



# Wooden bridges enrich the world

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## 1 Introduction

Wooden bridges are certainly time-honored exotics among the building types. Thanks to a history that stretches deep into human history, wooden bridges have always reflected the state of the art in the historical context. And surprisingly, the material that has been used for a long time has never gone out of fashion. Even if wooden bridges nowadays only eke out a niche existence, there are good signs of a renaissance. High time for an evaluation and appreciation of this type of construction, taking into account various aspects

## 2 Technical enrichment

Developments in technology are always visible in buildings. The construction of wooden bridges is particularly interesting, as there are still structures with a service life of over 600 years to be analysed. Here, the technical development can be observed very well: While simple beam structures were originally erected, trusses were later increasingly implemented for larger spans. The relatively small availability of the material wood in the form of solid wood beams was the limiting factor. As a result, however, this type of construction continued to flourish until the last century. Thanks to new production technologies, a new chapter was opened with the invention of glulam. For 100 years now, it has been possible to produce large-format wooden beams, which have culminated in the gluing of log beams for 30 years now.



Figure 1: Trussbridge Kempten (GER)



Figure 2: Stress-Ribbon-bridge Gera-Ronneburg (GER)

## 3 Socio-cultural enrichment

The coexistence of people becomes very concise and directly tangible, especially in the construction of bridges: bridges serve the exchange and overcoming of obstacles. Pedestrian bridges in particular are more sensitive to the direct interplay of materials, which are intended to accompany people safely in the truest sense of the word. The material wood, which can be experienced with almost all the senses, creates a very harmonious relationship between the building and the user. Numerous identity-creating buildings bear witness to the power of wood as a material.



Figure 3: Cityscape Schwäbisch Hall (GER)



Figure 4: Border bridge Ainring (A-GER)



Figure 5: Landmark Sneek (NL)

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## 4 Ecological enrichment

The current public debate on climate change is shining a bright light on the timber construction industry in general - and timber bridge construction in particular. The enormous added value of the CO<sub>2</sub> saving capacity will help wood to achieve a new classification. An exemplary comparison of different types of bridge construction shows quite impressively:

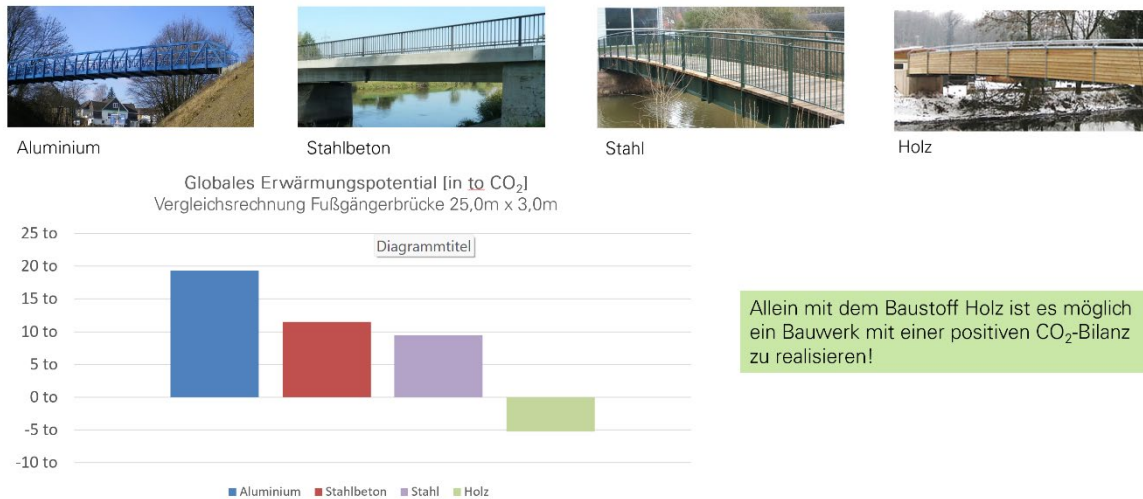


Figure 6: CO<sub>2</sub> Ecobalance timber bridge 25 m long, 3 m wide

The overall context of wood's performance must be assessed: wood is almost the only load-bearing building material capable of storing CO<sub>2</sub>.

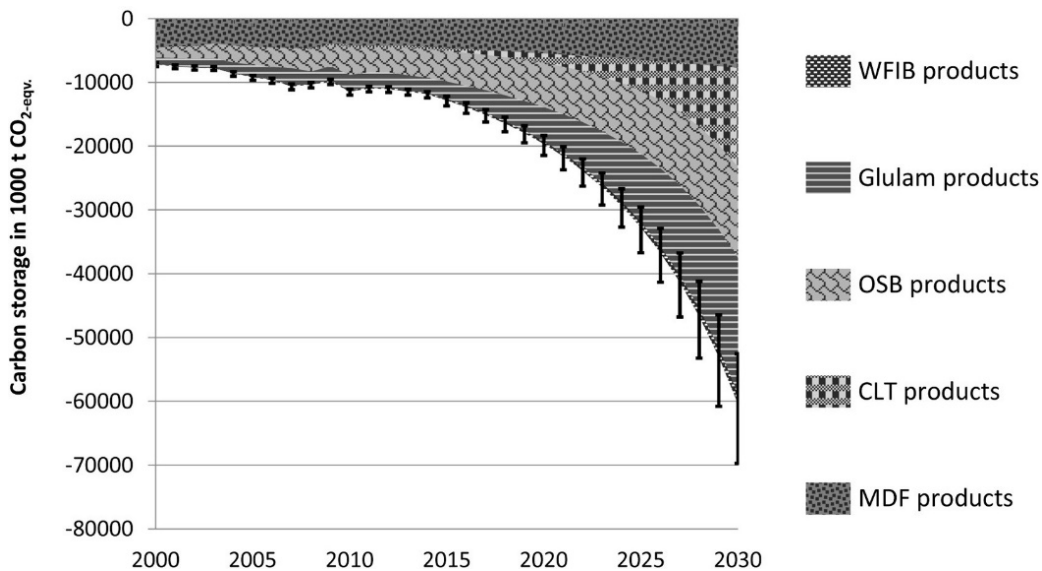


Figure 7: Prediction Carbon storage timber



## 5 Economic enrichment?

If we look at buildings in terms of their economic benefit, the life span and service life play a central role. Wood as a material is certainly ambivalent in this respect. Wood as a material is not necessarily durable per se if it is exposed to weathering. As soon as moisture is kept out, however, its economic potential becomes apparent: the material ages extremely slowly and can reach a service life of several hundred years.



Figure 8: Bridge Unterregenbach (DE)

With a different approach, the question may be asked why wood is a niche material in bridge construction? The answer is often that timber construction has to be affordable, so the economic viability is doubted.

But isn't it interesting to observe that in Germany, for example, there is a correlation between the timber construction rate and the prosperity of the federal states?

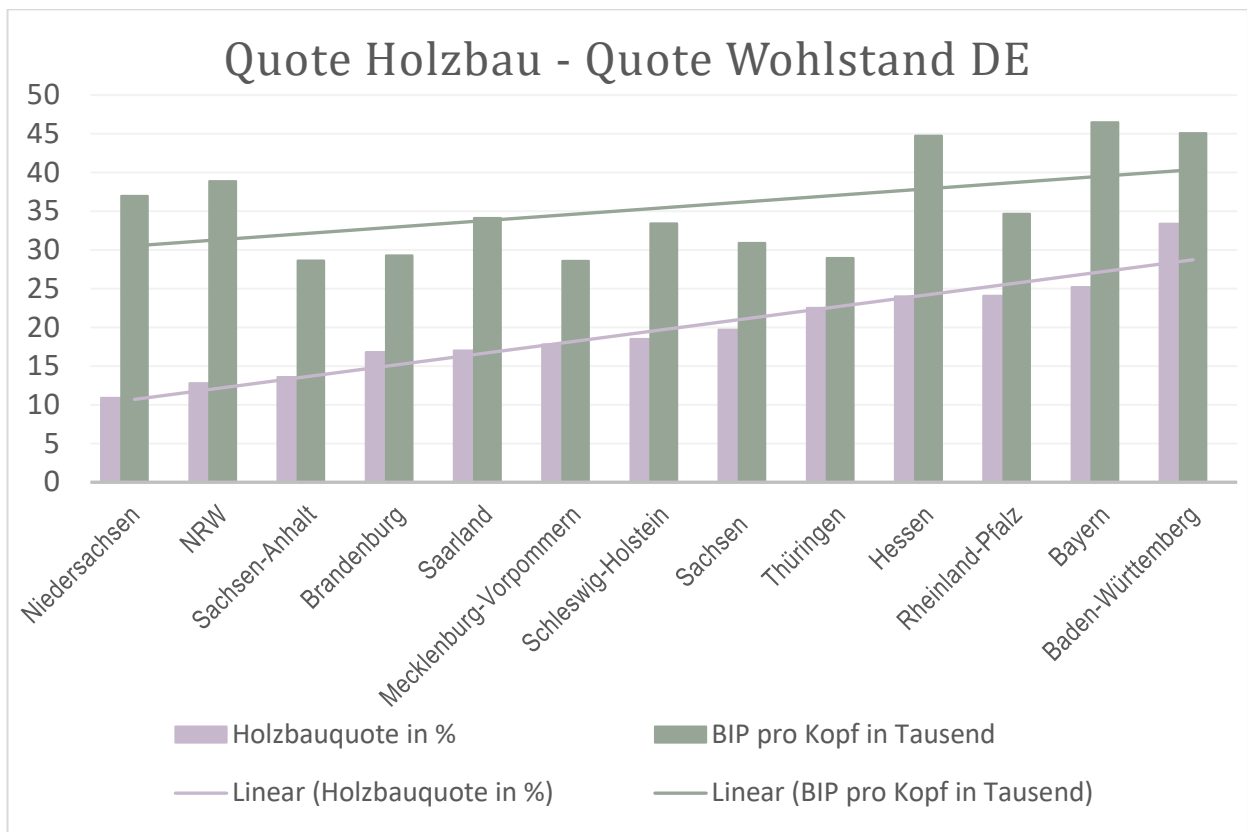


Figure 9: Graph of timber construction rate and income in Germany by federal state (as of 2019)



## 6 Conclusion

In numerous aspects, timber bridge construction is undoubtedly an enormous asset. The structures can be technically demanding, are often regarded as identity-forming, are ecologically advantageous and sometimes very durable. But beyond that, it seems that the following insight can be gained: In those regions of the world where timber construction is strongly represented, there is increased prosperity. Thus, timber construction enriches in the truest sense of the word!

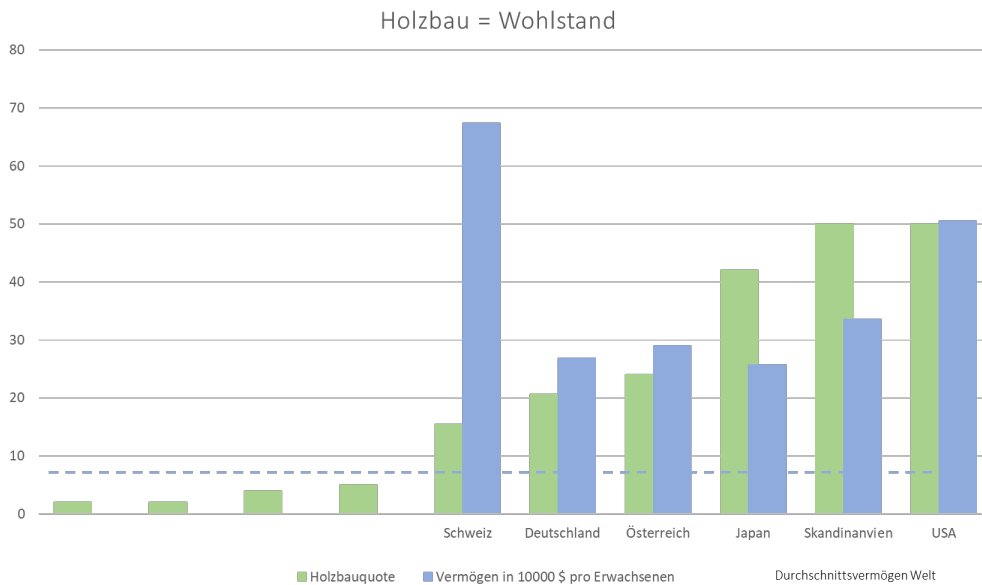


Figure 10: Graphic timber construction rate and income worldwide (as of 2019)