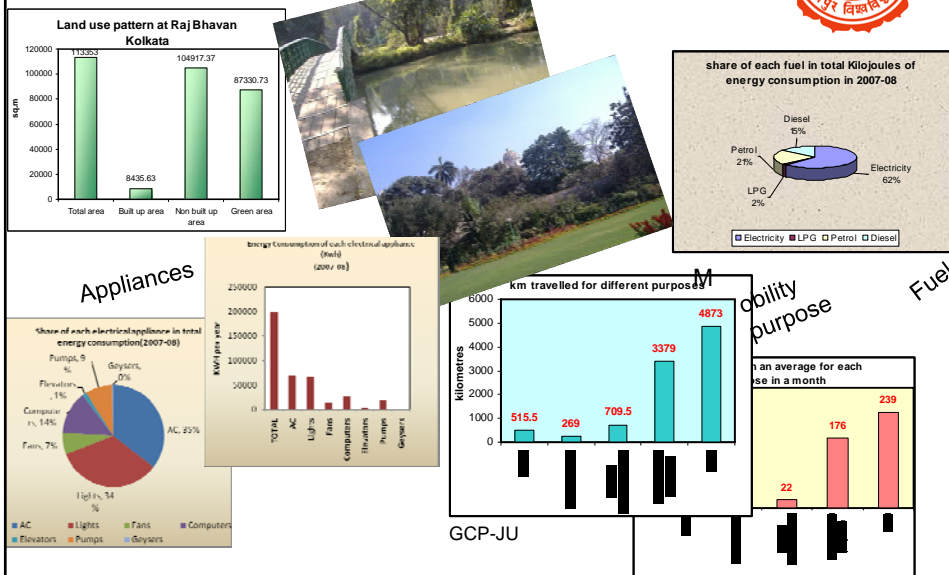
Highlights



of the Report

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Information checklist



Voluntary Action



- Climate Responsible Consumer
- Responsible Consumers for sustainability Transition
- CRLI and ResConST decision tools



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Responsible consumer



- **Need to know BEL from operational lifestyle**
- **Steps to know reduction potential and costs associated**
- Enabling environment/
Voluntary action



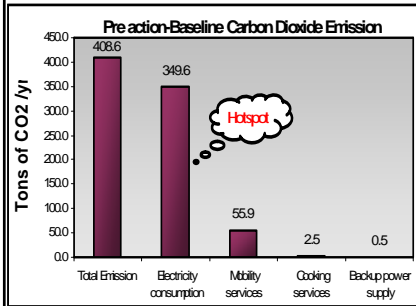
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Raj Bhavan : BEL and VA

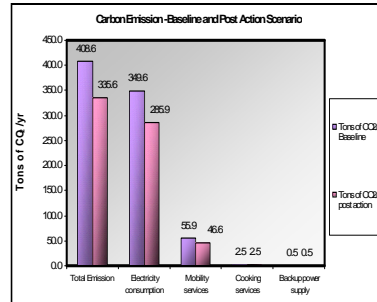
408 tons per year



BEL of Raj Bhavan energy service demand on 2015-2016



Carbon Dioxide Emission Baseline, Post Action



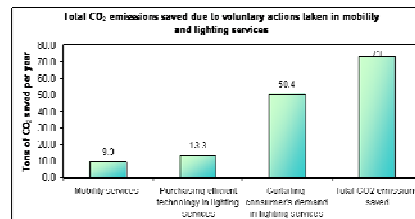
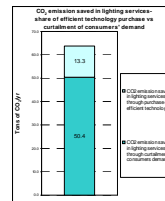
Emission Reduction due to Voluntary Actions is 73 tons

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VA @ Raj Bhavan



- **Lighting Services**
 - Purchase of efficient technology
- Curtailment of demand
 - 100% Black out
- Efficient use of vehicles
- Number of cars in the convoy reduced from five to four
- Shared occupancy in cars increased.



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Cost of Voluntary Actions



- 15 % reduction in electricity bill owing to voluntary actions.
- 18% reduction in CO₂ emissions from electricity consumption as a result of the voluntary actions.
- The pay back period of VA is 1.5 years



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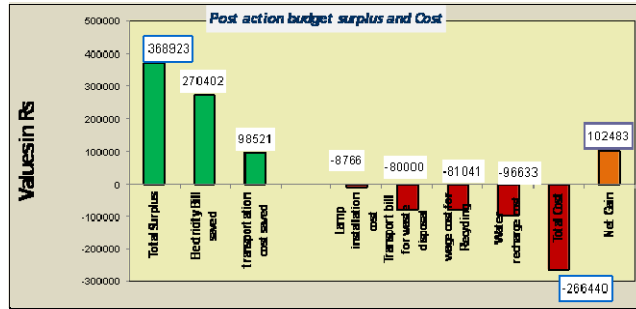
ResConST



- **Water and Waste Management**
- Surplus water is recharged in underground aquifers
- Paper and plastic wastes are segregated at source
- Paper is sent for recycling at Belur Recycling Plant
- Plastic is sent for recycling to H. C. Plastics
- Green Waste is transported to designated dumping site
- **Land Use Pattern**
- Decision to maintain land use pattern between built up area, water body and green open area

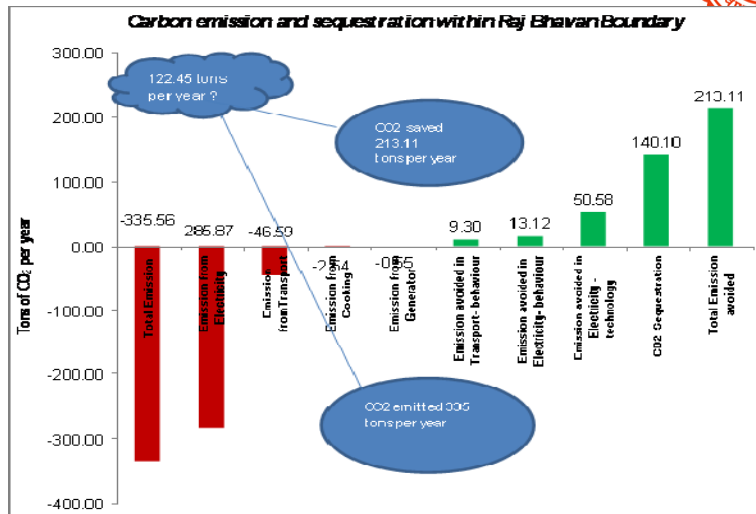
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Economic return



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Carbon Balance



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To do list for Carbon neutrality



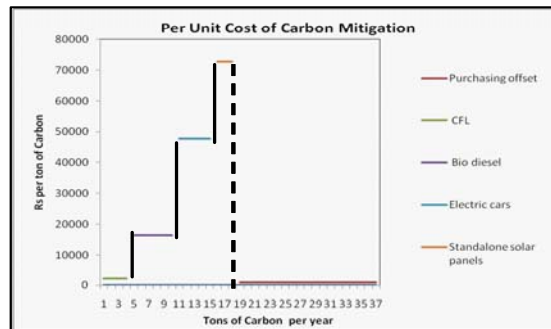
- solar energy for 100% boundary and street lights
Mitigation potential 11 tons per year
- Introduce intelligent Building Management system :
Mitigation potential 71 tons /yr
- Use solar energy to generate electricity to meet the (1/3 rd=100 kw) partial demand of indoor lighting and space cooling: **Mitigation potential 11 tons per year**
- Raj Bhavan Ponds as viable source of bio fuel to replace fossil fuel for mobility services: **Mitigation potential 20.2 tons per year**
- Replace diesel operated cars by electrically operated cars. **Mitigation potential 16 tons per year**
- Purchase carbon offset linked to community development programmes for rest of the carbon balance: **Mitigation potential will vary as this is the residual.**

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Steps to realise Carbon neutrality Goal

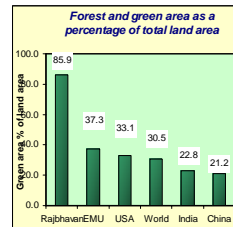
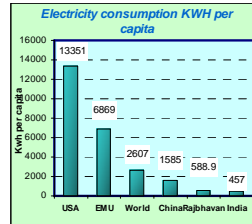
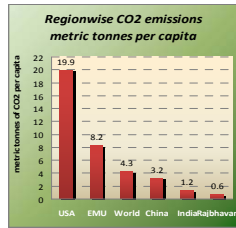


Cost of Carbon Mitigation



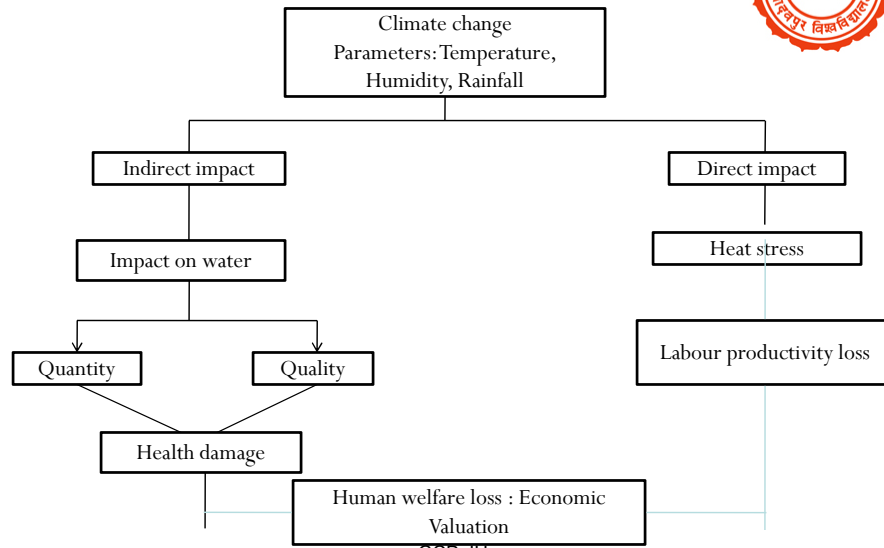
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Raj Bhavan-vis-à-vis- ROW



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NATCOM II: Measuring Human Welfare Loss



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Global Change Programme-Jadavpur University

Knowledge Gap



- Scalable Project Implementation with measurable gain, State level action plan. SEAC contribution, JNNURM contribution
- Experimental Project Development, Replicability and Measurability
- To enhance India's participation through measurable domestic action with global finance
- To negotiate for better participatory mechanism beyond CDM

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Thank you



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