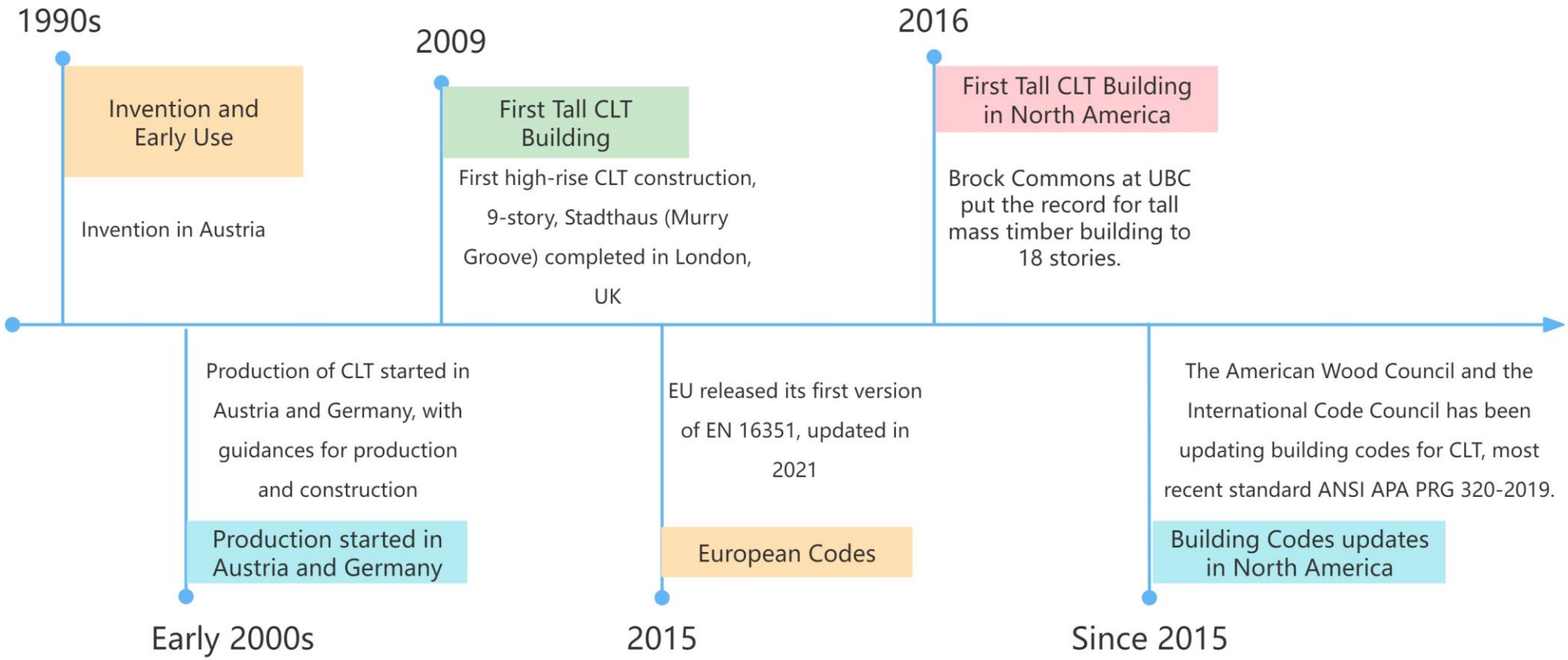
Enhancing CLT Production Proficiency through Supply Chain Optimization

Lily Yang

SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products

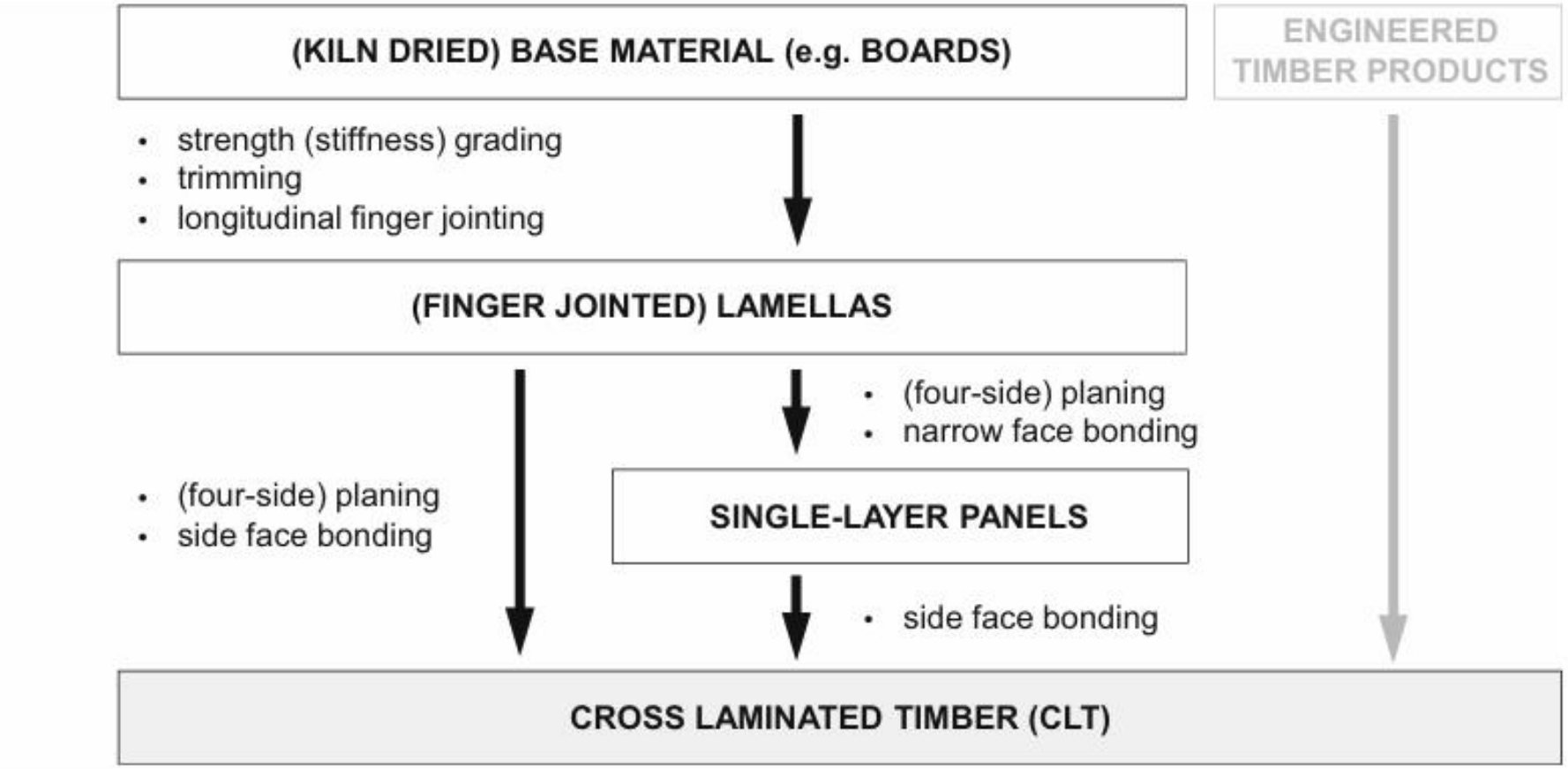
A bit history of Cross-Laminated Timber



Cross-Laminated Timer

- Cross Laminated
- 3/5/7/9 or more layers
- Light-weight
- Prefabrication in factory
- Accurate dimensions and openings
- Short installation time
- Maximum architectural freedom
- Carbon storage
- Less site space needed for storage
- Less labor costs
- And much more…

CLT Production Process



Source: Brandner, R., Flatscher, G., Ringhofer, A. et al. Cross laminated timber (CLT): overview and development. Eur. J. Wood Prod. 74, 331–351 (2016).

Lumber reaching CLT facilities – Europe vs. North America

- **Industry structure**

  More vertically integrated in Europe

- **Moisture content**

  12+/-2% delivered to CLT mills in Europe, some NA mills get requested MC delivered

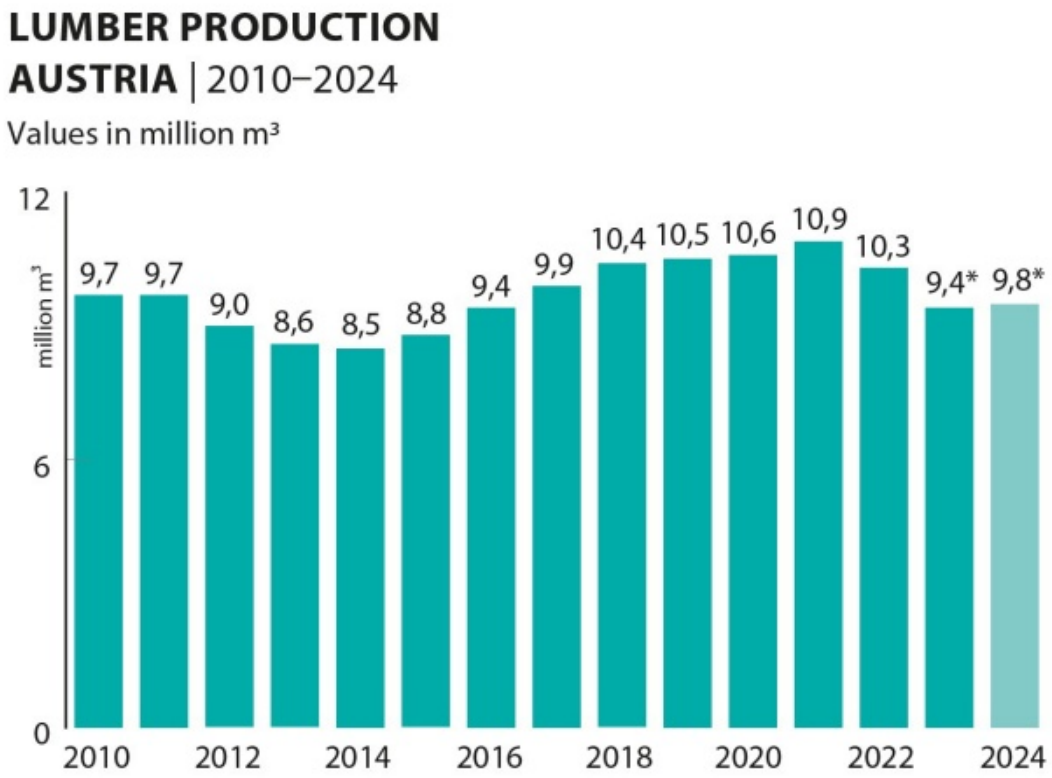
- **Dimension**

  Requested dimensions in Europe, standard dimensions in NA

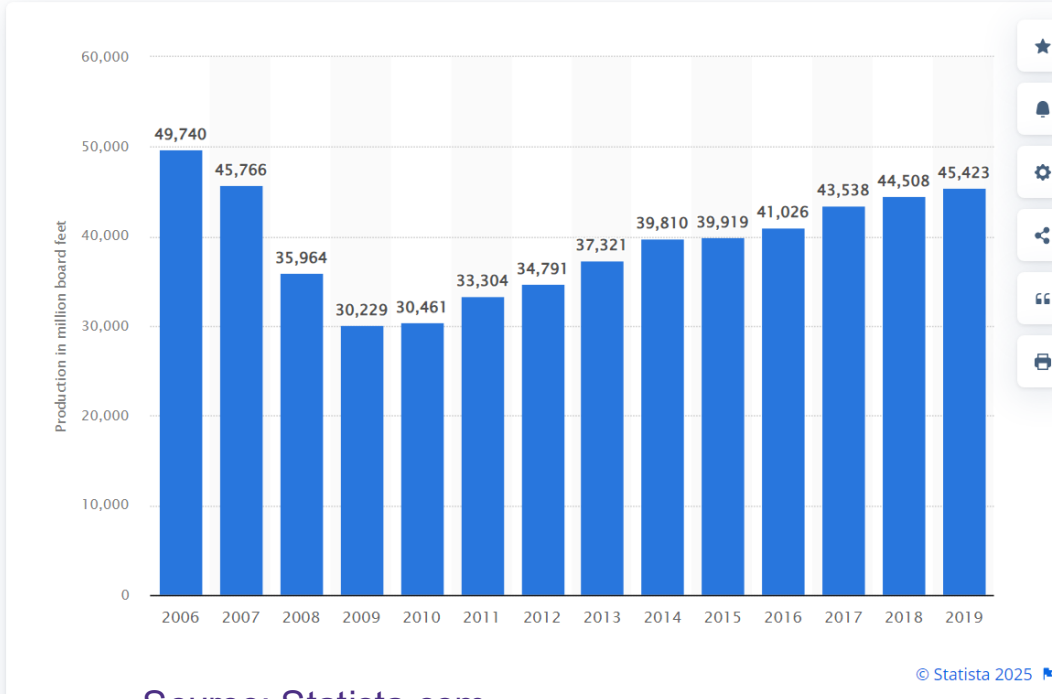
- **Surfacing**

  Rough sawn vs. surfaced (sometimes rounded corners)

Softwood lumber production: Austria vs. the US (roughly 1:10)



Source: Timber Online



Source: Statista.com

SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products

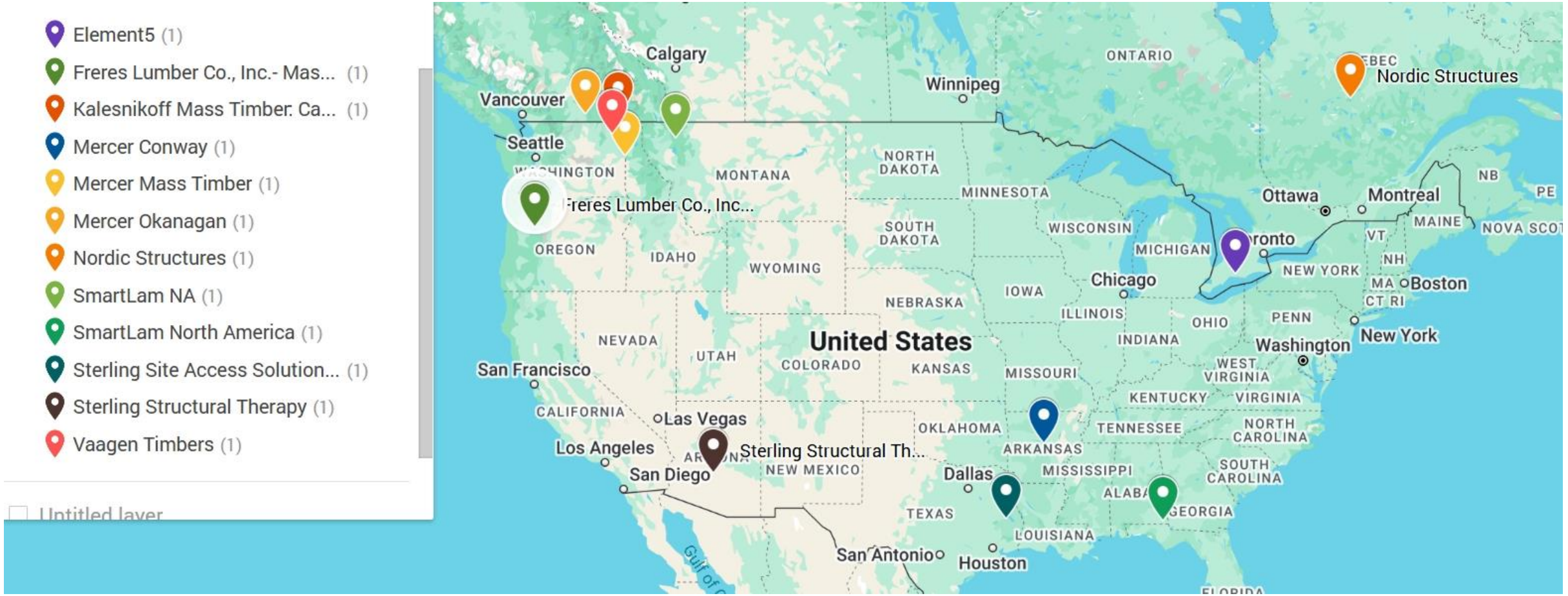
CLT facilities in Central Europe

- 36 mills in 5 countries, 14 in Germany, 12 in Austria
- 4 more mills starting production in 2025
- Production in 2024: appr. 1.4 Million cbm
- Total production 2024 in Europe: more than 2 M

SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products

CLT Manufacturers in North America



SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products

Mass Timber Manual of producers and projects

Europe

KLH Massivholz GmbH | www.klh.at | office@klh.at0043 (0)3588 8835

KLH Massivholz GmbH
Gewerbestrasse 4, A-8842 Teufenbach-Katsch, Austria

Founded	1997 (First industrial-scale CLT production in 1999)
Products	Cross-Laminated Timber (CLT)
Branch Companies	• KLH UK Ltd. (since 2005) • KLH US Holding Corp. (since 2014) • KLH Massivholz Wiesenau GmbH (Austria) • Distributors in 20+ countries
Lumber Sourcing	Sustainably harvested spruce from sister sawmill
Production Capacity	• Teufenbach-Katsch, Austria: ~125,000 m³/year • Wolfsberg, Austria: Up to 150,000 m³/year
Brief Introduction	KLH pioneered industrial-scale CLT production and is a global leader in mass timber. They offer full design support, BIM integration, and prefabricated solutions for walls, floors, and roofs.

64

Data resource: a) Timber online

Education

CA & USA

Founders Hall (FNDR)
4215 E Stevens Way NE, Seattle, WA 98195

CLT Glulam

Completed in 2022, Founders Hall at the University of Washington's Foster School of Business is the first fully mass timber building on campus. The 7,875-square-meter, five-story structure uses cross-laminated timber (CLT) and glulam beams, reducing its embodied carbon by about 60%. Exposed timber elements enhance its aesthetic appeal, creating a warm and inviting atmosphere for students and faculty. The building showcases a commitment to sustainability and innovation, demonstrating the potential of mass timber in modern construction while supporting environmental responsibility.

MASS TIMBER
Mercer (CLT) →
https://mercermasstimber.com/

Western Archrib (Glulam) →
https://www.westernarchrib.com/

ARCHITECTURE
LMN Architects
https://lmnarchitects.com/

ENGINEER
Magnusson Klemencic Associates
https://www.mka.com/

CONTRACTOR
Hoffman Construction
https://www.hoffmancorp.com/

LEARN MORE
1 → 2 →

18

High-Rise Housing

CA & USA

Brock Commons Tallwood House
6088 Walter Gage Rd, Vancouver, BC V6T 0B4, Canada

464 CLT Panels 1,302 Glulam Columns

Brock Commons Tall House, completed in 2017, is a pioneering example of mass timber construction located at the University of British Columbia, Canada. Standing at 53 meters with 18 stories, it was once the tallest wood building in the world. Its innovative use of timber, combined with modern construction techniques, earned it several accolades, including the 2018 Wood Design Award. The project showcases the potential of sustainable architecture while reducing carbon emissions in the built environment.

MASS TIMBER
Mercer →
https://mercermasstimber.com/

ARCHITECTURE
Acton Ostry
https://www.actonostry.ca/

ENGINEER
Fast + Epp
https://www.fastepp.com/

CONTRACTOR
Urban One Builders
https://urbanonebuilders.com/

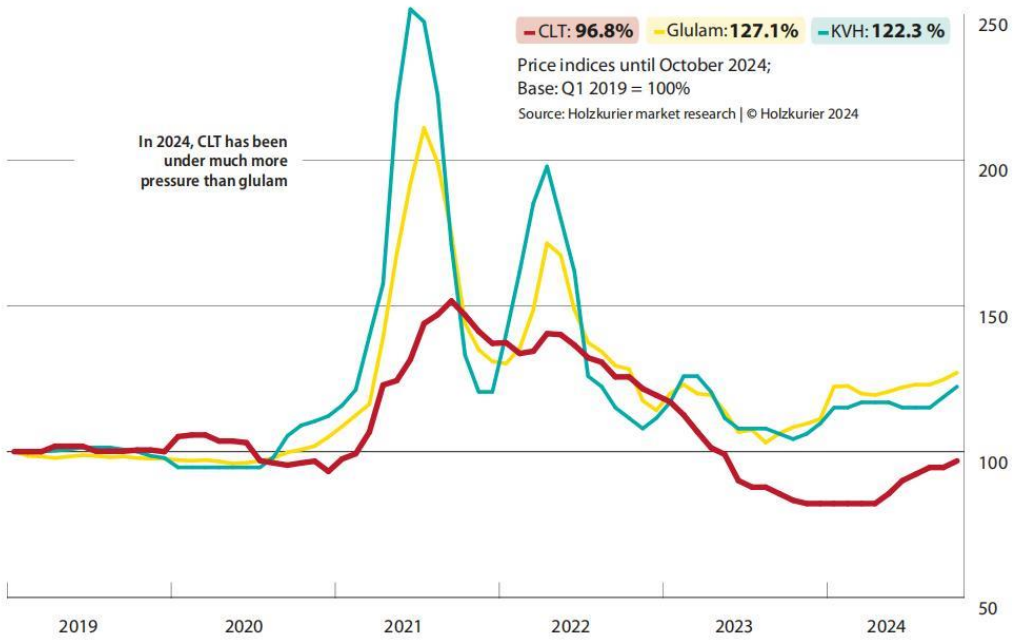
LEARN MORE
1 → 2 → 3 → 4 →

22

Other challenges – lumber price & CLT price

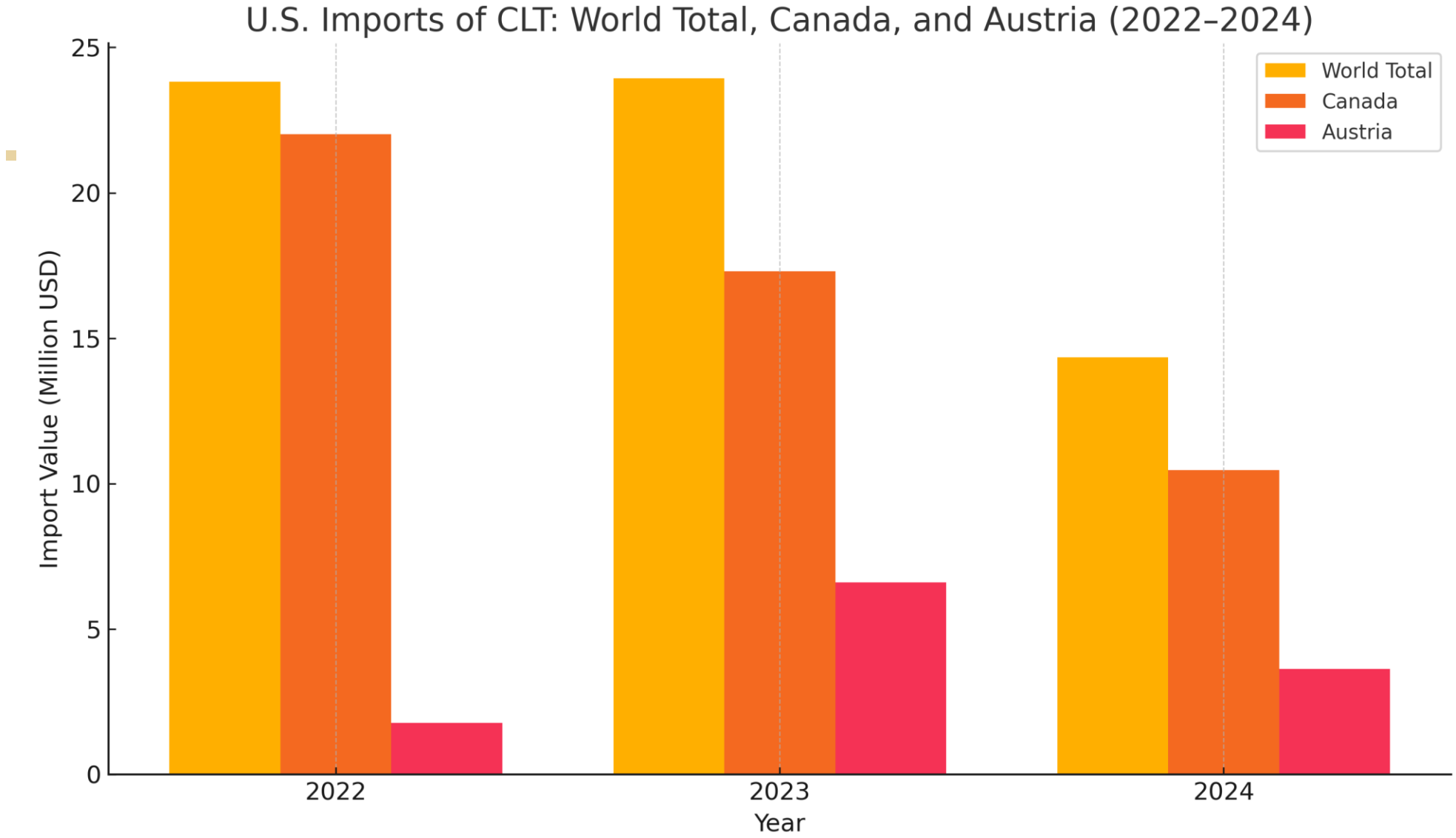
CLT/glulam price index Central Europe

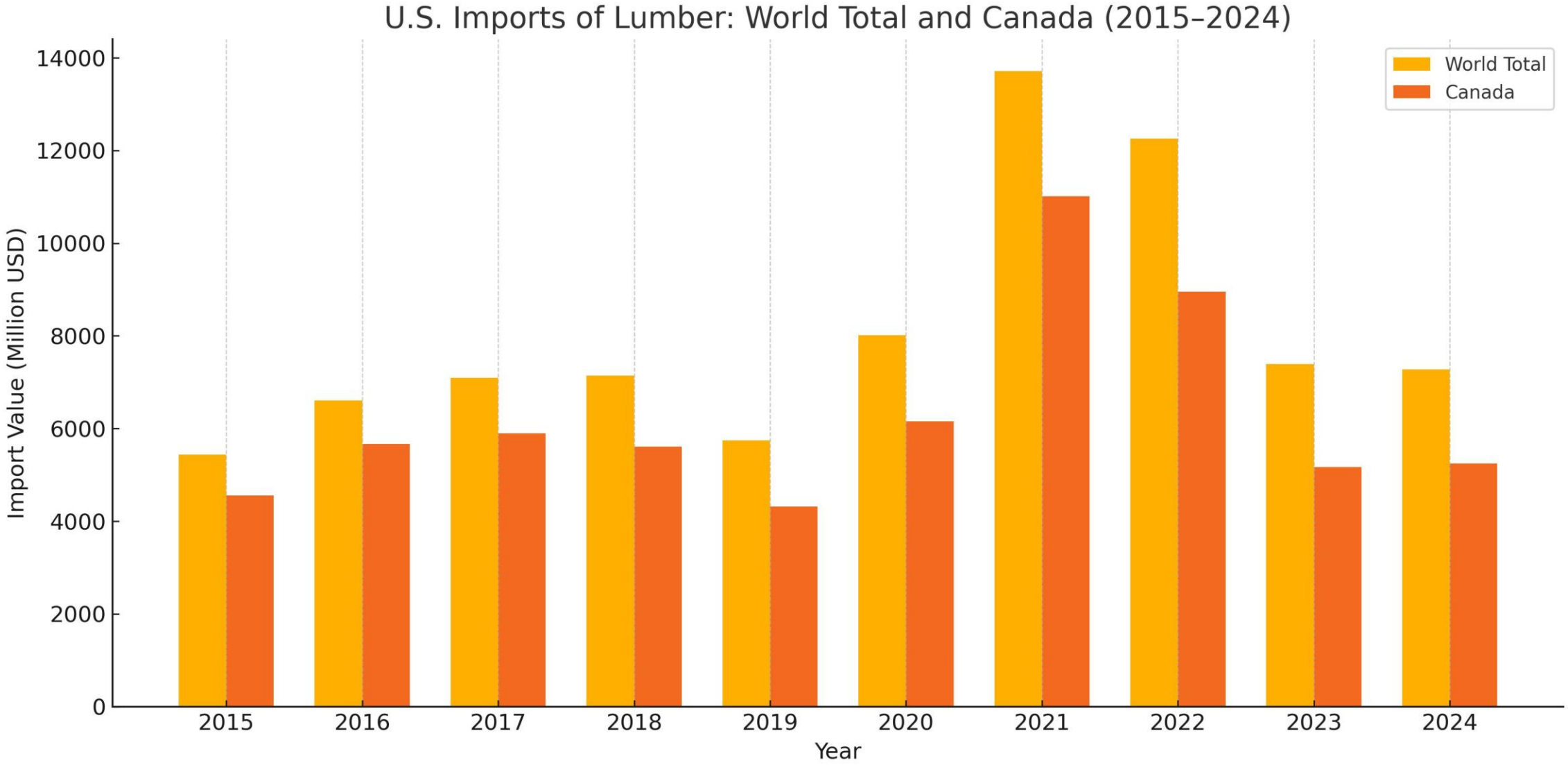
Source: timber-online



US Lumber Price 10 years

Source: trading economics


U.S. Imports of CLT: World Total, Canada, and Austria (2022–2024)
World Total
Canada
Austria
Import Value (Million USD)
25
20
15
10
5
0
2022
2023
2024
Year



SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products

Possible approaches to increase production efficiency:

- Increasing forest harvest
- Lumber supply tailored to CLT production
- Smaller CLT panels?
- Modular housing to distribute part of cutting capacity to construction companies
- Close regional cooperations in the industry

Questions?

Acknowledgements
This research is based upon work supported by the U.S. Department of Defense's Engineer Research and Development Center (ERDC) under the Award Number W9132T-24-9-C003

SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

CINTRAFOR
Center for International Trade in Forest Products