

## **Reinvigorating a Culture of Re-use through Multi-stakeholder Collaboration**

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### **Abstract**

As estimated by the U.S. Department of Housing and Urban Development, over 230,000 public housing units will be demolished in the next two decades. Furthermore, the U.S. Environmental Protection Agency (EPA) estimates there are 84 million tons of demolition waste being landfilled in the U.S. annually. Cities confronted with these material streams make poor use of them, creating liabilities rather than assets, and everyone suffers the consequences. Along with the significant environmental impacts that this scale of devastation creates, the further disenfranchisement of chronically disadvantaged communities will result if the demolition is handled in a business-as-usual manner.

A holistic approach to transforming urban construction and demolition (C+D) waste into resources for local wealth generation can aid municipalities in creating inclusive strategies that defray demolition costs, increase material reuse, reduce greenhouse gas emissions, and enrich public, private, and community interdependence.

Regenerative strategies for managing demolition debris can best be realized through the development of interconnected networks of incentivized stakeholders. A promising approach to this problem involves a systemic focus on generating physical, human, financial, social, and intellectual capital. Waste streams can be transformed into structures for historically under-served communities such as greenhouses, park benches and tables, and pergolas, as well as supply chains for vocational training and entrepreneurial development (physical capital). Building deconstruction and reclaimed material preparation can become a vehicle for training under-employed populations, and stimulating small business development (human and financial capital).

Diverse communities can be brought together through communal material preparation and 'barn-raising' events (social capital). And new operational processes can be co-designed and shared with construction companies and municipal agencies (intellectual capital).

Emergent Structures has developed a multi-pronged strategy for C+D waste transformation with localized wealth creation resulting from these material flows. Through on-ground iteration, inclusive design practices, and multi-stakeholder collaboration, this organization has developed the tools, knowledge, and capacity to facilitate the successful application of this process in other cities.

A 3-tier planning and implementation model (market transformation; tri-sector partnerships; and cultural transformation) serves as an a la carte menu for wealth generation and community development. Emergent Structures is also in the process of creating a cloud-based Enterprise Resource System that will make this process more efficient for municipalities and engineering and construction companies. This paper will focus on successes and strategies for inclusive, holistic, networked-based building material re-use in urban environments.