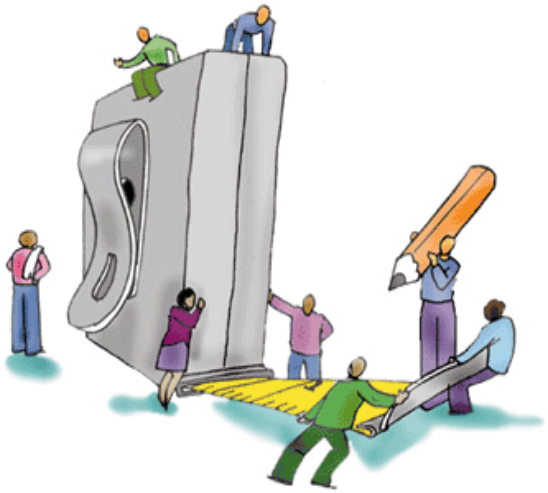

Designing Buildings Towards the Environment Sustainable Construction

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Background

- Design plays a vital role in project life cycle
- The concept of creative architectural solutions based on Environmental Design is highly appreciated by today's construction clients
- They wish to increase profits by utilizing economic and environmental analysis to improve their decision making during the course of planning, designing, and constructing

Background cont..

- It is vital to explore environmentally and economically sound design in order to design buildings that are sustainable, healthy and affordable

- Sustainable Design is the first step towards the sustainability

- The design should par with environment policy, waste and recyling, energy conservation and efficiency, noise and land use for buildings to make it as environmental preferable design

Background cont..

- Environment Sustainability is not well addressed in construction and at present it caused into number of repercussions in global arena

- It is a context driven concept and different societies tend to define it based on their own values, needs and expectations

- Natural resources, air quality, water resources, bio diversity and habitat, environmental health, energy are the key performance indicators of the Environment Sustainability (ESI, 2005)

Background cont..

- Among the multiple indicators ‘construction materials’ have great impact to the environment

- If any product is labeled as environment favourable that should be well balanced with
  - low embodied and maintenance energy,
  - high content of reusability,
  - compatibility with environmental policies
  - the materials with a long life and low maintenance requirements

Aim

The research study focused on

- how the greening concepts can be incorporated in the design process towards the sustainability

- To test the level of acceptance of the concept when selecting construction materials

Methodology

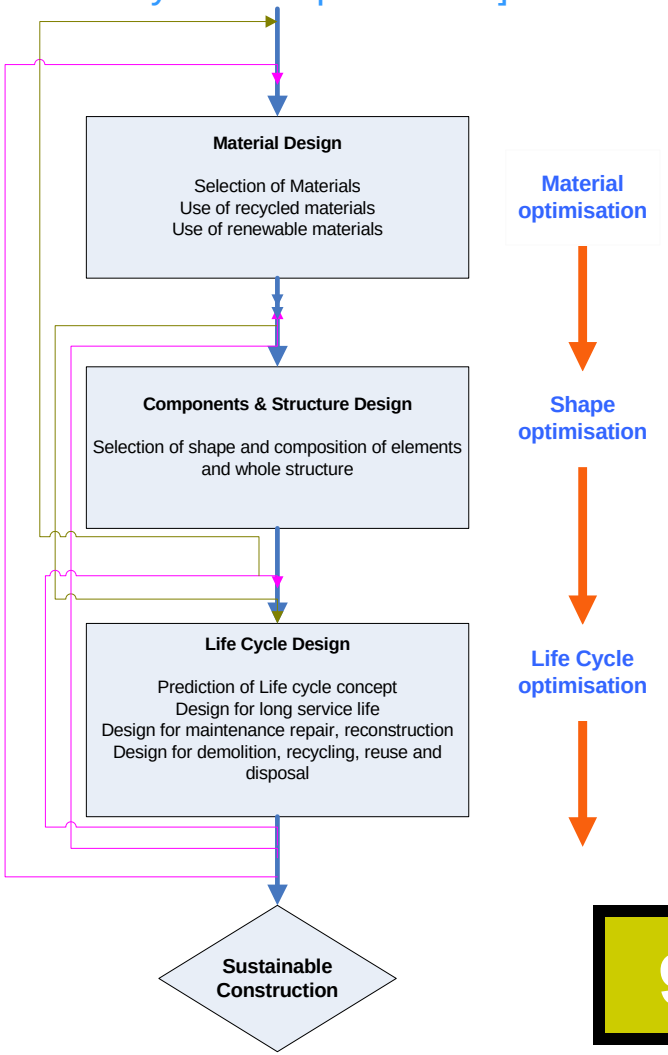
- A comprehensive literature review to find the environmental optimisation frameworks
- Few brainstorming sessions were conducted among the professionals to get the comparative analysis of materials in terms of their ‘green’ contents
- The applicability of the model was tested through multiple case studies

Selection of a Framework & Cases

- Among the number of environmental based optimisation models Hajek's (2001) model was selected to test because of its life cycle concerns
- The selected cases were apartment complexes which are located at Colombo Metropolitan area
- The sub unit of analysis are the selected elements of each apartment complexes
- Data was analysed through the Likert Index and mean rate was used to rank and compare the derived materials for selected elements

Findings from the Literature Review

[Framework for Environmentally based Optimisation]



Hajek, (2001)

Findings [Case I]

Project	Element	Material Derived through the Framework	Client's Choice
Vishnu Court, No 19, Arathusa Lane, Colombo 06 Sri Lanka	Floor Finishes	Timber	Ceramic Tiles
	Partitions	Timber	Brick

Findings [Case II]

Project	Element	Material Derived through the Framework	Client's Choice
Apartment complex, No 08, Sripala Road, Mount Lavenia, Sri Lanka	Column/ Beam	Pre cast concrete	In-situ Concrete
	External Walls	Brick	Brick

Findings [Case III]

Project	Element	Material Derived through the Framework	Client's Choice
Semi Luxury Apartment, No 97, Galle Road, Rathmalana, Sri Lanka.	Roof Coverings	Calicut Tiles	Asbestos sheets
	Internal Walls	Hollow Block	1B thick walls

Conclusions

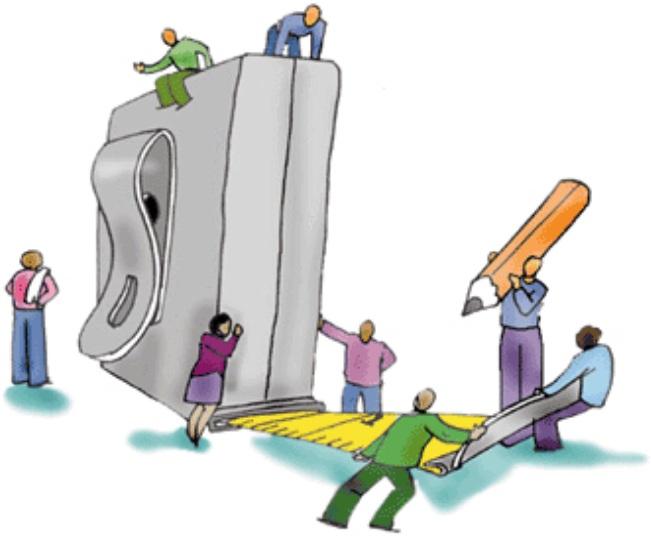
- Most of the clients' would like to concern environment as their best value criterion
- They would like to adopt environment favourable materials for their buildings
- Through the study it was found approximately one sixth of materials are purely match with the client's choice

Conclusions cont..

- The construction clients are still reluctant to adopt the greening concepts in Sri Lankan building industry

- Therefore it is recognized that the environmental policies and regulations should be in par with the construction activities to direct the building structure towards sustainability

- Therefore it can be concluded that the level of acceptance can be increased further by advance awareness of the client on environment favourable attributes of the materials



Thank You