

# Tropical forestry and innovation.

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- The forestry sector, especially in the tropics, is not widely seen as one of the most innovative sector. One might even say it is seen as rather conservative and opaque by many. This must however change and is indeed changing.
- Innovation can be incremental, transformative or disruptive.
- Incremental innovation occurs when a business (company or sector wide) – having reached a productivity or expansion plateau – is adding attribute to existing products, develop more efficient processes or expand into new markets.
- Transformative innovation leads to new products or novel entire value chains or new ways of doing business, creating new socio-economic trade-offs.
- Innovation becomes disruptive when a transformative innovation is so radical that it displaces existing established actors or well-known technologies.
- Innovation is not only about technologies, it is also about new organizational structures, institutions and forms of governance
- Incremental innovation is relatively easy to plan and forecast, often the result of improved processes or market knowledge (e.g. flat-screen TVs); it is generally a linear process with relatively quick turnover of “new” products (e.g. yearly new smartphone models that are only marginally different to the previous generation)
- Transformative or disruptive innovations are not and are often the result of a “crazy” idea matching a not yet known demand (e.g. the smartphone itself); it is never linear, progresses by leaps and bound and ultimate outcomes are not really known in advance
- Incremental innovation is generally coming from within the sector and in tropical forestry, using bamboo and rattan as examples given we are here at the Bamboo and Rattan Conference, we can cite: Karuun® (rattan based new material), rattan “bones”, laminated bamboo flooring, , bamboo composites, offsetting carbon emissions by buying credits from bamboo plantations, etc.



- China is widely seen as leading the charge of this incremental innovation, building on a long history of cultivating and using bamboo and strong incentives from the government at various levels to foster innovative uses.
- Transformative innovation on other side is often coming from a very different sector and takes more time and efforts to be tailored for specific uses in or adopted by other sectors. It also requires the congruence of several conditions: versatility of the innovation (can it be used outside of the realm it was initially created for), existence of technology or enabling environment that can be used to expand the use of the innovation, strong – yet unknown – demand for the products of this innovation. The latter being the condition for transformative to become disruptive.
- So, what are the current new technologies, operation models or concepts that have the potential to transform or disrupt the tropical forestry sector? Here it is a bit more complicated to be specific about the bamboo and rattan sector because many of these innovations are still in laboratories, in development or not yet used in the sector but the audience can easily imagine the use of such novelties in promoting an expanding and more sustainable use of bamboo and rattans.
- On-going examples of potentially disruptive innovations in the forestry sector are more numerous than generally thought for our perceived conservative sector.
- Bio-technology advances used in tailoring trees in plantations (e.g. reducing amount of lignin in wood to improve pulp yield or increasing it to produce biomass for energy; cellulosic derived sugars for bio-plastics or bio-fuels)
- Using drones equipped with advanced sensors (e.g. LIDAR) for management surveys or fire detection or illegal logging reporting has huge potential in saving costs and protecting resource
- Rethinking forest, plantation and tree product ownership with a greater involvement of individuals and communities (rather than following a classic industry concession ownership) could provide significant expansion potential of tree cover into private or community land as well as increased diversification and better livelihoods for the rural dwellers.
- The previous examples are already in use in some places but need a wider adoption in the tropical forestry sectors.



- Other innovations have probably an even higher potential for transformation and disruption but are yet to be applied in any meaningful scale in our tropical forestry (including bamboo and rattan) sector. These often require the existence of a given “technology” and an associated “platform”. We will simply highlight two examples that we believe will change the future of our sector and of society at large
- Digitalization: drones equipped with new sensors combined with more and more accessible and accurate satellite data supported by increasingly affordable data storage, distributed calculation capacities and virtual reality will change completely the way we manage forests or plantations at all scale.
- Blockchain and other fintech developments supported by mobile applications although created for a very different purpose have immense potential in securing land rights, transactions and increasing transparency in any forestry based operations.
- Let’s remind us however that for this to happen, we will need forests, plantations and trees managed by well-trained women and men who can make a decent living by sustainably managing the resource.
- Thank you