

# Topical Feature: Sustainable Construction Discovery

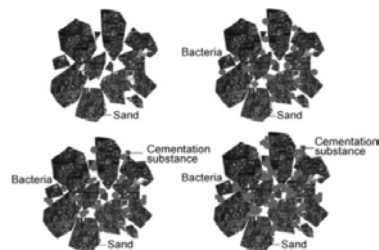
We SHARE to inspire and ignite ideas

The titles featured here are to give you a peek into the wealth of resources we have. We hope this will encourage you to explore and read further. Share with us trending topics and we can introduce relevant titles from some 400,000 eBooks we carry & other publications from the wealth of resources

April 2017

## BIOCEMENTATION

**A review of microbial precipitation for sustainable construction**



Concrete is a commonly used building material. However, current techniques to generate it use large amounts of energy and are a major source of greenhouse gas emission. Microbially induced  $\text{CaCO}_3$  precipitation (MICP) was proposed as a sustainable alternative for construction material generation, as it has limited energy consumption and greenhouse gas emission.

Source: [Construction and Building Materials](#) (23 May 2015)

## BOTTOM ASH

**Novel coal bottom ash waste composites for sustainable construction**



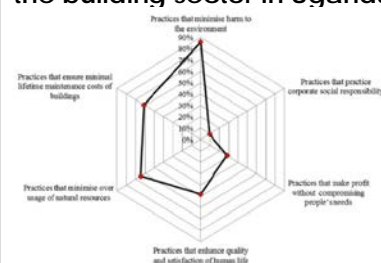
Source: [epa.gov](#)

Decreasing the carbon footprint of the construction industry through the recycling of bottom ash waste to produce ecological products. These ash waste composites had low density, making them attractive for brick, tile, paving stone, and controlled low-strength applications. Possible uses are outlined in this [article](#).

Source: [Construction and Building Materials](#) (3 August 2016)

## CARBON ACCOUNTING

**Enhancing sustainable construction in the building sector in Uganda**



Read about an investigation that assessed if the consideration of embodied carbon (EC) in the development approval process (DAP) improved sustainable construction (SC). It was revealed that most construction professionals were highly aware of SC. It was also found that integrating the assessment of EC in the DAP of building projects would aid in improving sustainable construction.

Source: [Habitat International](#) (15 July 2016)

## COOL ROOFS

**Cool roofs: beating the midday sun with a slap of white paint**

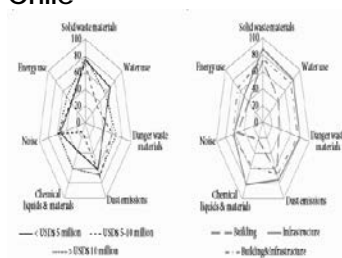


Read about how painting roofs white could aid in reducing a building's carbon footprint. The white painted or 'cool roofs' can reflect a significant amount of solar energy and this can reduce the cooling costs of a building. It was also found that solar panels installed on a cool roof generate 7% more electricity.

Source: [The Guardian](#) (13 April 2017)

## CONSTRUCTION FIRM PRACTICES

**Awareness, actions, drivers and barriers of sustainable construction in Chile**



Results of a study about sustainable construction (SC) practices utilized by construction companies in Chile are discussed. The article also elaborates on the level of awareness and knowledge along with what propagates SC and what hinders it.

Source: [Technological and Economic Development of Economy](#) (17 June 2013)

## ENVIRONMENTAL AWARENESS

**Promoting earth architecture as a sustainable construction technique in Egypt**

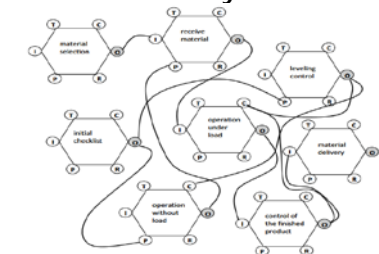


Egypt has considered the use of earth architecture for sustainable construction. Earth has been employed as a building material for thousands of years and it has shown a variety of benefits.

Source: [Journal of Cleaner Production](#) (25 September 2013)

## FUNCTIONAL RESONANCE ANALYSIS

**Assessing risk in sustainable construction using the Functional Resonance Analysis Method (FRAM)**



Construction work happens in the presence of frequent changes and varying needs. The Functional Resonance Analysis Method (FRAM) is used in this study to identify potential occupational hazards based on system functioning.

Source: [Cognition, Technology & Work](#) (24 April 2015)

## GEOPOLYMER

**Geopolymer-bamboo composite – A novel sustainable construction material**



The authors reinforced a potassium-sodium geopolymer with bamboo fibers and strips. The resulting composite was found to have high compressive and flexural strength.

Source: [Construction and Building Materials](#) (21 July 2016)

## HEAT INSULATION

**Insulation Systems and Green Sustainable Construction**

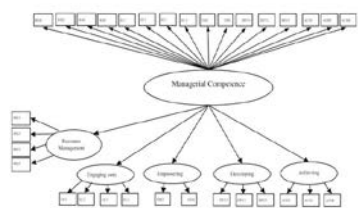


Read about how heat insulation systems are used in sustainable construction. Heat insulation systems aid in reducing heat loss from the building, which in turn decreases energy needed for a central heating system and hot water consumption.

Source: [Advanced Materials Research](#) (12 September 2014)

## LEADERSHIP COMPETENCE

### Leadership competences of sustainable construction project managers

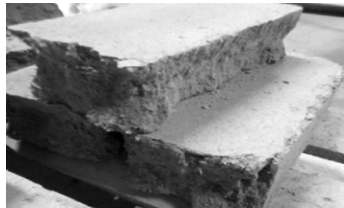


A model was generated to illustrate criteria for leadership competence to achieve success in sustainable construction. Intellectual competence and transformational leadership were the characteristics that influenced success in sustainable construction the most and least, respectively.

Source: [Journal of Cleaner Production](#) (2 March 2016)

## MATERIALS DEVELOPMENT

### Utilization of Palm Oil Fuel Ash and Rice Husks in Unfired Bricks for Sustainable Construction Materials Development

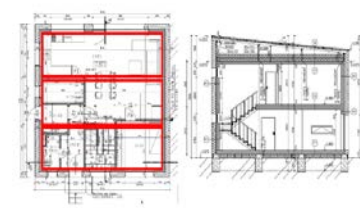


The authors investigated the use of Palm Oil Fuel Ash (POFA) and Rice Husk (RH), which are both types of agricultural waste products, in producing sustainable bricks. Laboratory tests were carried out on the composite bricks and it was found that they had lower density, but decreased compressive strength relative to conventional bricks.

Source: [MATEC Web of Conferences](#) (19 August 2014)

## MODULAR CONSTRUCTION

### Sustainable Construction Technology Based on Building Modules

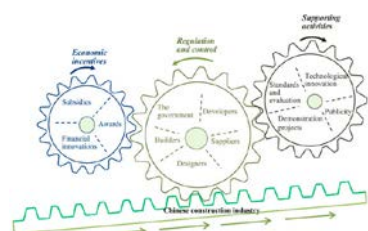


A case study of a family house construction was employed for analysis of construction techniques. It was shown that modular construction reduced time for excavation and establishing foundations, establishing the bearing structural system and roofing. Modular construction was also associated with reduced costs.

Source: [Advanced Materials Research](#) (27 October 2014)

## POLICIES

### Facilitating the transition to sustainable construction: China's policies

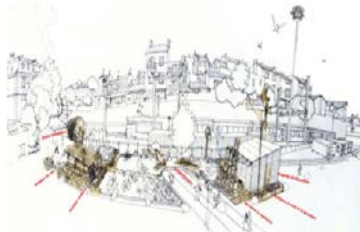


The authors studied the policy system in China to promote sustainable construction. Regulations, along with economic benefits have been implemented thus far. Areas that have to be addressed include the social and economic dimensions of sustainable construction and ineffectiveness of some policies.

Source: [Journal of Cleaner Production](#) (6 May 2016)

## REPURPOSED MATERIALS

### Sustainable construction with repurposed materials in the context of a civil engineering-architecture collaboration



Repurposed materials are existing materials that are reused and recycled for a particular purpose, instead of being discarded. A [pedagogical activity](#) emphasizing the utility of repurposed materials was presented. Also, how the gap between civil engineering and architecture perspectives has been closed in the "design-build" practical workshop, was explained.

Source: [Journal of Cleaner Production](#) (16 December 2013)

## SITE MEETING

### Site meeting as a sustainable construction tool



Source: PP Construction Safety

To ensure that construction projects are sustainable, adequate site meetings were found to ensure that protective wear are used by workers on construction site, skilled and qualified workers are used on sites and that there is a health and safety officer on site.

Source: [Socioeconomica](#) (11 June 2016)

## SUSTAINABLE DESIGN

### UCalgary's newest residence buildings recognized for sustainable design and construction

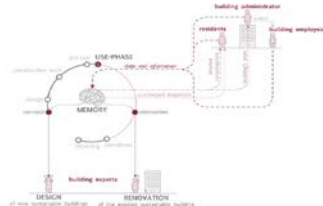


Aurora and Crowsnest are two residence halls that are certified under the international Leadership in Energy and Environmental Design program. The halls produce no more than 100 kg of CO<sub>2</sub> emissions per square meter each year. Low-emitting materials and an outdoor air system ensure good air quality throughout the year. Low-flow fixtures were installed to reduce water consumption.

Source: [UToday](#) (28 March 2017)

## USE-PHASE MEMORY

### Use-phase memory: A tool for the sustainable construction and renovation of residential buildings



The main factor affecting the variability in the use-phase of energy consumption and how residential buildings affect the environment, is residential behaviour. However, how this occurs is yet to be fully understood. Thus, the authors introduced a use-phase memory model for residential buildings. Data analysis and synthesis was carried out on two different use-cases.

Source: [Automation in Construction](#) (19 September 2013)

Source: [Universities UK](#) (June 2014)

## WATER STRUCTURES

### Sustainable Construction of Water Structures



Principles of sustainable construction such as sustainable site management, maximising material recycling and low carbon footprint have to be taken into consideration when constructing a sustainable water structure. Green buildings, cementless construction, conserving energy during the construction process and a selection of eco-friendly building materials are also discussed.

For more articles or in-depth research, contact us at [library@sutd.edu.sg](mailto:library@sutd.edu.sg)  
An SUTD Library Service©2016