



Forest Economic Advisors

The Central European Spruce Bark Beetle Epidemic: British Columbia's Mountain Pine Beetle Redux?

Paul Jannke

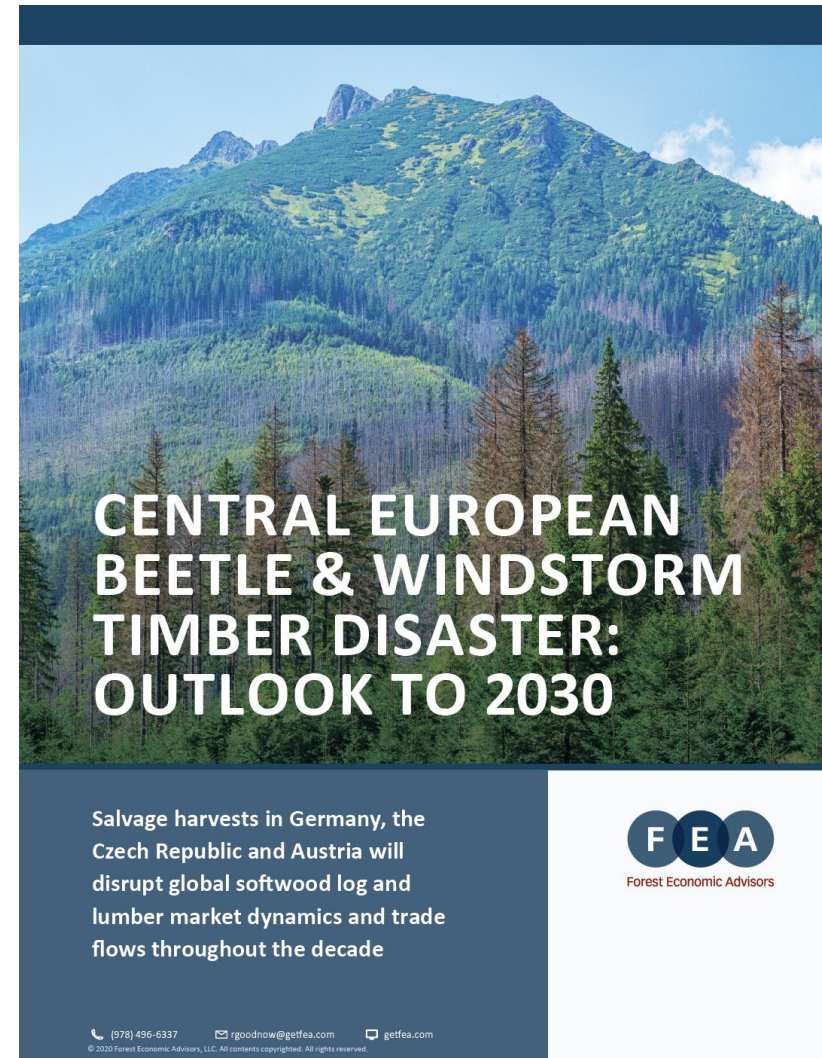
Market Discussion by the Committee on Forests and Forest Industries

November 5th, 2020

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FEA's Central European Beetle and Windstorm Timber Disaster Outlook to 2030

- The data and information in this presentation come from FEA's recent report on the Central European spruce bark beetle epidemic as well as four studies FEA has done on British Columbia's MPB, and our ongoing work on Global Sawtimber Markets.
- Special thank you to Gerd Ebner at Holzkurier for assistance in compiling the report.

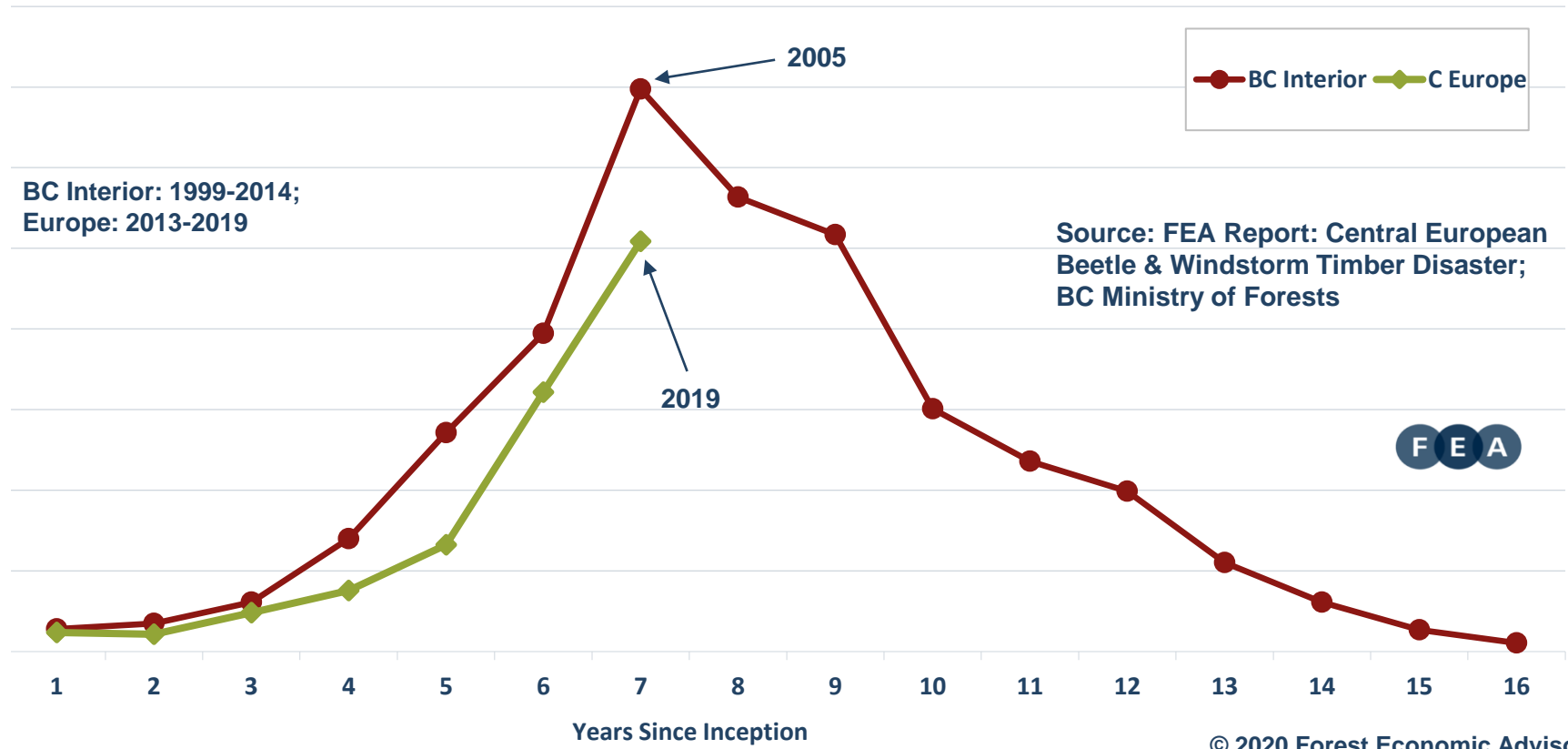


Outline Of Presentation

- The similarities between the two epidemics
 - The scale and scope
 - Causes, both of the outbreaks and factors exacerbating them
 - Effects of the epidemics in the marketplace
- The differences between the two epidemics
 - Shelf life
 - Economic environment in which the epidemic is taking place
- Implications of the difference for both production and pricing over the next five years

The Main Similarity Between British Columbia's Mountain Pine Beetle Outbreak and Europe's Spruce Bark Beetle Epidemic Is The Scale Of The Devastation

Years Since the Inception of Bark Beetle Epidemics

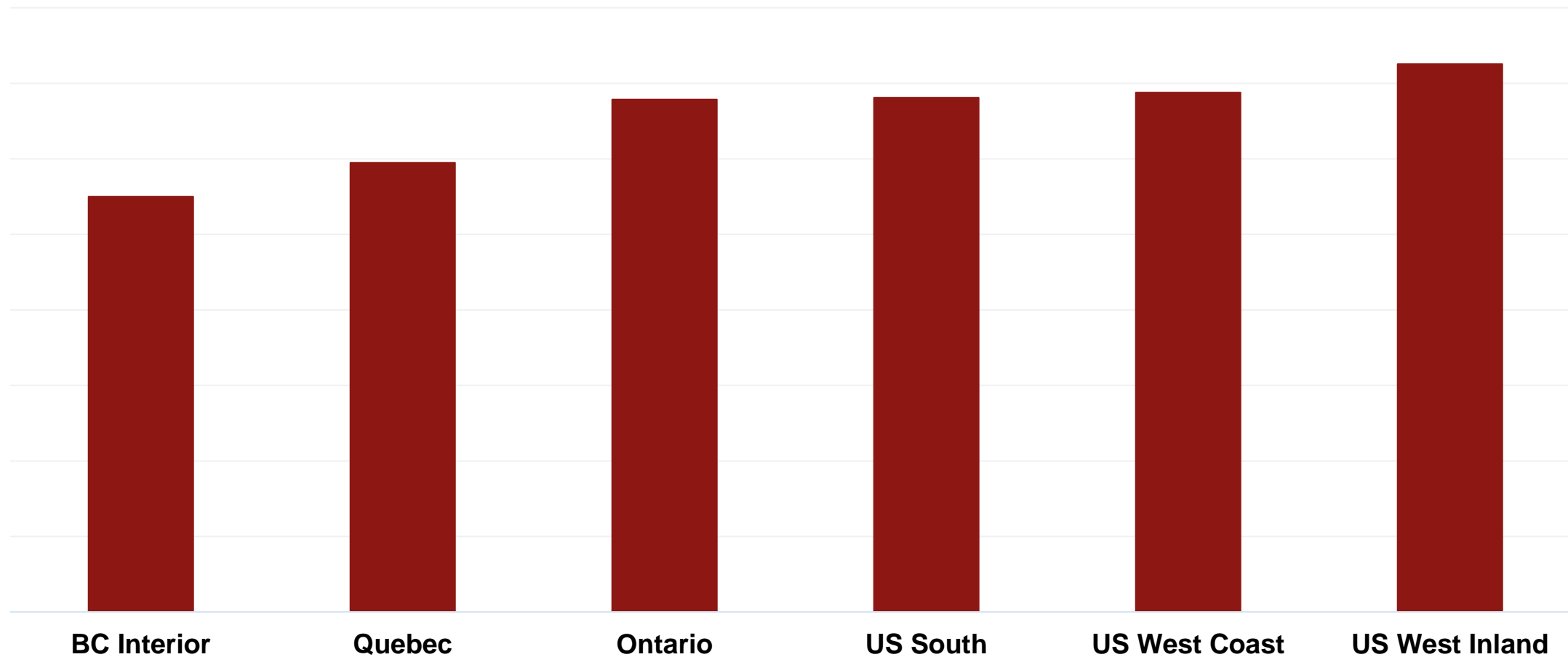


There are a Number of Similarities Between the European Spruce Bark Beetle and British Columbia's Mountain Pine Beetle Epidemics.

- Climate change involving hotter, drier summers, lower rainfall, and warmer winters.
- Monoculture forests that were often even-aged and mature to over-mature (100+ years old).
- The outbreaks expanded quickly, and the dead timber could not be harvested fast enough to control the spread of the beetle (very similar to the situation in the Czech Republic).
- Harvesting capacity was a limiting factor relative to the annual volume of beetle-attacked timber.
- Domestic log prices dropped to essentially cost levels in areas with heavy beetle kill.
- Sawmills increased shifts to process more of the beetle-killed timber, causing an oversupply of lumber that created lower prices in some markets.
- At the end of the mountain pine beetle cycle in BC, 750 million m³ of lodgepole pine forests were killed, and this resulted in 35 sawmills (an average of 200 million BF or 300,000 m³ of sawtimber) closing from 2006 to 2019. This last chapter has yet to be written for Central Europe.

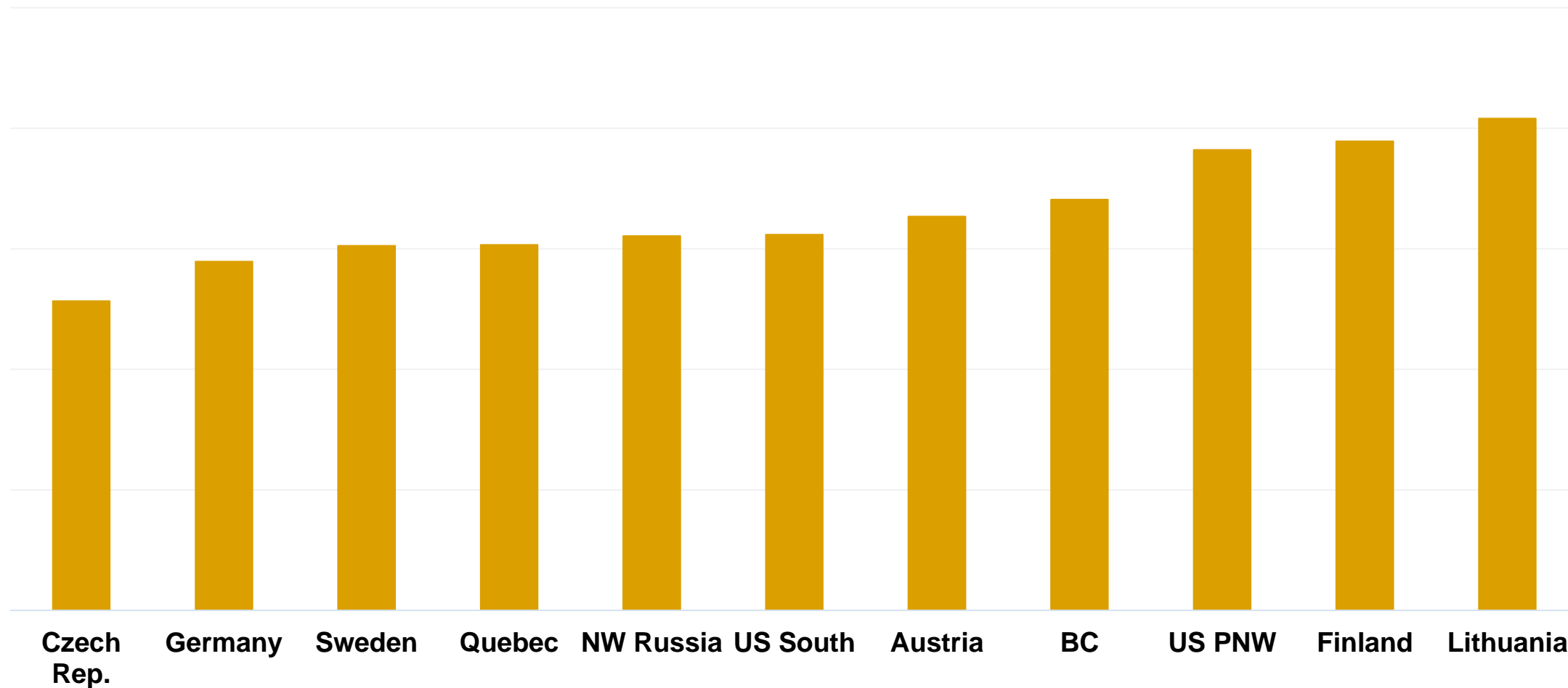
Abundant Timber Drove British Columbia Costs To The Low End of the Cost Curve in 2010

\$US/M3, Net

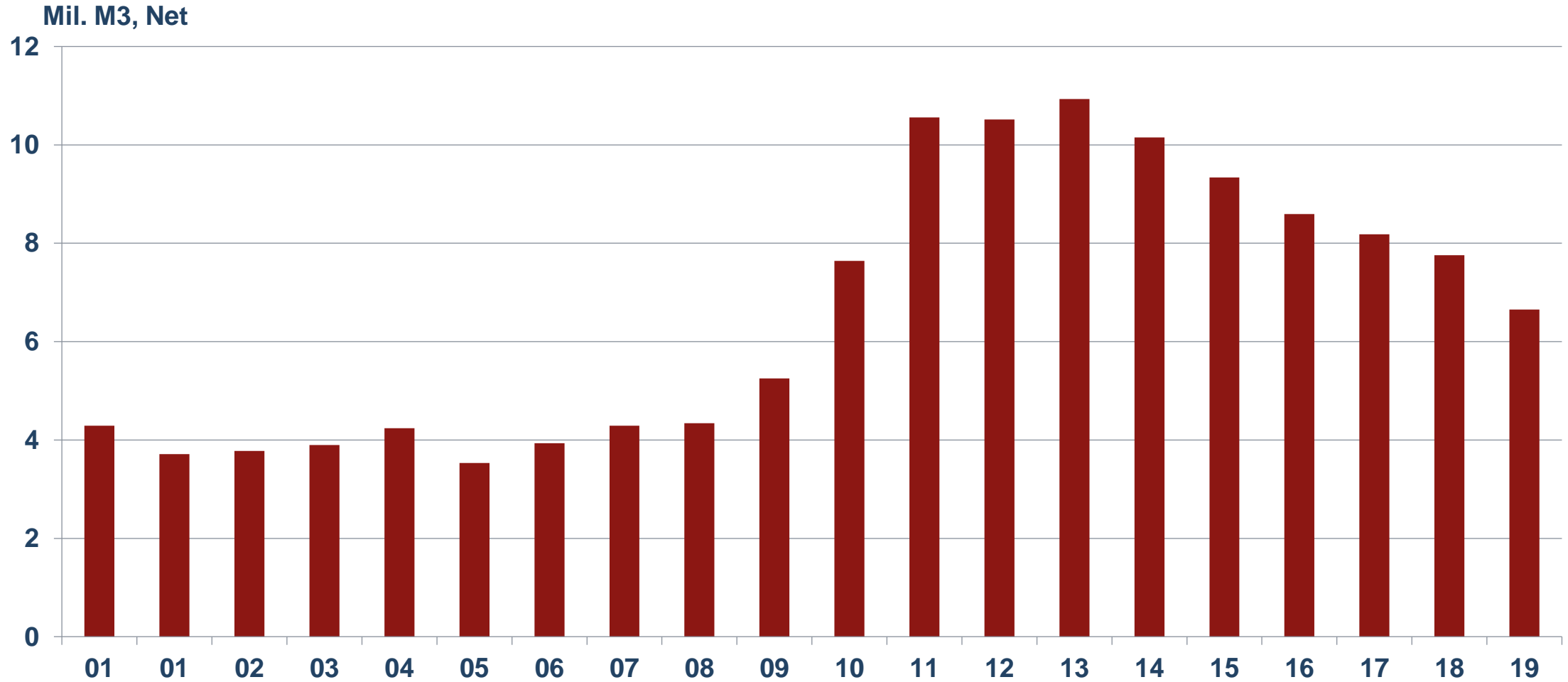


The Same has Happened for Central European Producers

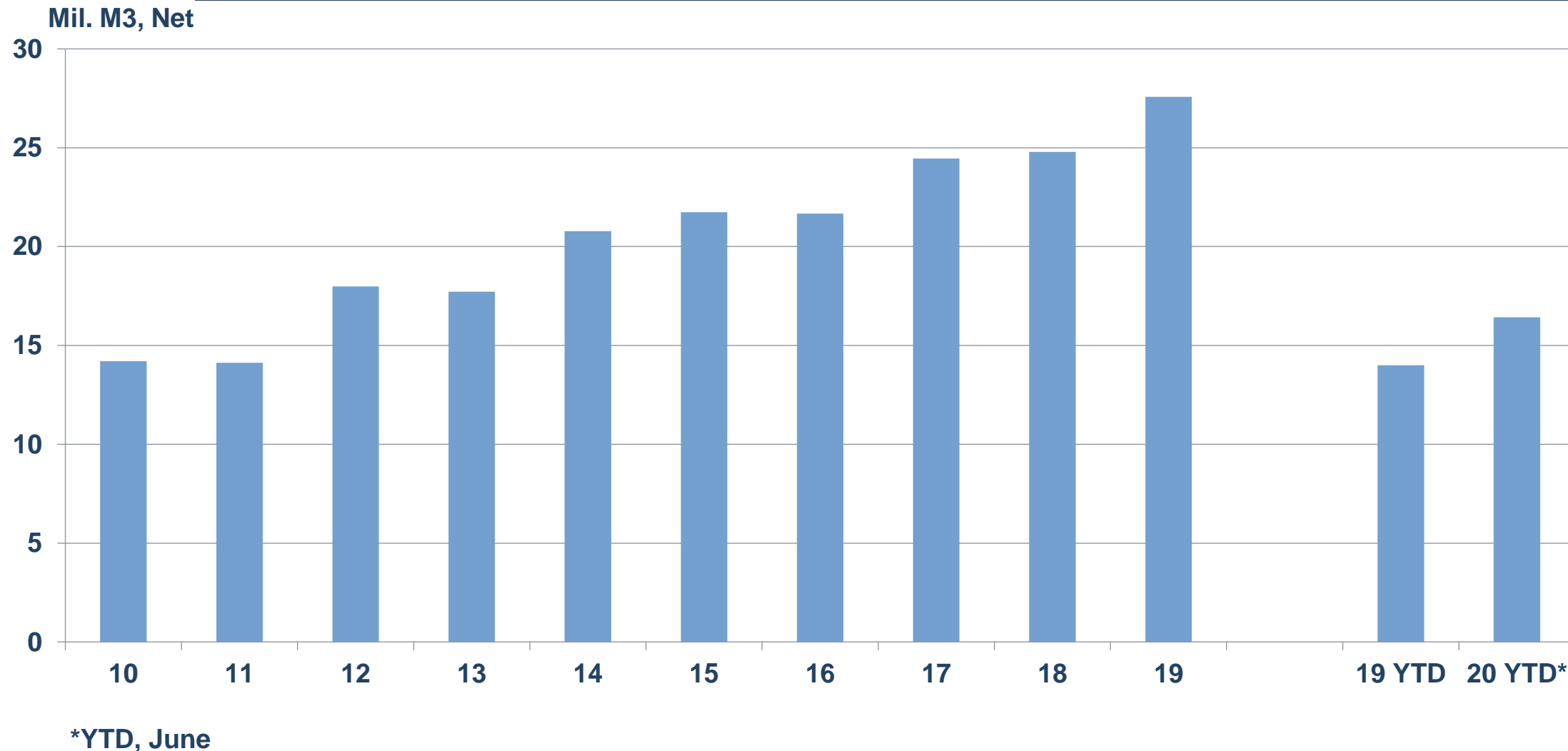
\$US/M3, Net



Canadian Exports Surged During the MPB Epidemic



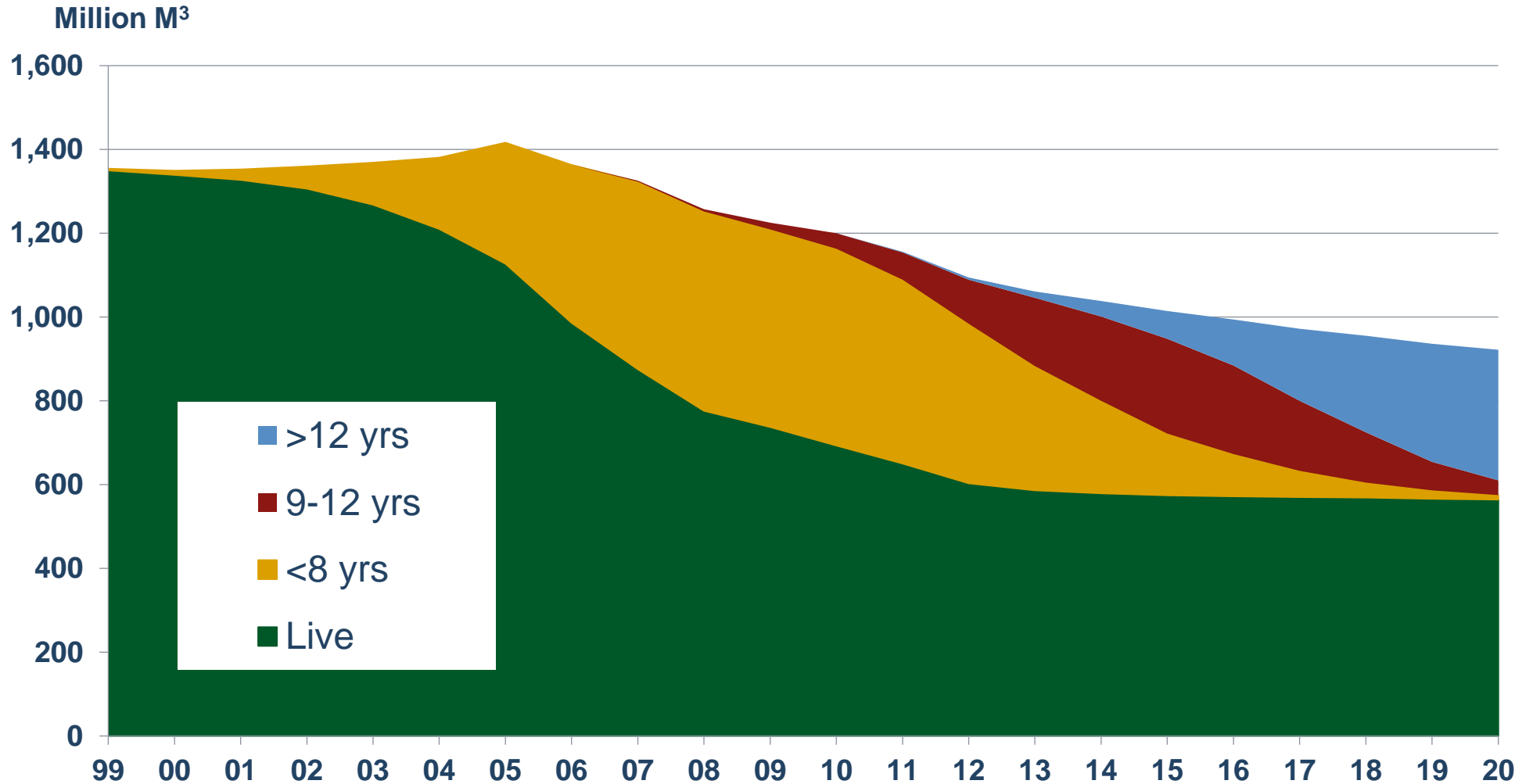
European Offshore Exports Continue To Rise Despite COVID-19 Recession



Central Europe: Shelf-life <1 Year

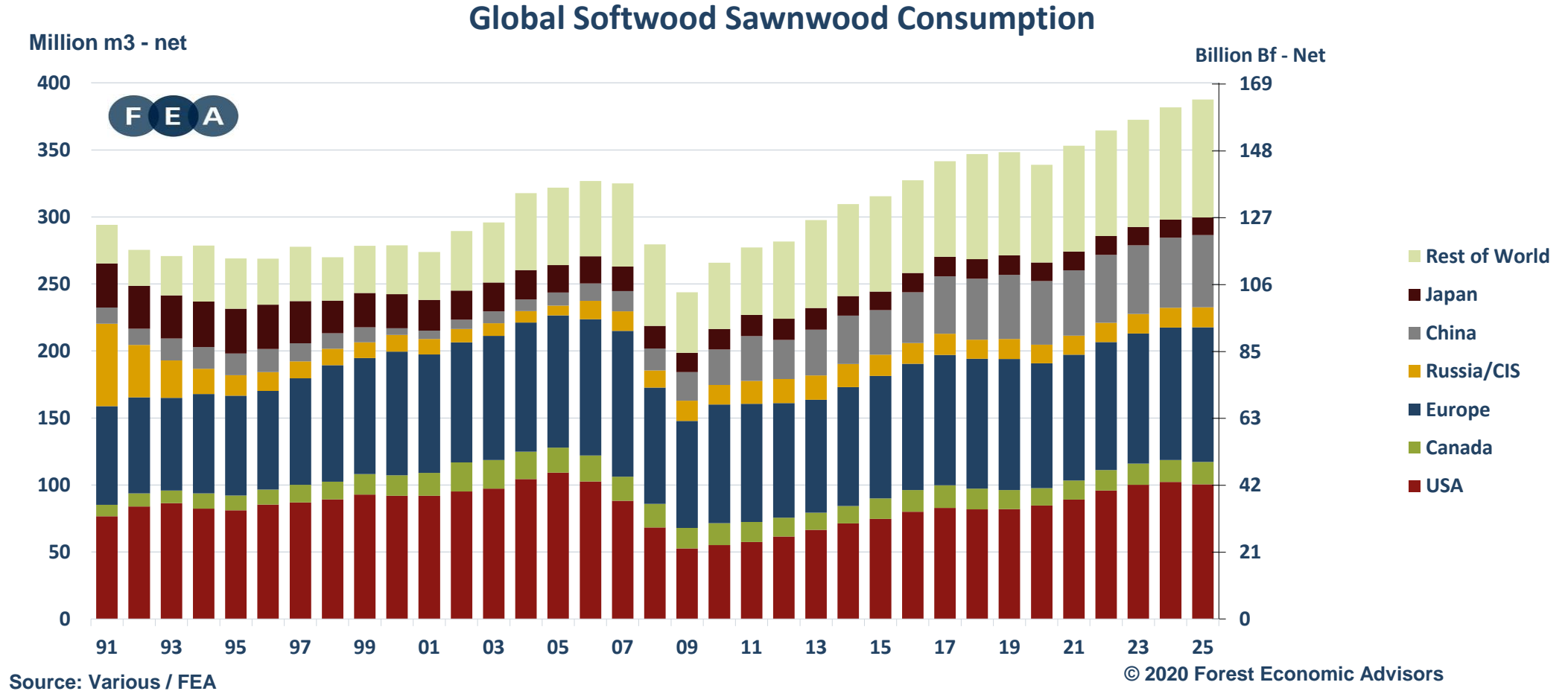
- Shelf-life varies by country
- Germany
 - Killed logs usually unusable after one year
- Czech Republic
 - Shelf-life measured in weeks (especially summer)
 - Can be months at higher elevations
 - Highly weather dependent
- Austria
 - Sawmills estimate shelf-life is up to one year

Inventory of Available Live and Dead Lodgepole Pine, by Years Since Attack, 1999-2020

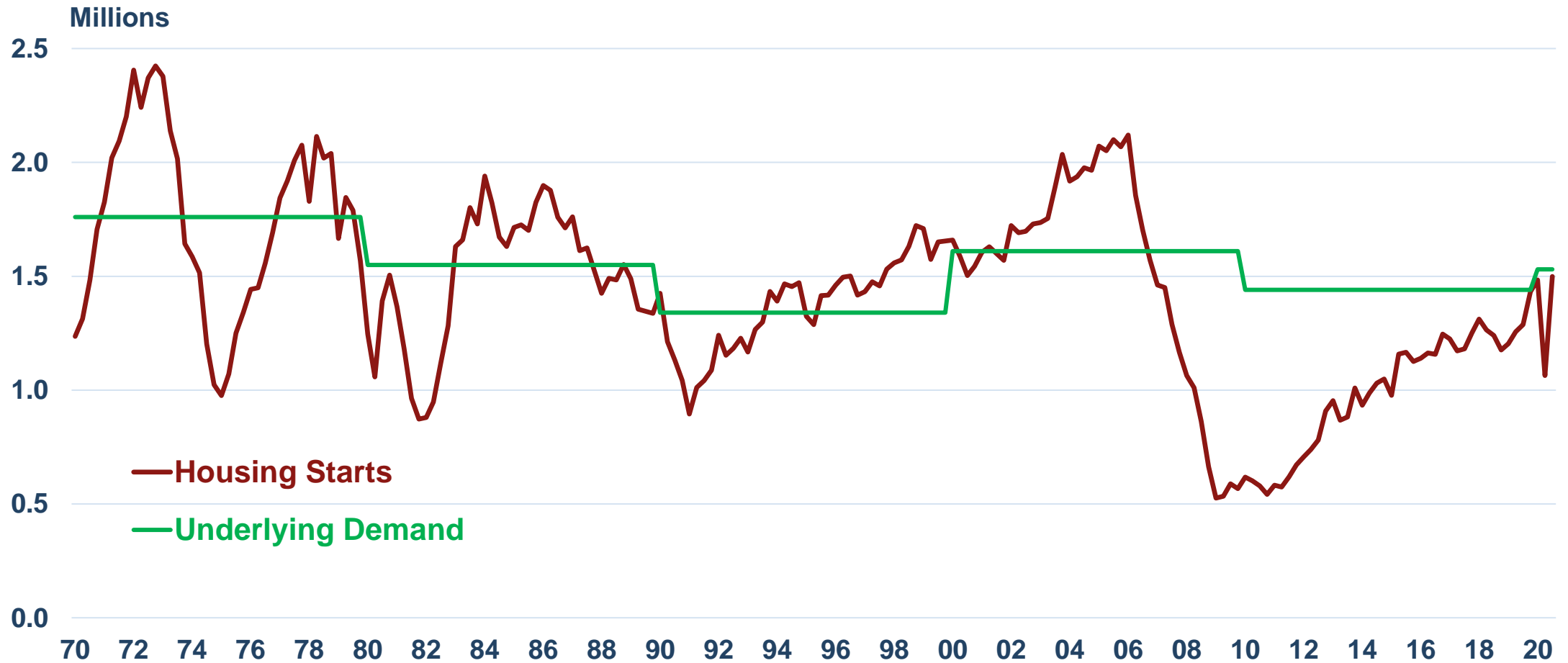


Source: FEA estimates

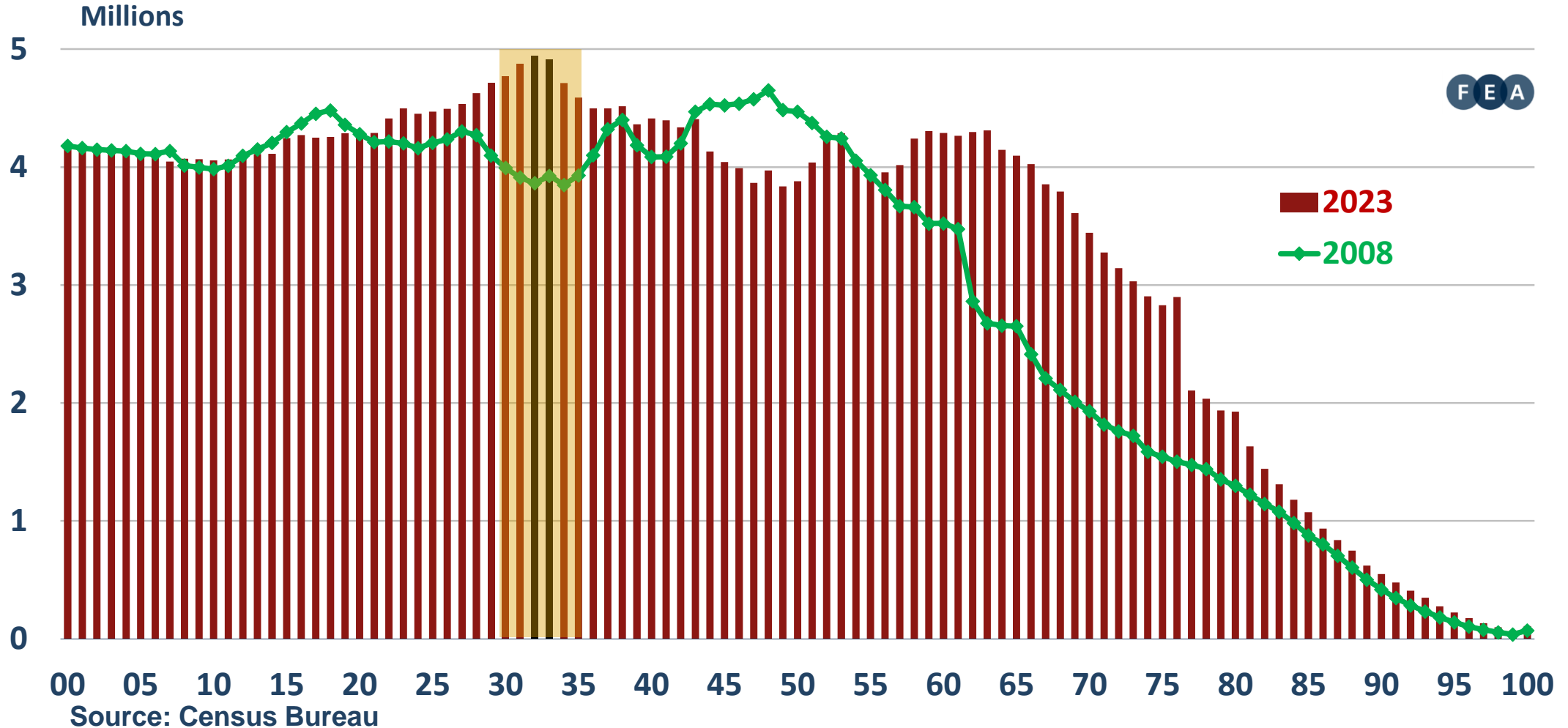
Global Consumption Is Growing



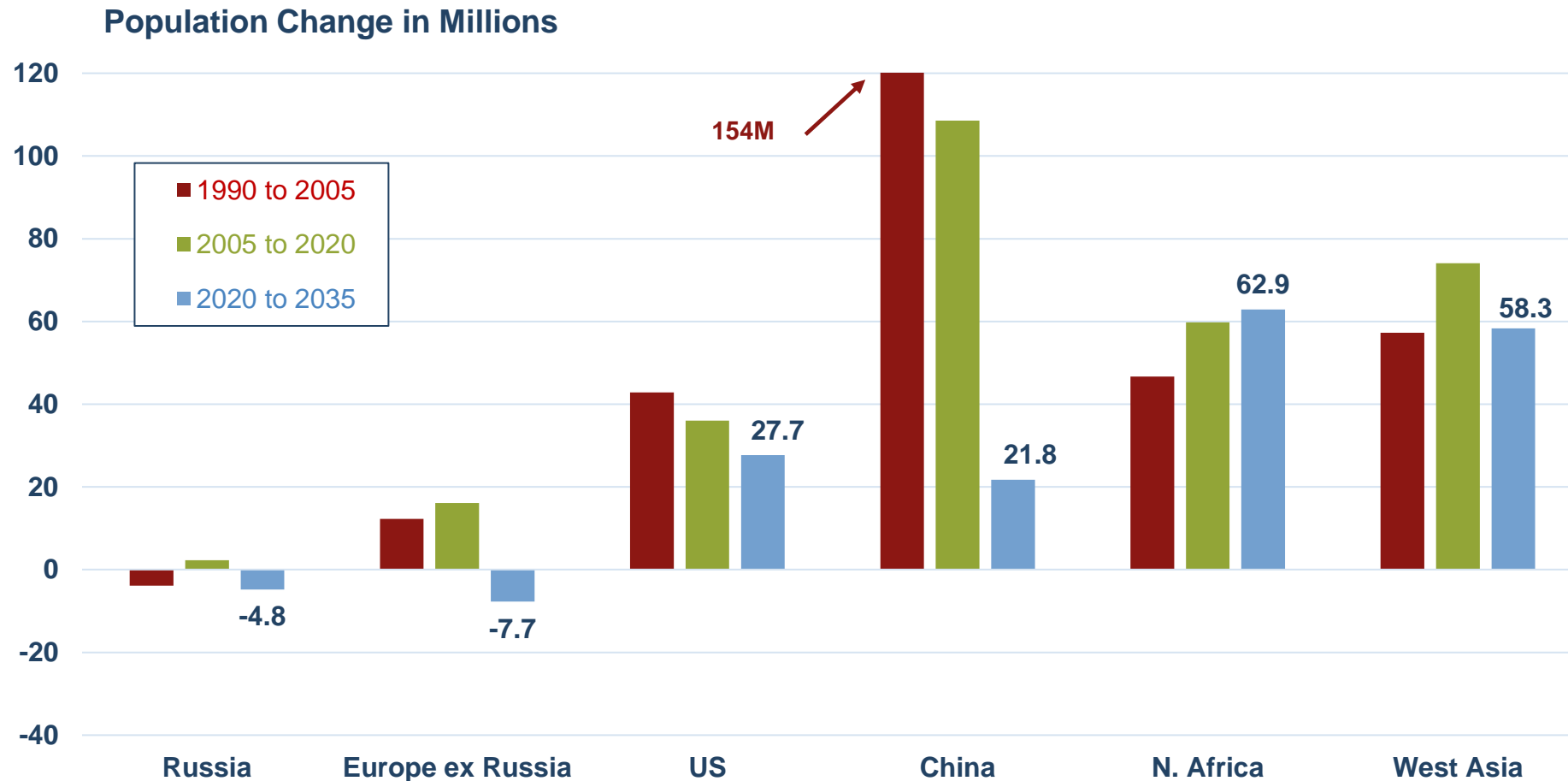
There Is A Tremendous Amount Of Pent Up Demand In North American



2008 – Strong Demographic HEADWIND 2023 – Strong Demographic TAILWIND



Europe's Main Trading Partners Are Growing



Source: UN Population Division
Medium Variant Projections

What are Mass Timber Panels?



CLT - Cross Laminated Timber



NLT - Nail Laminated Timber



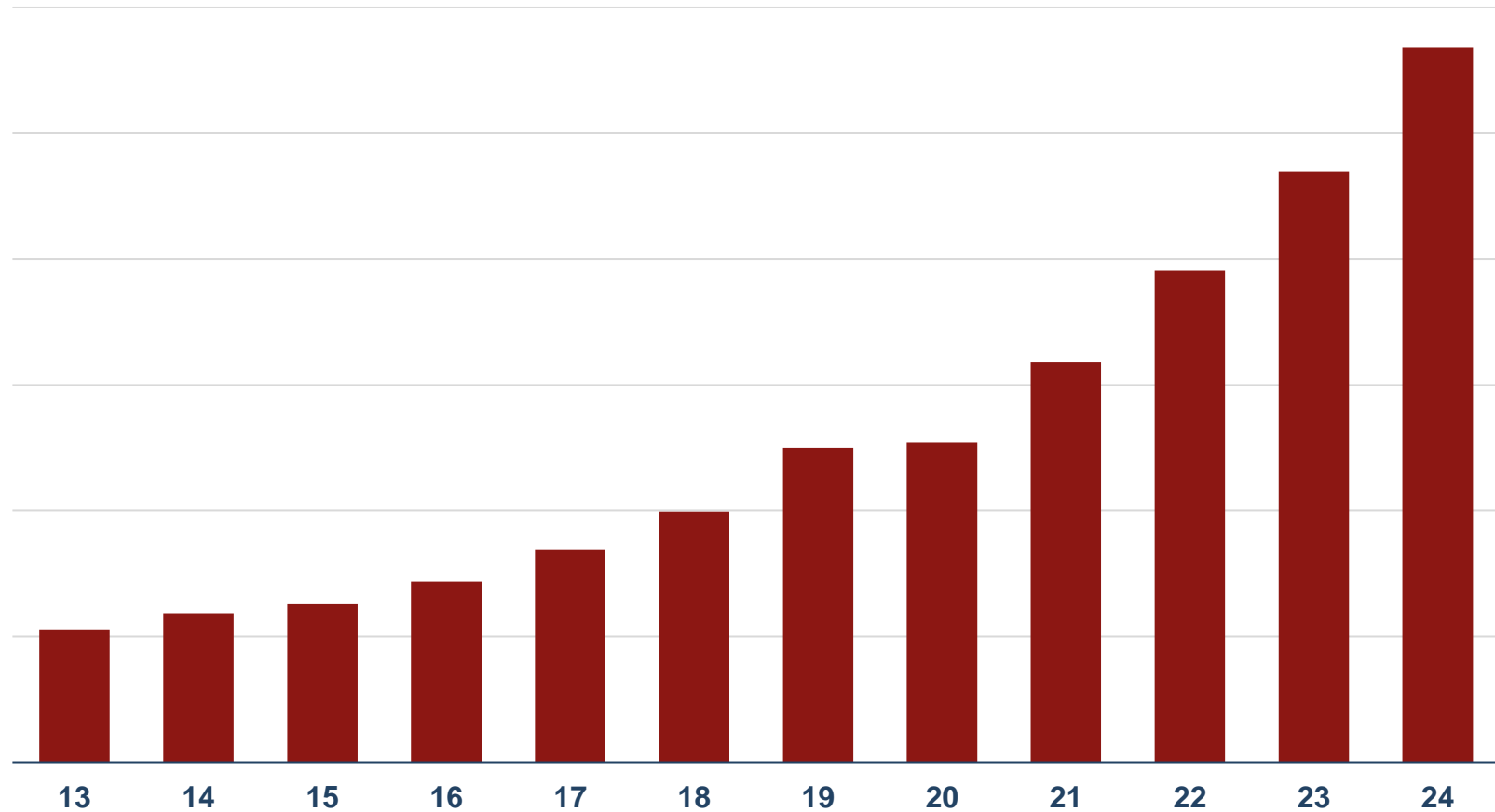
DLT - Dowel Laminated Timber



MPP – Mass Plywood Panel

Global CLT Consumption Will More Than Double by 2024

Global CLT Consumption Forecast



Why are We Bullish on Growth?

Mass timber is part of a global trend toward vertically integrated offsite construction in response to poor construction labor productivity and shortages of skilled construction labor on site

Why wood?

- More sustainable,
- Quicker
- Quieter
- Cleaner
- Cost competitive
- Sequesters Carbon

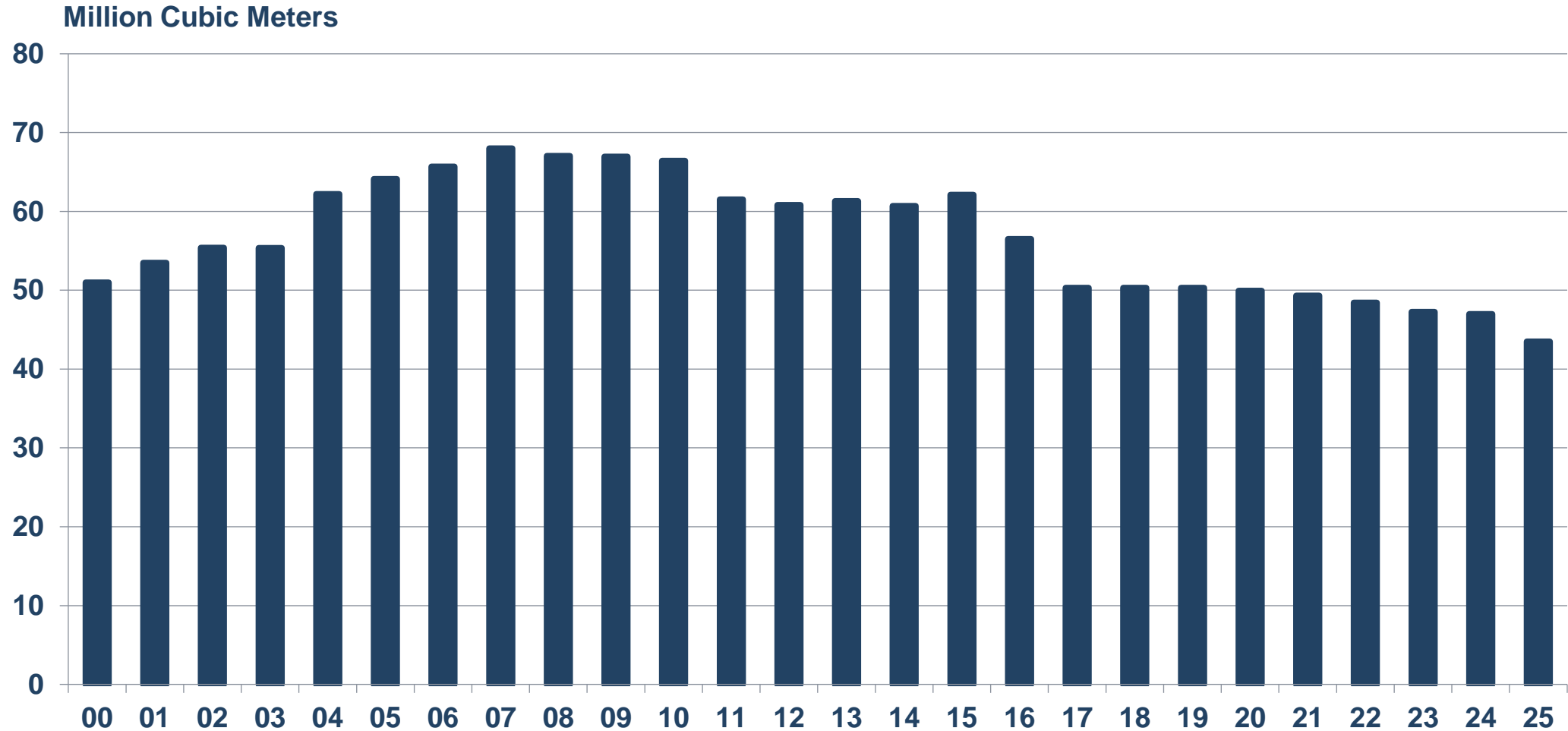
Why are We Bullish on Growth?

- North American Building Codes are Moving Swiftly; much more so than in Europe
- ICC approved model code provisions for the use of CLT in buildings in the US up to 18 stories. These changes will take effect in 2021 but will have to be adopted by individual states, counties and municipalities.
- Oregon and Washington have already approved the above code changes. Colorado may follow suit soon.
- In Canada, model building code changes will come into effect in this year, allowing wood buildings up to 12 storeys
- British Columbia has already adopted these changes.
- State and provincial governments are providing strong backing (BC, Washington, Oregon, California)

Why are We Bullish on Growth?

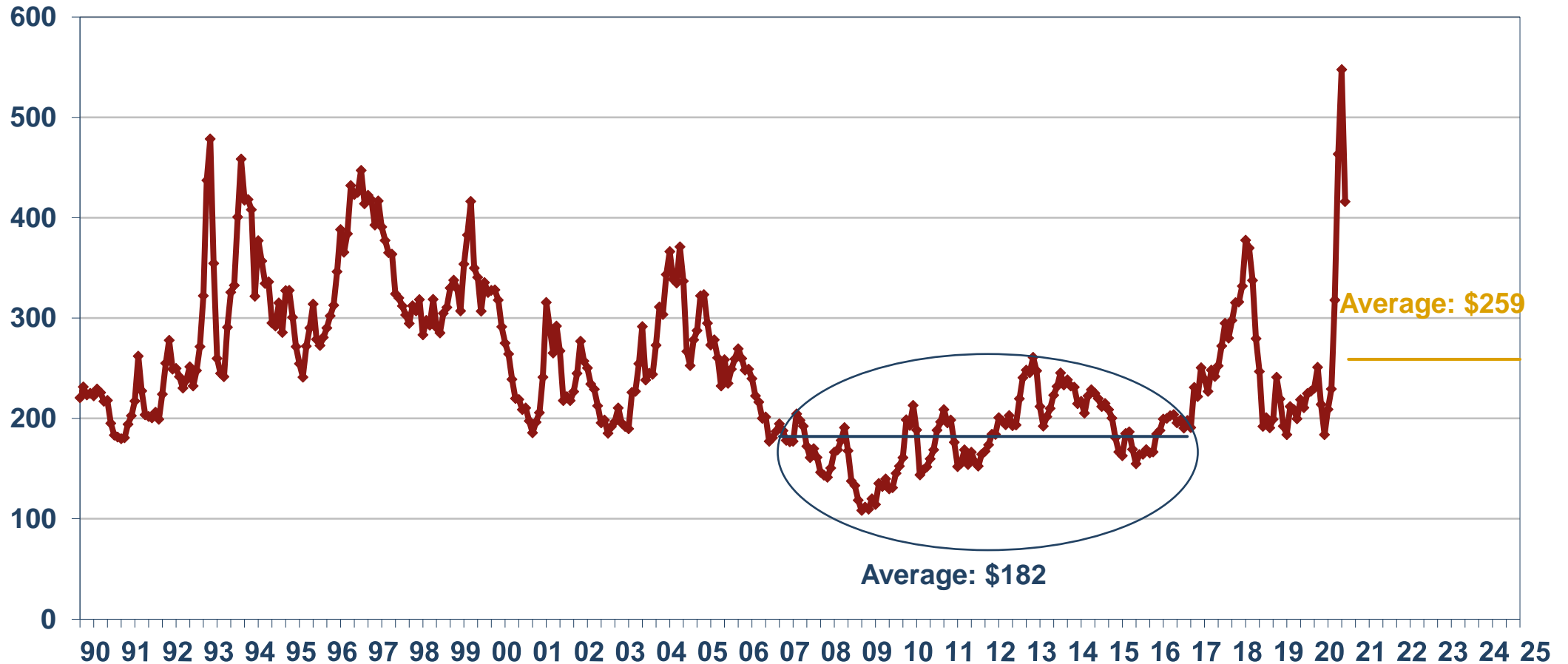
- More players and more capacity provide architects and engineers with more choices and competitive bidding
- Mass timber design and systems are becoming more cost-efficient.
- A push toward building platforms with “kits of parts”, repeatable elements, standardization and repeatable manufacturing – multifamily, hospitality, student housing, assisted living, work-place housing

British Columbia's Annual Allowable Cut Will Fall Further



Strong Demand and Limited Supply Will Cause Prices To Be Higher

2&Btr 2x4, Western SPF \$2019US/M3, Net



Take Home Points

- A combination of climate change and monoculture precipitated both the European spruce bark beetle and British Columbia's mountain pine beetle
- The scale of the mountain pine beetle epidemic was massive. The scale of Europe's spruce bark beetle epidemic will likely exceed that in British Columbia.
- The shelf life of the spruce is shorter than that of the pine, so the European timber will enter the markets more rapidly than in British Columbia.
- Demand will be higher over the next five years, so we don't expect a similar period of weak pricing like we saw during the MPB epidemic.

Questions?

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