ISSN: 2348 9510
International Journal Of Core Engineering & Management (IJCEM)
Volume 1, Issue 7, October 2014

Bottle Bricks And The Esthetics Of Sustainability

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Abstract:

Plastic bottles are used to store different substances for consumption and for other uses. Bottles used to package water takes over 1,000 years to bio-degrade and if incinerated, they produce toxic fumes. Recycling is only feasible in limited circumstances because only PET bottles can be recycled all other bottles are discarded and only 1 out of 5 bottles are sent to the recycle bin. So there is a need for environment friendly constructive use of waste plastic bottles. This report consist of use of plastic waste bottle in construction as a brick which is filled with compacted sand or mud and other material ,method and technique of use, its relative advantages over traditional bricks in this way plastic waste of bottle can be removed and reused safely for construction.

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Key Words: Waste Plastic Bottles, Bottle bricks, Methods andTechniques, Esthetic, Advantages

Bottle Bricks And The Esthetics Of Sustain Ability

Can the 'crude' and the 'untamed' look esthetic? Does sustainability have an esthetic dimension? Can the tacit knowledge and expressions of a community contribute in achieving sustainable as well as esthetic designs? We use the example of bottle bricks in interior-architecture to answer these questions

'Bottle bricks' refer to sand filled plastic bottles that are used as units or modules for construction. Use of these abundantly available low cost materials, and the involvement of indigenous communities for construction may be quoted as a good example of sustainability. However, equally important are the esthetics of these designs that are nurtured by the community's expressions, motifs and day-to-day activities.

The idea or concept behind bottle brick construction can be summed up as following:

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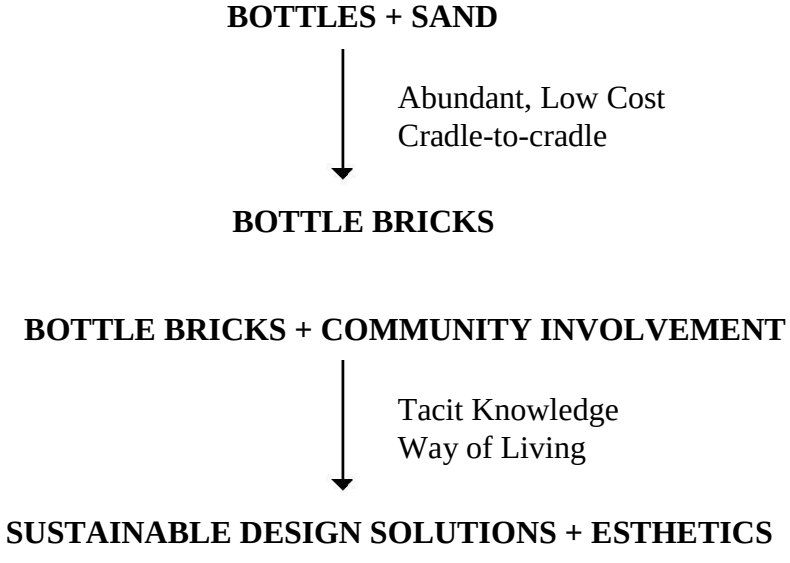

Need for Bottle Bricks in Construction

Plastic bottles take hundreds of years to biodegrade in landfills. Every year they are dumped into waterways and landfills, causing pollution, erosion, irrigation blockages and health problems. Using these bottles as bricks for construction may be termed as a cradle-to-cradle approach for designing. According to Trade Invest Nigeria, each plastic bottle takes on average 450 years to biodegrade and once

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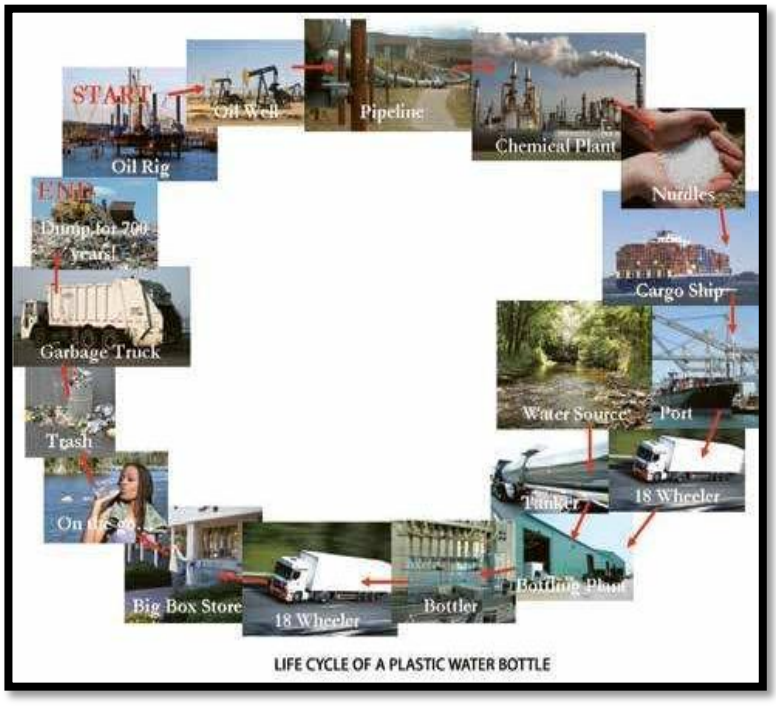
filled with sand creates a sustainable, eco-friendly and bullet-proof building block that can be used in a variety of architectural designs. According to research findings from a recent environmental impact assessment conducted by REPRISE, as quoted by an organization called Recycling of Used Plastic Limited (RECOUP), the energy used to recycle plastic bottles is eight times less than the energy required for manufacturing the same virgin polymer. For each bottle recycled the energy saving is sufficient to power a 60 watt light bulb for six hours.



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Bottle Bricks and Methods of Construction

Use of bottle bricks began nine years ago in Nigeria, followed by India, South and Central America, and Philippines. Eco-Tec, established in 2001 in Central America by ecologist Andreas Froese, is working extensively on this concept. Another organization that is actively promoting and implementing this concept is Developmental Association for Renewable Energies (DARE). Plastic bottles are cleaned and stuffed with sand (or inorganic trash). These are now ready to be use from which granite is blasted out can be saved too. A PET bottle can last as much as 300 years longer than the cement used to bind the bottles together in the walls. They are low cost, abundant, non-brittle, able to absorb abrupt shock loads, bio climatic, re-usable, need less construction material, and are easy to build. Yahaya Ahmed, the head of the project for DARE, explains that the compacted sand inside a bottle is nearly 20 times stronger than bricks. They are even intending to build a three-storey building. Use of plastic bottles for construction reduces the cost to one-third of that of a house built with concrete and brick. as construction modules. The bottle bricks are also sometimes tucked between supportive chicken wire, and coated in layers of concrete to form walls between the framing. The bottles are tied to each other with the help of ropes or threads. Mud plaster or sand or mortar may be used between the two layers of bottle bricks to provide strength

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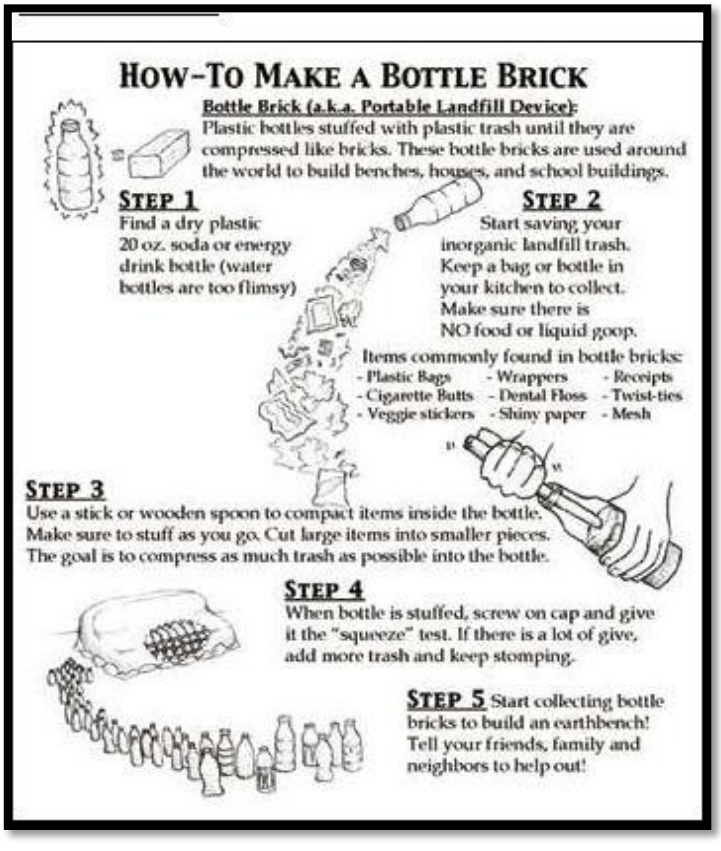
and stability.



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Bottle Bricks and Sustainability

According to experts at DARE and Eco-Tec, a clay brick requires a lot of time and energy to make, right from mixing the clay to baking it in the kiln; a significant amount of firewood is also used. In this regard, a bottle brick is far more energy-efficient. The technology also reduces the carbon emission that happens during the baking of an ordinary brick. The heat generation from cement factories can also be reduced as this technology uses only 5% cement. The foundation for the entire construction is obtained from building waste and so the mountains.

Communities Involved and Their Esthetic Sensibilities

Involvement of the local communities while designing or constructing enriches the whole process by adding their tacit knowledge and esthetic sensibilities that are a reflection of their way of living. These artisans and crafts persons engage in self-expression through creative interaction with materials, reflecting the esthetic tastes and socio-economic needs of a community. They can impart a unique language to the designs through their selection of motifs (extracted from bottle caps and floral bottoms), choice of colors (perky colors from different plastic or sometimes glass bottles),

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understanding of community needs (types of construction), and ability to dialogue with the environment and draw inspiration from it (joinery and structure inspired from nature).

Sustainability is a buzz word in contemporary times. People define, address, and work on it with different approaches. Working with recycled and re-used plastic bottles is also an approach towards finding sustainable design solutions. What is more enthralling and rewarding is to involve local communities in these design processes. Their involvement enriches the designs with sensitiveness towards the environment, understanding towards materials, tacit skills, esthetic sensibilities, expressions, and concerns to fulfill community needs. The designs resulting from the recycled trash bottles and sand may appear ‘crude’ and ‘untamed’, but also have a unique manifestation of the community’s way of living that makes these designs piquant and esthetic.

iJCEM
International Journal of Core Engineering & Management

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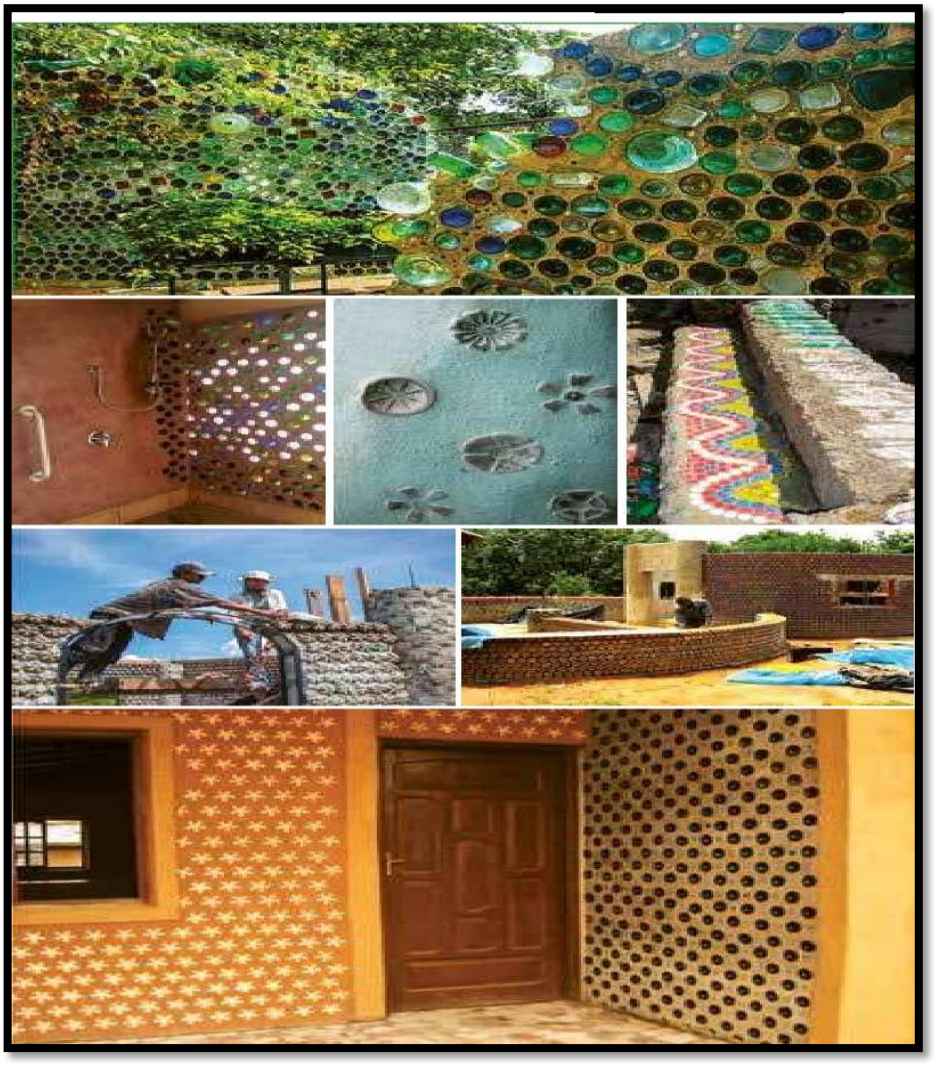

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