

Sustainability in Construction

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Present Focus of Construction Industry

- Deliverance of products
 - Optimum cost but not the least cost
 - Speedier construction
 - Quality of product

Aspects of Sustainability often not cared for in the rat race of economic development

Three elements of Sustainability

Meeting present day needs without harming ability of future generations to meet their needs in future

- Self Sustainability
- Sustainability for the Present
- Sustainability for the Future

Self Sustainability of Structures

- Safe
- Durability
- Strength to withstand imposed loads
- Economy
- Ease in Construction
- Serviceability

Four Pillars of Safety

National Building Code 2005 lays down minimum provision to protect the safety of public with reference to

- Structural safety
- Health Safety
- Fire Safety
- Public Safety

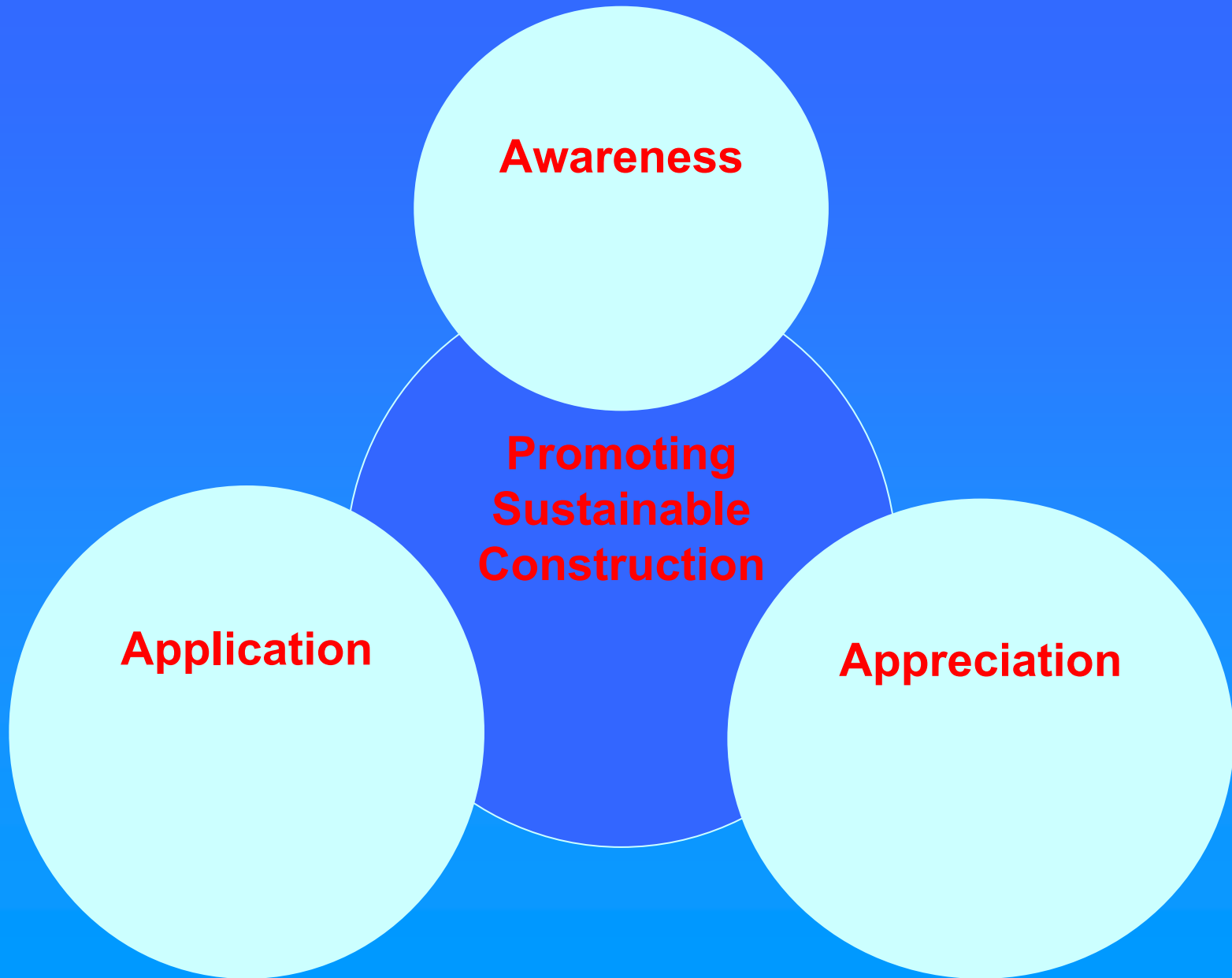
Till date some consideration appears to be given to structural safety while other three aspects have been reasonably neglected

Construction Safety Aspects

Safety during construction requires well planned and organized mechanism to take care of safety during

- Excavation, drilling and blasting, piling and tunneling
- Material handling and Transport
- Structural steel erection
- While working in compressed air
- Safety in use of tools, Equipments
- Operating construction machinery
- Working in Substation, overhead lines/Cables

Sustainable Construction



Awareness

- Most of the population is unaware of effects of un sustainable construction with present construction processes
- Awareness to trickle down to the level of :
 - Community in general
 - Practicing professionals
 - Building construction Agencies
 - Building regulatory Agencies
 - Users

Appreciation

There is clear lack of appreciation amongst :

- General public
- Practicing professionals
- Building Organizations
- Regulatory agencies

About the need for having 'safe' and 'sustainable' construction

Application

- A sustainable building construction incorporating disaster resistant planning and design aspects would need to encompass application from point of view of
 - Society norms
 - Economic norms
 - Environmental norms

Sustainability for the present

- **Societal**
 - Creating safe & durable well designed housing
 - Preserving natural resources
 - Enhancing urban environment
 - Adequate remuneration to people engaged
 - Good working conditions for workers
 - Skill development
- **Economic**
 - Optimizing the present economic cost
 - Use of recyclable Material
 - Value Engineering
- **Environmental**
 - Energy Efficiency
 - Embodied energy
 - Energy during operation
 - Water Harvesting

Sustainability for Future

- **Societal**
 - Preserving our cultural heritage
 - Enhancing urban environment
 - Training & Skill development
- **Environmental**
 - Meet objectives of Kyoto Protocol
 - Climate change
 - Preserving natural environment
- **Economic**
 - Reduced Maintenance costs
 - Primarily life cycle cost consideration

Key Goals of Modern Construction

- **Meeting Client/User requirements**
 - Better Living Comforts
 - Optimum cost but not the least cost
 - Reasonable return on investments
- **Safe,secure and durable construction**
- **Knowledge based**
 - Adaptable to technological changes
- **Improving Productivity**
- **Improvement in Quality of Life**
 - Working conditions
 - Higher purchasing power

Impact of Present Construction Process

- Large scale depletion of Natural Materials
- Shrinking of Water bodies
- Depletion of Ground water
- Air pollution & Global warming
- Vanishing of Forests
- Excessive Energy Requirements
 - In production of material
 - In construction Process
 - In maintenance

Required Re-look

- **Self supporting**
- **Environmental friendly**
- **Need for Re-engineering of the Process**

New Developments

- Industrialization
- New Technologies
- Innovative materials
- Efficiencies in construction process
 - With Mechanization
 - Training

Prohibitive Factors

- Fixed mindset of Managers
- Insistence on continuation of practice
- Short-term planning
- Lack of awareness of new technologies
- Lack of relevant skill /Capacity building
- Cost of adopting new technology
- Consumers' response

Principle Issues

- Quality Assurance in construction
- Refurbishing the Image of the industry
- Stress on R & D activities
- Development of sustainability indices
- Waste management from demolition
 - By Recycling of materials
 - By Re-using materials

Challenges

- How to optimize resources consumption
 - Energy
 - Water
 - Natural Material
- Reduce environmental and manmade impacts
- Recycle/Reuse wastes
- Management of 'In time' concept of supply
- Improving safety and security
- Use of underground city space
- Knowledge based construction
- Large scale use of information technology
- Reasonably neat & clean work place

Sum up

- **Construction industry has a bigger role to play in view of its impact**
 - On general development process
 - Potential for employment generation
 - As a means of Poverty Alleviation

Thank You