



How Bio-Based Construction can unlock value for Governments

AN OPPORTUNITY NOTE

Introduction

The burgeoning mass timber construction industry has the potential to become an employment provider, a platform for economic growth, a channel for climate-friendly new construction models and support the growth of the sustainable commercial forestry sector.

Mass timber¹ building projects are not only beneficial to construction companies and private organizations involved in their trade and supply, but governments are also very much primed to benefit from this industry. From reaching their environmental sustainability goals to improving the economy, the mass timber industry is a sector governments should pay attention to, it has the potential to benefit the environment, local economy, and communities.

The Opportunity for East Africa's Governments

East Africa is uniquely primed to seize the mass timber construction opportunity. Here, governments can meet their national goals to grow local forestry; improve rural livelihoods; develop new manufacturing capacity, provide economic value addition and new jobs; and build sustainable affordable housing.

The market value of forest resources, especially timber, is on the rise and is a long-term repository of value. A recent report from Arup² has estimated there could be 668,000 ha of plantation area available across the East Africa region of Kenya, Uganda, and Tanzania by 2040 to produce mass timber. The study looks at different scenarios for mass timber sector development and estimates possible outcomes for each. The report projects that the productivity of plantations in East Africa could increase from ~7M m³/year by 2040 in the case of a 'business as usual' scenario, to 9.6-12.2M m³/year over the same period should interventions to support the industry be adopted. These interventions would include lifting the logging ban in Kenya, expanding the forest area of plantations, and increasing their productivity. A roundwood production increase like this in the region would result in an increase in forest management and harvesting jobs, particularly in the peri-urban or rural areas the plantations would be located. Adopting an optimistic scenario for the mass timber construction industry, the forest plantation area in East Africa could increase by up to 40%, resulting in increased opportunities for the sale of forest carbon credits obtained from sustainable forest management practices.³

The prospects of international trade are mouth-watering. Presently, the manufacturing capacity of mass timber in the region is largely only for bespoke purposes. However, Arup has projected

¹ Mass timber is prefabricated, load-bearing building components made using layers of wood and fastened together with glue, nails, or dowels for high strength. They are typically manufactured offsite in factories and are significantly lighter in weight than other construction materials, including concrete and steel. Unlike traditional wood products, mass timber components have improved structural integrity and can be used in different types of construction, including residential, commercial, or industrial buildings. (Tirone, J., Silicon Valley Falls for European Climate Tech Made of Timber, 2020, Accessed: 2022)

² Arup established three scenarios that qualitatively describe the current and potential future enabling environments for the use of timber in construction in Kenya, Tanzania, and Uganda. These scenarios are i) Business as usual; ii) Timber Transition (conservative/realistic scenario); and iii) Timber Renaissance (optimistic scenario)

³ Arup and Fractal Forest, East Africa Sustainable Timber Construction Supply/Demand Study, 2022

that the manufacturing of mass timber could increase to about 40,000 – 470,000 m³/year by 2040 under their conservative and optimistic forecasting.⁴ Considering that the cost of mass timber products in markets such as the US is higher due to their limited number of suppliers⁵, governments of East African countries could supply the local demand and internationally ship supplies of mass timber products to clients who would pay premium prices to access them. Given East Africa’s large land availability and extensive forest resources, a sustainable export market could be created without compromising forest cover if the appropriate safeguards are in place. This increased capacity of the mass timber value chain could also bring socioeconomic development through value-add industries and skilled job creation for the timber industries in East Africa.

Overall, the growth of the mass timber industry directly plays a role in socio-economic development and poverty alleviation as forests and their products can aid the well-being of local communities. Apart from building timber, it also provides raw materials for smaller industries, including sawmilling, paper and furniture manufacturing, and pulp milling. These smaller industries can offer a range of different types of employment for the indigenes of the community and, in summary, strengthen the area’s economy. A thriving mass timber industry stimulates the local economy with various jobs such as woodland management, haulage, tree work, manufacturing, distribution, and transportation. It also supports the rural economy and small-scale local businesses. Governments can take advantage of this to employ their citizens.

Going further, it is essential to mention the climate and ecological benefits this can bring. Current construction techniques are a significant contributor to the global climate crisis and urgently need to be transformed. By substituting the carbon-intensive materials commonly used in construction with forest economy biomaterials such as wood, which sequester carbon, we can create buildings with reduced carbon emissions. The carbon dioxide absorbed from the atmosphere during tree growth is stored in the timber and locked up for decades by being made into long-life mass timber products incorporated in buildings. This is a massive benefit to governments aiming to reach their sustainability goals and to create positive ecological environments for their citizenry. It is also necessary to note that local and sustainable wood product manufacturing doesn’t generate toxic by-products or unusable wastes. It also doesn’t require mining or drilling and their associated large-scale environmental damage.

Many forests and reserves are owned and managed by the government and are a great source of sustainable timber for the mass timber industry if managed sustainably. Proper forest management and the continuous increase of timber demand locally and on the international markets could create a sustainable economic return. By focusing on forest management strategies and creating favorable policies, the government could achieve its carbon targets and sustainability goals for communities and create revenue generation by keying into the mass timber trends.

How Mass Timber Can Aid the Government’s Goal to Solve the Housing Crisis

Housing infrastructure is one of the many difficulties East African countries face due to population surges and the migration of people to metropolitan areas. There is a push from the younger and upwardly mobile generation to relocate to the cities, putting pressure on the housing demand. Mass timber buildings typically use fewer parts and pieces than conventional construction methods. Assembling the prefabricated wood elements takes a shorter time, making it a more cleaner and sustainable way of building homes.

How does this help? Rather than building blocks of flats with just cement and steel, which takes longer to deliver and requires more resources, timber provides a viable alternative. Governments can now embark on mass housing projects for their citizens which can be done at a reduced cost. These projects are also delivered faster, and a lot more people could benefit from the scheme.

⁴ See note 2

⁵ ARUP, The obstacles and opportunities of mass timber construction in the US, 2020

Adopting mass timber construction would benefit the government’s plan of solving housing inequity.

By 2040, it is projected that the demand for mass timber and hybrid mass timber buildings in Kenya could account for up to 14% and 28% of all new residential and commercial developments, respectively. As a result, 170-500 hybrid buildings and fully mass timber buildings could be constructed annually.⁶

How Governments Can Support the Mass Timber Industry

The mass timber industry is a complex conglomerate of stakeholders representing many branches market, with individual efforts from several industry players only recently beginning to take shape. For example, British International Investment, Norfund and Finfund are investing a combined \$200 million in [New Forests’](#) (AFIP) new open-ended African Forestry Impact Platform⁷, where AFIP will invest in plantation forestry companies and projects in Sub-Saharan Africa. These individuals and groups must be brought together to grow the sector, including construction companies, the government, insurance agencies, forestry, agriculture, business, trade, and social agencies.

For wood-based construction to work, there must be access to sustainable timber. Considering the ecological benefits of mass timber and the role it can play in affordable housing, it is paramount that the government supports the industry, enables the constructions of timber buildings, creates policies to support the already existing forests, ensures sustainable growth of timber, plants more trees, and provides financial support to the industry. This will cause an increase in timber access and allow for locally produced timber products.

Take, for example, Kenya: In a situation where the government takes the lead in ensuring the best possible changes are made to bring about an enabling environment and growth in the green building market, future projections for the green building market share could soar to 70% by 2040 from the 3% that is projected otherwise. As a result, the potential market share for mass timber could rise to USD 85-970M over the same period.⁸

Also, to support the success of mass timber projects, it is necessary for the government to create advanced regulations, standards, and statutory guidance documents on using mass timber in construction.

Conclusion

There are excellent benefits for East Africa governments to enjoy from structuring and supporting the mass timber industry. From boosting the economy through international trade to increasing opportunities for its citizens to live in safe spaces, mass timber is a worthy, climate-smart investment.

⁶ See note 2

⁷ ImpactAlpha, [New Forests’ African Forestry Impact Platform secures \\$200 million from development finance institutions, 2022](#)

⁸ See note 2