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From Concrete Jungles to Hemp Sanctuaries: The Rise of Sustainable Building Practices

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The landscape of our cities has undergone a remarkable transformation over the years. From expansive concrete jungles that once dominated the urban core, we are seeing the emergence of sustainable building practices that prioritize eco-friendliness and focus on the use of carbon sequestering materials. This paper delves into the evolution from concrete jungles to hempcrete sanctuaries examining the driving factors behind this change, the innovations in sustainable architecture, and the impact it has on our communities.

To understand the shift towards sustainable building practices, we must first look at the history of concrete jungles. In the early 1900's we saw rapid urbanization and industrialization, leading to dense urban areas characterized by towering concrete structures. Capitalism and architectural trends during this period prioritized efficiency and cost-effectiveness- how quickly can we build for the least amount of money. This was often at the expense of the environment and could be considered a type of slow violence, in which these quick, cost-effective decisions ultimately result in a worse, maybe more expensive, future in the long run. The demand for resources, energy consumption, and greenhouse gas emissions sky rocketed as concrete structures burst out of the ground lurking over what was once a natural landscape. To architects and urban planners, it became evident that this trajectory was unsustainable and that climate change was at their doorstep.

By the mid 1900's, as the 20th century progressed, a growing awareness of environmental issues, such as climate change and the depletion of non-renewable resources, began to make headlines. Architects and urban planners recognized the need for change and started advocating for more sustainable building practices and materials. These early pioneers laid the foundation for the sustainable building movement that would follow, advocating for designs that incorporated renewable energy sources, better insulation, and materials with a lower carbon footprint.

Today, we stand at the doorstep of a sustainable building revolution, driven by innovation and a commitment to a greener future. One of the most promising developments in this field is the introduction of green building materials like hempcrete. Hempcrete is a composite material made from the inner fibers of the hemp plant mixed with lime and water. It offers a sustainable alternative to traditional concrete which according to the US Energy Information Agency, the concrete industry is the most energy-intensive industry in the United States. Internationally, the production of concrete accounted for about 10% of all carbon emissions in 2018 (U.S. Natural Gas Production).

Hempcrete deserves special attention due to its unique properties. This material not only has excellent insulation properties but also can sequester carbon dioxide over time. As hemp plants grow, they absorb carbon dioxide out of the atmosphere, and when incorporated into buildings, hempcrete actually locks away this carbon, making it a carbon-negative building material. According to a recent study from Tarun Jami and Sumit Kumar, hempcrete can sequester 19 pounds of CO_2 per cubic foot, that's roughly the equivalent of the carbon emissions your refrigerator produces every three years! Hempcrete, as a concrete alternative, not only reduces carbon emissions but actively works to combat climate change. Its use in architecture is expanding rapidly, with numerous projects showcasing its potential.

From residential homes to commercial buildings, hempcrete is proving to be a sustainable alternative to traditional construction materials. Its natural properties also contribute to healthier indoor air quality, making it a win-win choice for both the environment and the well-being of humans. Hempcrete “regulates indoor air temperatures, the relative humidity, is mold resistant and cleans our indoor air” (Lane). Hemp seems to be the answer to a lot of problems. So, why isn’t it a standard material in construction?

In recent years, a significant policy change in the United States has played a pivotal role in advancing the use of hempcrete for building materials. The legalization of industrial hemp cultivation wasn’t introduced until 2018 by the 2018 Farm Bill. Since then, the production of hemp for building materials has gained momentum. This policy change has not only boosted the availability of hemp-based building materials but has also created opportunities for economic growth and job creation in the emerging hemp industry. Hopefully as this industry expands the pricing of the materials will condense.

In October 2022, hempcrete was added as an appendix to the U.S. residential building code and will be included in the 2024 International Residential Code. According to the approval, "the committee considered that this is another technology similar to that of the straw bale and the cob wall construction. The industry will be able to provide safer buildings with uniform requirements being codified as an appendix as opposed to being an alternate method [where the architect or designer has to convince the building official that it is OK] This will make it easier for building departments to review plans for permitting this option” (Treehugger).

The transformation from concrete jungles to hemp sanctuaries represents a significant shift in our approach to design and urban planning. Historical rapid urbanization and industrialization led to the dominance of concrete structures, which came at a considerable ecological cost. However, as environmental awareness grew, architects and designers recognized the need for change. The

introduction of sustainable building practices and innovative materials like hempcrete have paved the way for a greener and more sustainable future. These developments not only reduce the environmental impact of construction but also actively combat climate change.

As we continue to evolve as designers and city planners, it is crucial to recognize the significance of this transition and the importance of continued innovation and advocacy in sustainable building practices. The call to action is clear: we must embrace and promote environmentally friendly construction methods, such as hempcrete, as a means to create a healthier, more sustainable urban landscape. The shift from concrete jungles to hemp sanctuaries is a testament of our commitment to a more sustainable and harmonious coexistence with the natural world.

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