



Cultivated Materials

Reducing our dependence on fossil fuels is especially critical in Europe, where these resources are becoming increasingly scarce. By shifting to cultivated materials, we can foster more sustainable and resilient pathways.

Bio-based materials consist of a wide range of resources derived either fully or in part from renewable living systems, which include plants, animals, enzymes, microorganisms, and their by-products. They stand in opposition to extractive, non-renewable, fossil-based materials and include a range of compositions, from raw materials like timber and stone to composite materials made using cellulose, pectins, and other natural substances.

Examining the construction industry, we have focused on viewing sustainability through the lens of passive house building, which prioritizes high energy efficiency to drastically reduce the need for heating and cooling. Principally this has required the use of high-performance petrochemical products like tapes, membranes, and expanded foams to greatly improve insulation, thereby reducing heat loss and improving airtightness. However, as design studio Material Cultures (pp. 104 and 148) points out, these fossil-based materials do not retain any trace of the social or ecological processes involved in their production, are incredibly hard to repair, and are susceptible to single points of failure. The designers also note that the materials often fail to achieve their intended lifespan—but endure in landfill.



Above: CornWall by Circular Matters and Front Materials, a wall finishing material. Made using discarded corn cobs.

The importance of bio-based materials

While environmentally conscious consumption often focuses on minimizing harm, bio-based materials present an opportunity to actively improve environmental outcomes.

By sequestering carbon, natural materials can positively impact the biosphere. Organic matter, such as soil, timber, and hemp, are all able to capture and store carbon from the atmosphere. Algae is one of the most efficient organisms for absorbing carbon through the process of photosynthesis, which it uses to create energy and grow.