

## ERA NET „SUMFOREST“, Project „Benchvalue“ “Glue laminated timber (GLT) production as a house construction element”

### Background:

Mitigation of climate change, carbon sequestration and low carbon economy are some of the corner stones of the European bioeconomy strategy. Lithuania has sufficient forest resources and a competitive wood industry, and More than 20% of annual harvest level is exported. Also, Lithuania Exports about 80% of glue laminated timber for wooden constructions using only 20% for national house construction. Because of this, Lithuania losses possibility to develop its low carbon economy based on high value added products.

As many other construction products, glued laminated timber, structural timber, structural laminated veneer lumber, wood based panels, etc., are regulated with regard to their marketing rules. There are national requirements for structural design of timber structures. These set a minimum framework conditions for the use of wood products in construction. However so far, in Lithuania there is no political decision on special promotion of wider use of wood in construction. The influence can be done by public sector as a main client of design and construction services, for example, by application of Green Public Procurement criteria, as well as application of Building Sustainability Assessment Schemes, Building Information Modelling (BIM).

The production of glue laminated timber (GLT) is rapidly growing in Lithuania. The aim of the case study is to quantify and to compare sustainability impacts of national value chains for non-renewable materials (reinforced concrete (RC)) and renewable materials (GLT) used in construction sector. GLT value chain involve: forest logging–transporting–timber sawing–GLT producing processes; RC value chain involve: raw material extraction for cement and concrete–transporting–cement producing–RC producing. GLT value chain based on examples of Company “JURES MEDIS” – the largest manufacturers of glue laminated timber structures in the Baltic states, and sawing timber company “STORAENSO LITHUANIA”.

In order to compare sustainability impacts of GLT and RC constructions in practical application, were designed two floor (765 m<sup>2</sup>) and five floor (1913 m<sup>2</sup>) GLT and RC buildings.



Projected buildings

### Project partners and stakeholders:

- “JURES MEDIS” – GLT production
- „STORAENSO LITHUANIA“ – sawmill
- „AKMENES CEMENTAS“ – cement producer
- “AKSA” – reinforced concrete
- Ministry of Environment of Lithuania
- Forest owners association of Lithuania



Stakeholder conference: “The Forest Bioeconomy in Lithuania – what are obstacles and opportunities to a strong and vibrant wood construction sector in Lithuania?”  
6 September, 2018

# Results

## Study selected indicators

### Social

- Employment
- Wages and salaries
- Occupational safety

### Environmental

- Volume of non-renewable material
- Energy use
- Generation of waste
- Water use
- Greenhouse gas emissions

### Economic

- Total production
- Production cost
- Productivity

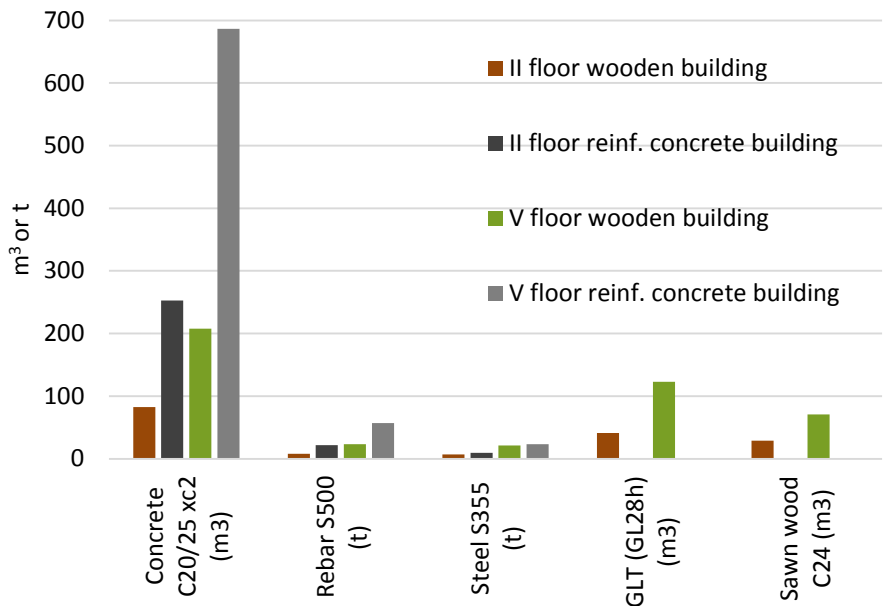


Figure 1. Material amount used in the projected II floor (765 m²) and V floor (1913 m²) buildings

**Key findings from Lithuanian stakeholder interaction “Wood use in Lithuanian bioeconomy”, based on KETSO method, summarized at Table 1. The most important factors for vital bioeconomy development in Lithuania identified – forest resources, public perception, investments, innovations, wood construction sector, Markets and biomass energy sector.**

Table 1. KETSO results.

	Main factors						
	Forest resources	Public perception	Investments	Innovation	Construction	Markets	Energy
<i>Strengths</i>	Resource management Resources' accumulation Large harvest		European funds Location, close to Belarus Competitive work force	Human capacity Support from forest oriented industry		Export markets, GLT Close to markets Foreign markets	
<i>Possibilities</i>		Public procurement Increase harvest Wood mobilization	Increased sawmilling industry Increased wood gluing industry	Innovative composite materials Cascade use of wood Development and export of technologies	Wooden construction increase Building house wooden living Public buildings	Clean end production Export of wooden prebuilt houses to Sweden Improve trade balance	Replace fossil energy with biomass Increased use of country residuals Green energy
<i>Challenges and barriers</i>	Local restrictions International restrictions	Bureaucracy Political green populism Unfavorable political solutions	Investors' attitude Company internal strategies Lack of international standards for cost moderes	Youth emigration Science and industry limited cooperation Competition from steel and concrete industry	Perceptions against wooden buildings Planning at municipality level	Strength of carbon based industry Wood exports Access to the bioproducts technologies and markets	
<i>Who and how</i>	Cooperation of Science and Industry use 80-90% of wood annual increment Address barriers to wood mobilization	Highlight benefits of wood use Eliminate unnecessary Bureaucracy Tap into existing legal governance	Scientific initiatives Lobbying for Lithuanian investments Lobbying for wood based houses	Joint ventures between concrete and wood Scientific investments Work with other sectors	Promote use of wood for the construction	Market development	