

Soon, home builders may be growing their own insulation right in the walls of the home. And bricks could grow in a mold rather than bake in a kiln.

Manufacturing traditional construction products like bricks and insulation consumes a lot of resources. The U.S. Environmental Protection Agency says that residential and commercial building contributes up to 40% of landfill wastes, and 40% of global carbon dioxide emissions are linked to the construction industry. Also, the building products industry is a large consumer of non-renewable materials and embodied energy.

To reduce the environmental impact of building, scientists and entrepreneurs are creating products that are grown, not made.

Two of the winners in the recent Cradle to Cradle Product Innovation Challenge show how renewable biological resources can give buildings a whole new shade of green.

The goal of the Cradle to Cradle Products Innovation Institute is to chart a path for products that can be created from safe materials, that are built with renewable energy, and are completely reusable.

One of the innovation winners, bioMason, has developed a brick made from bacterial byproducts that cement sand particles together in a matrix that's strong enough to use for homes.

It takes only about five days for bacteria to create a natural cement similar to coral that binds aggregate into a brick. That's without the heat and raw materials required for masonry bricks. About 40% of the cost of a masonry brick is in the fuel for kiln firing.

The bio brick process can use waste products such as urea and common bacteria grown with salt and yeast extracts. The creators are experimenting with using seawater to bring the product to remote areas short on fresh water.

Another winner, Ecovative, has created a mushroom insulation material that uses agricultural waste products like plant stalks and seed husks bound together with mycelium, a fungal material.

The fungus can be grown in a mold or inside a wall cavity, providing rigid structural insulation for the home's walls. It can also be used as spray-on foam insulation, blown onto a wall in a structure.

The resulting insulation is fire-resistant and fully compostable, and does not contain formaldehyde or other potentially harmful volatile organic compounds.

The material can also be used as a compostable packaging. After you open your parcel, you can chuck the packing foam into the garden.

Other bio-based building products are in the works as well.

Bacteria engineered to thrive in dry climates is helping to create a concrete that can repair itself. The bacteria are mixed into the concrete and release calcium carbonate, similar to limestone, as part of their waste process. The material fills in holes and cracks in the concrete, making it last longer and reducing maintenance costs.

Of course, homes have been built with natural products—like wood, earth, and straw bale—for centuries, but the future could mean growing your home, or parts of it, right on the spot. And biologically based materials could make green building the natural way to go.

Source: [Forbes](#)