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BADERIA GLOBAL THE BEST Institute of Engineering & Management

BrahmaX 1.0

The Creation of Tomorrow

BrahmaX 1.0

Profile Overview

- **Theme** - Sustainable Construction Methods for a Greener Future
- **Problem Statement -** Green building and sustainable construction practice
- **Team Name –** Rising Coders

Sustainable Construction Methods For a Greener Future

- **Use of Sustainable Building Materials** - Incorporate renewable and recyclable material like bamboo, recycled steel .
- **Energy- Efficient Building Designs** – Implementing passive solar design, green roofs and cool roofs to enhance energy efficiency .
- **Water conservation Techniques** – Adopting rainwater harvesting and water recycling system to minimize wastes.
- **Modular And prefabricated construction** – utilize off-site construction methods to reduce waste and construction time .
- **Integration of Renewable Energy Sources** – Installing solar panels and building-integrated photovoltaic's (BIPV) to harness renewable energy.

Technical Approach

Programming Language

- **JavaScript** – create interactive display for smart homes
- **Python** – do data analysis , smart system control , energy modeling for smart building
- **C/C++** - power embedded system in smart meter and sensors

Frame Work

- **Energy Plus** – simple model which help buildings for better energy performance
- **Open Studio** – tool used for energy modeling

Hardware

- **Water Flow Sensor** - measures the rate of water is moving through a pipe or system

Implementation Steps

Problem Identification

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Solution Planning

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Technology Selection

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Prototype Development

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Testing and Optimization

Expected Outcomes

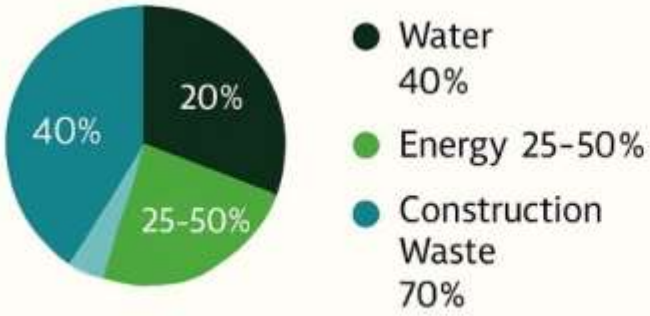
Reduced energy level and water consumption real time monitoring alerts user friendly interface for data consumption

Feasibility And Viability

Technical Feasibility

- Advanced Materials: (AACC blocks, fly ash bricks, low-VOC paints)
- Renewable Integration: rooftop solar, BIPV)
- Efficient HVAC (chilled beams geothermal) up to 50% energy saving
- Smart Systems; BMS, energy monitoring

Resource Savings in Green Buildings



Practical Implementation

- Policy Support: ECBC code, LEED/ IGBC/GRIHA certfications
- Case Study: **Indira Paravaran Bhawar** Delhi – Int's's 1st net-zero energy building
- Adoption: Government + private developers increasingly opting green

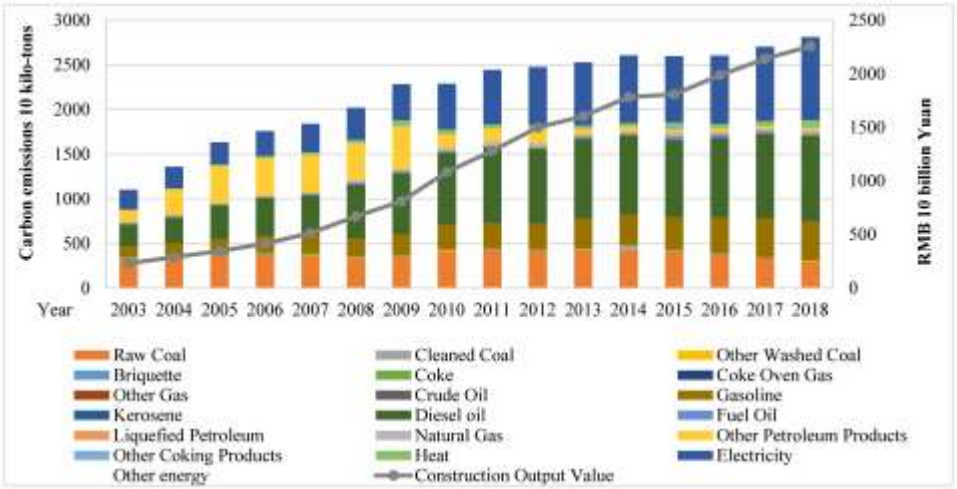
Potential Obstacles & Solution

Obstacle	Solution
High Initial Costs	Govt. subsidies, green loans
Lack of Awareness	Educational drives, workshops
Resistance by Builders/Developers	Incentivize gr
Technical Skill Gap	Green building program

Impacts And Benefits

Benefits

- Reduce destruction to ecology
- Efficient use of resources during construction
- Reduced construction waste
- Reduced energy consumption



Impacts

- Reduce environmental footprint
- Energy efficiency
- Water conservation
- Material efficiency
- Healthier living environments

Reference

Reference

- **United States Green Building Council (USGBC):** Develops LEED certification program for sustainable buildings.
- **National Institute of Building Sciences (NIBS)**: Provides guidelines and standards for sustainable building practices.

Research Areas

- Sustainable materials and technologies
- Energy efficiency and renewable energy systems
- Water conservation and management
- Indoor air quality and occupant health
- Building information modeling (BIM) for sustainability