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Crafting circular spaces

Circular architecture is a growing trend. It's where architects blend sustainability with circular economy. Reusing, repairing, refurbishing and recycling existing materials are the core principles of circular economy. Experts share pointers to design circular home spaces.

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The roof of residential project 'House of Need' designed by CSBNE, Kollam, features reused terracotta tiles.

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In others, evolving family needs call for a larger space. “Materials from these demolitions — doors, metal frames and even ceramic tiles — might still be in a prime condition, and far from calling it quits,” says Amit Khanna, founder and design principal of Amit Khanna Design Associates (AKDA), New Delhi.

In Noida, he fashioned a home by repurposing materials from multiple demolished buildings. The doors were salvaged from a past project and lights from a demolished building. The window frames were recovered from a skylight frame of a commercial building that was razed down for renovation. The kitchen set-up was sourced from a building that was upgrading its kitchen infrastructure. The bathroom tiles in this Noida home came with slight manufacturing defects. These would usually be thrown away but in these imperfections, the team of AKDA saw unique design elements. Old-style electrical switch plates are making a comeback in home interiors, so these relics were duly repurposed .

The studio has twin philosophies — to maximise the use of recycled materials and to use fresh materials in such a manner that they can be easily recovered for further use. For example, in this Noida project, Amit kept bricks on the walls unplastered. Exposed brickwork aids easier demolition, allowing for careful recovery of bricks, unlike in the case of plastered walls, he says. “Wooden doors and steel windows can take a cue from well-cared saris in that they can be passed down to generations. A flexible approach to door installation is one way of going about it. You can screw the doors in rather than burying them in the walls,” he explains.

Saving energy

Ravi Sarangan is the founder and director of Edifice Consultants, which has offices nationwide, including Bengaluru. He had helmed sustainability projects at a time when it wasn’t yet a buzzword. He had repurposed an old mill into the headquarter of an MNC and an air-conditioner manufacturing factory into an office space, both in Maharashtra. The core aim was to slash carbon footprint and make net-zero or net-positive buildings, which produce enough renewable energy to meet their own requirement.

Cut to the present. Edifice’s latest success is centered on designing India’s first net-positive-energy government office, the Atal Akshay Urja Bhavan in New Delhi. The building facade is climate responsive. The north, east, and north-east sides feature ample glazing to allow natural light to flow in while the south wall serves as a solar wall.

Currently, Ravi’s team is working on another circular architecture project, in Karjat in Maharashtra. The space will feature mud walls made from the soil recovered from the site and a starch-based finish. They plan to use steel in the main structure, so they can retrieve and reused it later.

Bio-inclusive ideas

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terracotta tiles lend a weathered look due to their worn-out texture of the green-blue ‘patina’ colour they tend to form over time.

They have built the house on stilts, which leaves the space beneath for poultry farming, for instance. Bio-inclusive foundations such as this adds a layer of versatility to a home.

Children's room

Architect Rinka D'Monte from Atelier ARBO has incorporated circular design concepts into a children's room in Mumbai. She used sound-absorbing panels made from recycled plastic bottles. She chose wooden furniture. She incorporated recycled materials like cotton, jute, cane, and wood in other parts of the room. Overall, the room features a minimalist biophilic style with muted colours.

"With careful planning, we can select decor items for long-term use and restoration. It is during our pursuit of temporary solutions, like buying plastic chairs and MDF, that we end up generating waste," she adds.

She believes circular living is in line with Montessori principles designed for children: respecting the environment, implementing sustainable practices, understanding product life cycles, long-term thinking, and creating a calmer environment.

Challenges

Building a home is often an emotional decision for Indians and many may not appreciate the use of reused materials. It, thus, calls for education among home buyers. "While convincing individuals to incorporate a 40-year-old main door may require effort, drawing parallels with antique items can help in conveying the value of historical materials," says Amit.

Building a circular home requires thorough planning — from tearing down walls without causing damage to picking fresh materials that are reusable.

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