



# WOOD at WORK 2015

*Elegant Strategies for Architecture, City-Building, and Forest Conservation*

## Conference Summary

The concept "think globally, act locally" has never held more promise or urgency. As they grow in size and influence, global cities are in a unique position to lead by example and innovation.

The recent agreements made at the Convention of Parties on Climate Change (COP21) serve as an unprecedented acceptance of global warming and the immediate action required to ameliorate it. Strikingly, COP21 emphasizes conserving and enhancing ecosystems—in particular forests—to meet global climate change targets better than ever before. Cities, with their enormous purchasing power and resource requirements, can influence supply by demanding better stewardship of our natural areas within the context of urban supply chains.

Connecting cities to conserving nature through proactive procurement was a founding principle behind Wood at Work 2015. We focused on wood: claimed to be the only truly renewable building material, simultaneously capturing carbon and conserving biodiversity as it grows, its potential is enormous, but it is often misunderstood.

Hosted at the Bronx Zoo on October 30, 2015, Wood at Work convened over 120 influential architects, foresters, policy makers, ecologists, and urban planners from around the world to address the climate change, economic, human well-being, and biodiversity issues surrounding the materials we use in urban building—and, ultimately, to radically impact the discourse around wood and forest policy in the world's cities.

In this forum, we asked: Is wood good? What are the environmental, social, and cultural benefits—or pitfalls—of using wood for public and private construction projects? How can we maximize its potential as construction material, conservation tool, and cultural building block? The outcomes of our conference provide a roadmap to conserving natural areas by creating sustainable solutions for future procurement from them, with cities leading the way.

The day of talks and activities took participants on a journey through forestry research that revealed some of the complexity of the role of timber in forest conservation and local livelihoods. Practitioners presented how emerging industries in wood technology had adapted or were adapting to the new emphasis on sustainable forest yields. Architectural historians and theorists put current interests and practices into the context of wood's use over the centuries. Local practitioners and developers showed how current real-life projects could embrace and push forward a wood agenda.

The feedback from participants was overwhelmingly positive. *“There is so much good work here. It was really a wonderfully inspirational set of lectures and discussions,”* wrote one speaker. Even renowned architectural historian Kenneth Frampton said, *“It was an extraordinary conference. I learnt so much.”* The interdisciplinary docket as a mode of exchange, more powerful than Google or Twitter, showed the next day when one participant wrote saying, *“The first thing I did this morning was order my own copy of The Golden Spruce,”* a historical novel written by Wood at Work presenter John Vaillant. The goal of exposing people to information that they otherwise would have never interacted with was achieved in remarkable and even unanticipated ways.

The conference concluded with a resolution signed by the majority of participants.

### Summary of the speaker lineup, themes, and Wood at Work resolution

Wood at Work events began the afternoon before the conference, when **Pilot Projects** Director **Scott Francisco** and **Natural Areas Conservancy** President **Bram Gunther** led a walking tour open to all conference participants across the wood-planked Brooklyn Bridge and through important nearby natural areas, including a stand of 9/11 memorial “survivor trees.” The tour concluded with a late afternoon reception at a Brooklyn restaurant.

The following morning, all participants met at the Bronx Zoo’s Schiff Family Great Hall to convene the conference. **Francisco** made introductory remarks, stressing the vital role of wood in the stories of both our cultural development as humans and of our individual lives. He described wood as an inspiring building material that can function in cities as biological refuge, carbon sink, and cultural preserve.

**Eric Sanderson**, Senior Conservation Ecologist at the **Wildlife Conservation Society** and Founder and Director of **The Mannahatta Project**, spoke about scientists’ findings that our current global shift toward urbanization is easing poverty, improving health, and enabling better education for the world’s population—all factors that are also moving people toward replacement fertility rates (2.1 children per couple) and thus saving the environment. This move toward cities, and its attendant ramifications, could tip the scales in favor of our surviving the effects of climate change—particularly if we start building more of our cities with carbon-sequestering wood.

**John Calvelli**, Executive Vice President for Public Affairs at the **Wildlife Conservation Society**, echoed many of Sanderson’s points, and reiterated that more of the answers to our conservation problems are poised to be found in cities than in forests.

**Jeremy Radachowsky**, Assistant Director of the Latin American and Caribbean Program of the **Wildlife Conservation Society**, explained that trees are one of Earth’s best known technologies for mitigating carbon waste, whereas cows are one of our top producers of greenhouse gasses (both via their own emissions and the forest land that is often clear-cut to graze them). Livestock and their feed currently take up 30% of earth’s land surface, and 75% of our farmable land. Instead of continuing to jeopardize one of the best tools we have to mitigate climate change while growing one of our worst liabilities, we need fewer cattle, and more trees!

**Sarah Jane Wilson**, a research fellow with **IFRI (International Forestry Resources and Institutions)** and a forest geographer at the **University of Michigan**, said our current focus on urbanization trends as a means to conserve nature is misguided. Although forests do return when people abandon landscapes, having people remain on the land to steward and protect it can produce better long-term outcomes for both humans and forests. People whose lives and livelihoods are tied to the land can and will act on its behalf. This is the premise behind devolving top-down control of forests and promoting community-managed forestry, and the main reason that, at their best, these projects have proven to be win-win solutions for both local economies and global forest conservation efforts.

**Bill Keeton**, Chair of the Forestry Program and Professor of Forest Ecology and Forestry at the **University of Vermont**, defined sustainable wood as wood coming from forests that exist and function well for more than just wood production: they are also habitats, bastions of biodiversity, effective carbon sinks, and more. He posited that new and old forest growth models could be effectively combined to create habitats for plants and animals that live in each environment, and that U.S. landowners could be better incentivized to preserve their land instead of selling it for exurban development: for example, with payments for ecosystem services.

**Doug Boucher**, Director of the Tropical Forests & Climate Initiative for the **Union of Concerned Scientists**, spoke about meeting the increasing worldwide demand for wood and paper products. Growing mixed-species plantations of native trees could supply the required resources for wood products, particularly lower-grade ones, much more efficiently than natural forests. Today, persistent illegal logging is still one of the major sources of wood procurement, especially in the tropics, but we could sustainably source wood and still be able to meet future demand—and even substitute wood for high-emissions materials like concrete and steel.

**Erwin Maas**, President of the **Organización de Manejo y Conservación** in Uaxactún, Guatemala spoke, with **Radachowsky** translating, about his community-managed forest, which is the largest in Central America: about 81,000 hectares. About 1,000 people live there, and harvest a variety of forest resources. In any given year, about 66% of the forest is left unharvested; of the remaining land, only two trees per hectare are logged. As a result, after 100 years of continuous human use, 99% of the Uaxactún reserve's forest cover remains.

**Robin Chazdon**, Director of **PARTNERS Reforestation Network** and a Professor of Ecology and Evolutionary Biology at the **University of Connecticut**, explained that the the bulk of deforestation around the world has occurred in the tropics, mostly in Africa and South America, and that many natural forests in these places have been replaced with forest plantations. Both types of forests offer environmental benefits, like the ability to absorb rainfall and support native species, but their capabilities differ widely and they should not be conflated. She also spoke to the ability of tropical forests to regenerate naturally, especially after disturbances at small scales.

**John Vaillant**, nature and science journalist and author, framed our current global situation as the result of a sense of entitlement to the environment that's led to disdain, disconnection, and destruction. The impacts of our immature demands on the landscape have not been limited to environmental destruction; they have also done grave damage to the people living and working in those desecrated landscapes. He wondered what would happen if, when we built, we asked

ourselves: who or what could be comprised, killed, or robbed in this process, and who or what could be added, nurtured, or righted?

**Joshua Tosteson**, Senior Vice President of Programs, Planning, and Assessment for the **Rainforest Alliance**, contended that caring about conservation means also caring about ensuring sustainable livelihoods for forest-dwellers, and that community forest management isn't just about relaying management rights to communities—it's also about enabling their capacity to produce products, follow sustainability standards, etc. He said that new frontiers for the growth of CFEs (community forest enterprises) currently exist on most continents.

**Peter Pinchot**, President of **EcoMadera Forest Conservation**, is working in the world's worst-managed forests to turn them into successful, sustainable, community-managed forests. This turnaround happens most successfully when described to stakeholders as an economic turnaround plan. There are great opportunities now for enterprising businesses to partner with these forests to sell high-style, sustainable, affordably-priced wood products to the "aspirational" shoppers (mostly members of Generation X and Millennials) who have the desire and means to buy them.

**Chad Oliver**, Director and Professor of Forestry and Environmental Studies at the **Yale Global Institute of Sustainable Forestry** confirmed that using wood in construction saves vast amounts of fossil fuel and carbon emissions versus using concrete, brick, or steel for the same job, and pointed out that new growth wood can be used in construction; we don't need to spend our old growth forests in this pursuit. He also spoke about how new infrared technology tools can help enforce sustainability certifications, as they can detect illegal logging activities.

The conference lunch break included time for attendees to participate in outdoor activities—such as a Japanese saw workshop led by **Mokuchi** design studio founder **Yann Giguère** and a display of numerous types of reclaimed wood from **Jamie Hammel** of **The Hudson Company**—and indoor attractions, such as a samplable spread of tree foods and models of CLT (cross-laminated timber) products.

**Kenneth Frampton**, architecture historian and Ware Professor of Architecture at **Columbia University**, talked about dividing our building culture into masonry-type and wood-type. He attested that aluminum has the most embodied energy of any material; wood has the least. Using wood to build does not necessitate the destructive mining practices that other materials do, and it offers unique psychosocial benefits that we're only now beginning to study and understand.

**Donald Chong**, a partner at **Williamson Chong Architects**, described wood as a familiar material currency that's shared across oceans. He made a comparison about "leftovers" (extraneous elements that will lose value if not reused): in the same way that we have learned to reuse unwanted stale bread to make delicious French toast, architects can take "leftover" spaces and turn them into productive, enjoyable habitats. Using wood to build these projects is the ultimate win-win.

**Hammel** described how his company reclaims wood from expired water tanks and other past-prime projects to beautifully refurbish spaces such as the Whitney Museum of American Art and the Patagonia retail outlet in NYC.

**Amir Shahrokhi**, Project Director at **SHoP Architects**, spoke about his firm’s wood condo project at 475 West 18th Street in NYC, which uses a post-and-beam system unique to wood’s tectonics. **Michelle Roelofs**, Senior Structural Engineer at **Arup**, engineering consultants on the condo project, spoke about the challenges of tall timber construction in the U.S.: public perception of fire safety, existing fire codes, and concerns about acoustics, cost, vibration, and shrinkage, among others. She explained that most of these concerns can now be satisfied by new developments in non-combustible heavy timber production, including adding a “char layer” to wood beams, and the ability to make wood stiffer or more flexible depending on the building project’s seismic context.

**Justin Den Herder**, Senior Engineer at **Silman**, described his firm’s Empire Stores project: seven, 135-year-old buildings, of five and six stories each, that will be joined together in Brooklyn Bridge State Park. The buildings were derelict for 60 years and took on eight feet of water in Superstorm Sandy, but much of their wood infrastructure is intact and only needs to be bolstered, not replaced. The project is part new construction, part renovation, and part preservation, and, when completed, will function as a publicly-accessible extension of the park.

**Saglinda Roberts**, Assistant Professor of Interior Design at **Kean University’s Michael Graves College of Design**, presented recent scientific evidence showing that people sleep more deeply, their hearts beat more slowly, and they produce more melatonin when they spend time in wood structures. She explored some of the connections that might predispose us to these reactions, such as the historic familiarity of wood in human shelters.

**Marc Rivard**, New England Regional Director of Design & Construction Services for **WoodWorks**, explained that there is lots of opportunity to use wood in construction projects today, even given current building codes. He offered the help of his organization, which is an initiative of the **Wood Products Council**, to all participants: WoodWorks provides free project assistance, education, and resources related to the design of non-residential and multi-family wood buildings.

**Kenneth Kim**, Principal and Co-Founder of **MOREMAS**, informed the audience that about 97% of land in the U.S. is currently undeveloped (meaning it’s a forest, a desert, a rural area, or being used for agriculture). He professed that we are living in a time in which we can expect a sea change in building styles, including a move toward much more wood.

**Jean-Marc Dubois**, Director of Business Development for **Nordic Structures**, reported that mass timber is one-fifth the weight of concrete, so foundation needs are lessened when structures are built with wood. Also, wood structures made with CLT, which is manufactured offsite and to very strict tolerances, minimize site impact and can be built very rapidly.

**Brigitte Shim**, Principal at **Shim-Sutcliffe Architects**, said that building with wood can help historically stodgy building types—banks, grocery stores—take on beautiful new aesthetic identities, even civic ones. Wood can also help projects meet LEED standards. She is excited to be using more wood in her firm’s projects, as it opens up more possibilities for the built environment to emulate nature, as well as different ways of working with fabricators.

**Francisco** introduced the audience to the **Brooklyn Bridge Forest** project, a joint effort among several organizations represented at the conference to replank this NYC icon’s Promenade with

wood sustainably harvested from a Guatemalan rainforest—at no cost to the city, through a sponsor-a-plank program. He explained that the initiative embodies the central idea of Wood at Work: that cities are uniquely positioned to take a leading role in climate change mitigation by committing to using more sustainably-harvested wood in their building projects.

**Lars Laestadius**, Senior Associate at the **World Resources Institute**, explained that the FSC (Forest Stewardship Council) was originally created over 20 years ago out of concern for tropical forest management, but has wound up being vastly more involved in European and North American forests. He said government legislation, such as the Lacey Act, which makes it a federal crime to bring illegally-harvested wood into the U.S., can be just as effective as certifications like FSC's in deterring illegal wood production.

**Gunther** spoke about various NYC tree-related initiatives, including the success of MillionTreesNYC; the city's recently-doubled budget for pruning, stump removal, disease control, emergency care, and sidewalk maintenance of street trees; and their research into recycling options for some of the 15,000 - 40,000 tons of wood waste produced here each year.

**Peder Anker**, Inaugural Chair of the **Department of Environmental Studies at New York University**, illustrated that deforestation is not a new phenomenon by showing the crowd an intact Egyptian cedar mask made from trees in a Middle Eastern forest that was destroyed by human development thousands of years ago.

**Natalie Jeremijenko**, artist, engineer, and inventor, defined local distributed energy production as one of the big ideas of the 21st century. She offered the controlled burning of biomass—and its resulting nutrient-rich biochar—as prime candidates for mass-developing this emerging model. Biochar can sequester carbon for far longer than trees, and it increases soil biodiversity, thereby boosting food security.

**Daniel Safarik**, Director of the **Council on Tall Buildings and Urban Habitat's China Office**, is starting to explore the potential for wood construction projects up to 40 stories tall, though seven- and eight-story buildings are what's immediately practical. While the majority of CLT construction is happening in Scandinavia, he is excited by the new potential—following increased fire and earthquake safety—for wood buildings to start popping up everywhere. **Safarik** concluded the discussion by expressing that the way statements are made in cities now is by doing something—in this case, by building something—not by talking about it. If NYC can act as a collective of eight million people to create the changes we want to see, he said, and we broadcast our successes through our powerful mass media, we will influence the world.

Following the conclusion of the speeches, several keynote speakers participated in a panel discussion. The primary topic was a resolution proposed by the Wood at Work committee and presented by **Francisco** and **Radachowsky**, which, after some modifications arising from the group discussion, was signed by the majority of participants.

## Wood at Work Resolution

1. New York and other cities are centers of leadership, policy innovation, culture, arts, and inspiration, and their decisions impact and influence global trends.
2. Thriving forest systems are a critical part of mitigating global climate change, as well as maintaining biodiversity, community livelihoods and identity, human health, and broader ecosystem services.
3. The use of sustainably harvested wood from well-managed, certified forest systems (including community managed forests) can significantly contribute to global forest and wildlife conservation and maintain the aesthetic and architectural qualities that only wood can provide.
4. We suggest that New York and other cities create policies to proactively promote the use of responsibly sourced wood in city building projects and infrastructure as part of their climate change initiatives, and to build civic awareness about the global importance of forests.

**Boucher** summarized the resolution as follows: Cities are important, forests are important.

Following thanks by **Francisco** to all participants, attendees enjoyed more informal discussion over a lengthy wine and cheese reception. Many conversations focused on how to keep the momentum going and steps for the coming months.

In all, the event's intimate setting and multidisciplinary lineup of speakers, panels, and activities invigorated participants, and, it was observed, produced the type of productive discussions and practical solutions that cross-disciplinary collaboration strives for but too rarely achieves. The Wood at Work committee looks forward to continuing the discussion throughout the coming year during a series of workshops, meetings, and contributed papers, and to the next edition of Wood at Work in 2016.