



Building Materials from Demolition Sites  
<https://www.archdaily.com/943293/giving-demolished-building-materials-a-new-life-through-recycling/5f05315db3576588b30002e8-giving-demolished-building-materials-a-new-life-through-recycling-image>

## Background

As the saying goes, “Out with the old and in with the new.” The demolition team used bulldozers to raze the old buildings to the ground. In the dust and ruins, people will soon usher in more advanced and modern new buildings. It looks like a normal phenomenon, but Kaley came up with some easily overlooked problems. She thought our society is so full of calls for recycling waste paper, plastics, and metals that it's hard to think twice about throwing a drink can or plastic cup into the right trash can. It's as if it's deeply rooted in our minds. But how do we recycle the buildings we demolish? If a building cannot be adapted for reuse, how can we transform its building materials? How to endow them with new life through measures that can reduce the generation of landfill wastes?<sup>1</sup>

## Significance of Recycling Waste Building Materials

If we think about these problems carefully, we can come to the conclusion that the recycling of waste building materials is as important as the recycling of waste paper, plastics and metals. The main purpose is to protect the environment and save resources.

It can be seen from the data, at present, the global annual cement production exceeds 4 billion tons, and carbon dioxide emissions exceed 1.5 billion tons. The annual crude steel output is 1.2 billion tons, with an average of 1.83 tons of carbon dioxide per ton.<sup>2</sup> These two kinds of materials are the most used in construction, and also cause great pollution to the environment. If these waste materials can be recycled, their production will be reduced, thus reducing air pollution and waste of raw material resources.

## Current Situations of Recycling Waste Building Materials

Although the importance of recycling waste building materials has not been widely spread as recycling waste paper, and the general public generally do not have this awareness, more and more architects have begun to pay attention to or even try to think about this problem.

In a TED talk, Dan Phillips toured audiences through a dozen homes he's built in Texas using recycled and reclaimed materials in wildly creative ways. He picked up a lot of discarded building components and old furniture from the landfill and cleaned them up and put them into his design.<sup>3</sup>

The Lendager Group in Copenhagen found the possibility of building materials from demolition sites being reused in new buildings. Their Resource Rows project is a residential area built with recycled materials from their area. Most notably, the facade of the building highlights the unique style of bricks, which are laid in different directions. The design pays homage to the character and history of their recycled Carlsberg brewery, old school, and abandoned houses. Due to the influence of mortar adhesion, it is impossible to recover each brick. The bricks of the resource rows project are sliced into components, processed and placed into a new facade of the building. This technology reduces the average carbon dioxide emissions during construction.<sup>4</sup>



Unique Style of Bricks on Facade  
<https://www.archdaily.com/943293/giving-demolished-building-materials-a-new-life-through-recycling/5f053123b357655d46001d8-giving-demolished-building-materials-a-new-life-through-recycling-image>

From these two cases, it can be found that architects have been using their own way to recycle the waste building materials. After their design, the waste building materials can not only achieve the purpose of environmental protection and energy conservation, but also show new value and significance.

## Discussion

I've already mentioned how architects add old building materials to new designs, and they've turned trash into treasure. This is the effort of architects for environmental protection in the case of existing construction waste. But the design speed of architects is far less than the growth rate of waste building materials. Then we can think again, if we reduce the production of building materials in the beginning, the corresponding waste will be reduced. Therefore, it is also an important link to reduce the waste of building materials in production. E.O.W. Wong and R.C.P. Yip came up with an interesting and essential theory, which is the Balance Theory. The core of this theory is that balancing the supply of construction and demolition (C&D) wastes and the demand of recycled C&D waste products is an effective means of reducing these wastes. The Balance Theory requires construction workers to adopt the idea of reduction of wastes.<sup>5</sup> In other words, when producing building materials, workers should reasonably calculate and use raw materials to reduce unnecessary losses.

Another strategy that architects can use more wood instead of steel and concrete. Niall believes that wood is different from steel and concrete in four ways: first, it is the only renewable raw material among the three major materials in the construction industry. Second, it requires less energy than the other two materials for extraction and recovery. Third, it does not generate waste at the end of its life and can be reused in a variety of products before it is finally used as fuel. Fourth, wood absorbs a lot of carbon, a tree contains a ton of carbon dioxide.<sup>6</sup>



Wood is One Kind of Raw Materials  
<https://www.archdaily.com/933459/the-carbon-cost-of-key-raw-materials-in-architecture/5e4114c03312fd4a1300074a-the-carbon-cost-of-key-raw-materials-in-architecture-photo>

However, no matter what building materials are used, we should cherish and make good use of them. Architects can turn trash into treasure by recycling waste building materials, but it is difficult to recover the resources that have been mined.

## Bibliography

- <sup>1</sup> Kaley Overstreet, "Giving Demolished Building Materials a New Life through Recycling," July 17, 2020, [https://www.archdaily.com/943293/giving-demolished-building-materials-a-new-life-through-recycling?ad\\_medium=widget&ad\\_name=most-visited-article-show](https://www.archdaily.com/943293/giving-demolished-building-materials-a-new-life-through-recycling?ad_medium=widget&ad_name=most-visited-article-show)
- <sup>2</sup> Niall Patric Walsh, "The Carbon Cost of Key Raw Materials in Architecture," February 10, 2020, [https://www.archdaily.com/933459/the-carbon-cost-of-key-raw-materials-in-architecture?ad\\_medium=widget&ad\\_name=related-article&ad\\_content=943293](https://www.archdaily.com/933459/the-carbon-cost-of-key-raw-materials-in-architecture?ad_medium=widget&ad_name=related-article&ad_content=943293)
- <sup>3</sup> Dan Phillips, "Creative Houses from Reclaimed Stuff," October, 2010, [https://www.ted.com/talks/dan\\_phillips\\_creative\\_houses\\_from\\_reclaimed\\_stuff/transcript](https://www.ted.com/talks/dan_phillips_creative_houses_from_reclaimed_stuff/transcript)
- <sup>4</sup> Kaley Overstreet, "Giving Demolished Building Materials a New Life through Recycling."
- <sup>5</sup> E.O.W. Wong and R.C.P. Yip, "Balance theory for recycling of construction and demolition waste", in *Advances in Building Technology*, ed. M. Anson, J.M. Ko and E.S.S. Lam (Hong Kong, China: Elsevier Science, 2002), 1431-1438.
- <sup>6</sup> Niall Patric Walsh, "The Carbon Cost of Key Raw Materials in Architecture."