Wood Waste, the Challenges of Communication and Innovation

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Wood is our material of choice for sustainable and environmental friendly construction and manufacturing of products. Wood has excellent properties for reuse, realized and implemented through a cascading utilization, introducing intermittent product lives. In contrast, wood waste is still a heavily under-valued resource in North America. With current practices of sourcing virgin wood at lowest cost and few efforts to shift wood out of the single-use convenience mode of utilization, true innovation is unlikely to occur. Technical problems have been assessed and solved. What remains is collecting and combining unintelligently scattered and hidden information about wood utilization into a single place. And, if connecting a complimentary feedstock supply to our current industries remains a challenge, then innovation must happen on the product-side too.

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Wood, a Renewable and Sustainable Resource

North America is a place to thrive for anybody who is enthusiastic about wood. There is no need of convincing anybody in the U.S. that wood is the construction material of choice. Sustainability and green building have developed from being a mantra to becoming economically resourceful generators of value. What used to be an attitude or philosophy, embedded in idealistic, green mindsets, has developed into a hard-boiled economic factor. Where there is a demand for sustainable construction, remodeling, and certification, a supply of suitable materials and structures will fill that niche.

Currently, most wood is utilized in a single-use fashion. The principles of a cascading use suggest otherwise. Size reduction of wood is irreversible. Introducing intermittent stages in the life cycle of wood, creating loops of new products of different particle sizes, helps retain wood in service for an extended period. The particleboard industry is known to source the byproducts of wood processing facilities, as a reliable feedstock. But, isn't there a supply, a source of value, which is basically being overlooked, if not ignored? How about the roughly 20% of wood that is present in construction and demolition waste (C&D)? What about the dimensional lumber from nearly 250,000 demolished houses, annually?

We are not seeing many products apart from energy made from post-consumer waste, which is nothing more than an abrupt end of life solution for sustainable materials heating our homes. Those reclaimed wood pieces that make it to the market remain in niches, hidden from the opportunities of mass consumption.

A strategy to initiate change lies in the creation of truly innovative products. Such creations would combine the last century of wood science with todays' innovative

sustainability concepts. Using the concepts of the past, we have no problem in creating single-use products for mass markets, labeled "green" and assumed free of environmental concerns when disposed. Today's concepts of resource utilization tell us differently! Any possible effort should be made to reuse, recycle, and optimize the use of raw materials. Rather than optimization for single-use, the challenges are to develop strategies for reuse and recycling. Optimization for reuse and recycling would reduce the pace of size reduction, deaccelerating the decent along the cascade of intermittent life cycles.

The reality is that a small selection of such products can be found on the market at exorbitant cost. It is a problem of economics. If we used the terms "growing" and "harvesting" to describe the wood captured in our built environment, then urban regions would become like forests. If every building was regarded as a tree, we could look at its age and health, to know exactly about the wood-based resources it can provide. The current supply chains for fresh wood, from forests to mills, have been optimized over the last century. The industry has figured out the most cost-effective ways to source virgin wood. But, isn't it hard to believe that a resource, that is available in concentrated amounts in all the populated areas, is economically less favorable?

Needs and Efforts

Over the last 20 years, a lot of groundbreaking research has been accomplished to solve the technical challenges of creating a reliable feedstock for wood-based products. The biggest issue of today is concentrating knowledge and expertise in a single place, making it available and accessible for interested parties. Today, relevant information is unintelligently scattered and hidden from those who need it.

Research of today and tomorrow needs to build on the accumulated knowledge in this area, combine it with our knowledge about todays' wood-based waste streams to create realistic, feasible, and encouraging examples of value-generating mass market wood utilization, within the strategies of a cascading life cycles. Research and creativity are needed to connect the supplies of alternative feed stock with characteristic products suitable for mass markets. And maybe, many of these products do not yet exist.

Increasing the momentum of value-added wood waste utilization can be accomplished through strong, exemplary concepts that capture and showcase all the benefits along the chain of production. To enable a truly sustainable resource management, it is essential to highlight the economic benefits for everybody: local communities, businesses, and our environment.