

# **European Forest Institute**



EUROPEAN FOREST  
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# Biocities

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## Plant trees and urban forests

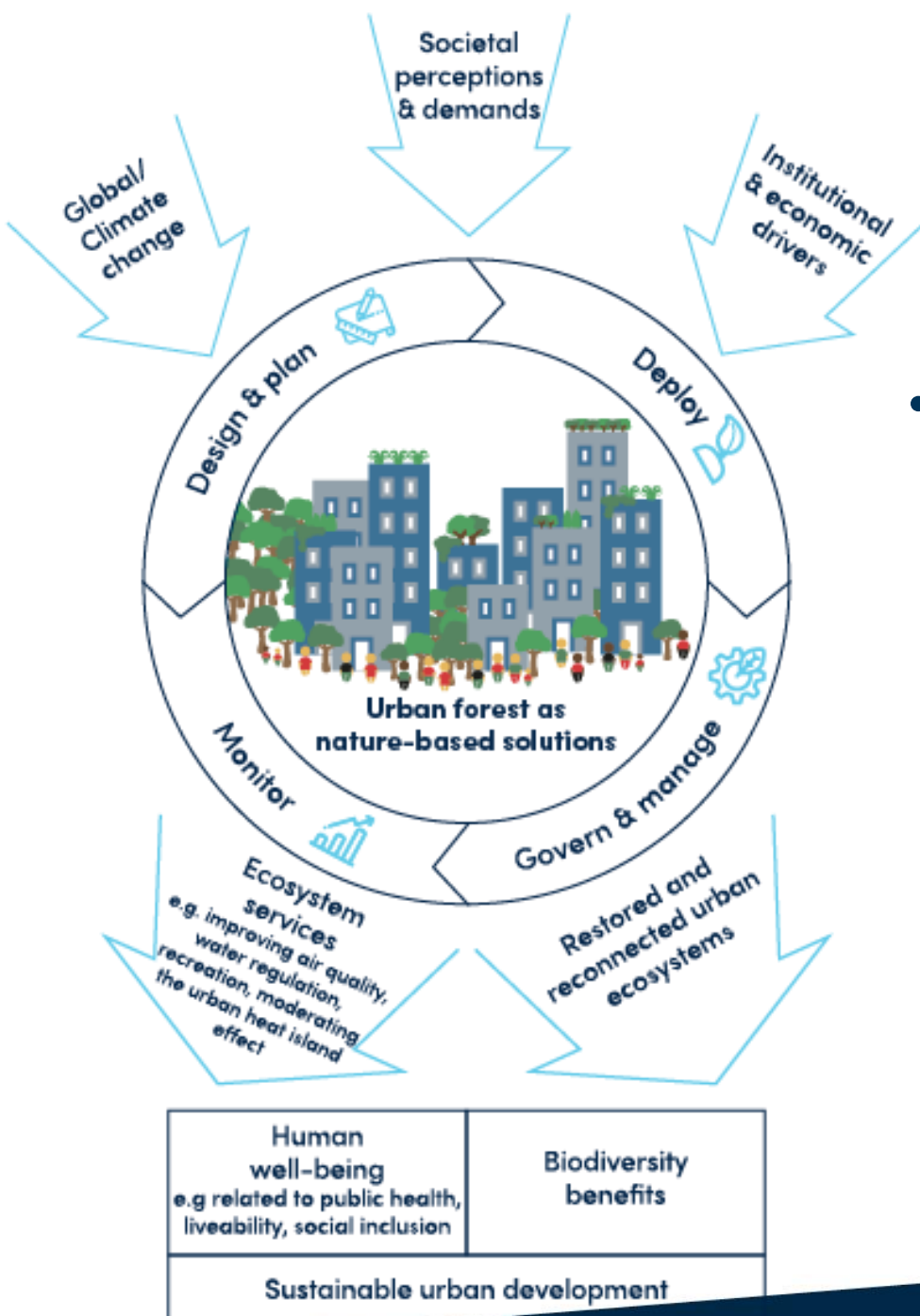


# Urban Forests as nature-based solutions

- Nature-based solutions: “solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience.”

Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.”

(European Commission 2016, Faivre et al. 2017)





# Urban Forests as nature-based solutions

- Urban forests and trees are well-established and well-recognised instruments in urban planning for providing multiple benefits.
- Cost-effective (when well-designed and managed)
- Undervalued as NBS (esp. Human-health impact)



# Wooden buildings and substitution

## Substitution benefits

- Measured by **displacement factor (DF)**
  - *avoided emissions per unit of wood used when replacing non-wood based products with equal functionality avoided fossil emissions*
- **When  $DF > 0$ , wood-based application results in climate benefits in the technosystem**

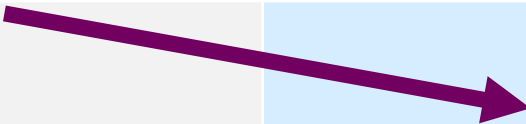


Source: Images courtesy Jonathan Enns,  
[www.constructioncanada.net](http://www.constructioncanada.net) (Showcasing engineered  
wood's potential for modular design  
November 7, 2014)

# Wood substitution benefits now...and in the future?:

(some example calculations from FORBIO study)

Product	DF today 2019 kg C / kg C	DF 2050 (estimated emission reductions in all the sectors) kg C / kg C
Sawnwood/construction avg	1.1	0.8
Viscose/synthetic textiles avg	4.0	1.2
Wood-plastic –composites/ construction avg	6.2	3.2
Some platform chemicals/fossil based	47.0	11.5





# Circular construction=climate change mitigation

Displacement factor is not the whole truth, there are more benefits:

- Long-term carbon storage
- Opens the doors for maximal resource efficiency and closed-loops system
- Wood cascading enables also higher substitution benefits



The world's tallest wooden building. Image by UBC Public Affairs/brudder/naturallywood.com

Long-term carbon storage + substitution benefits



UPM Formi (wood-plastic composite)

Long-term carbon storage + substitution benefits



Still feasible for energetic purposes! Substitution benefits

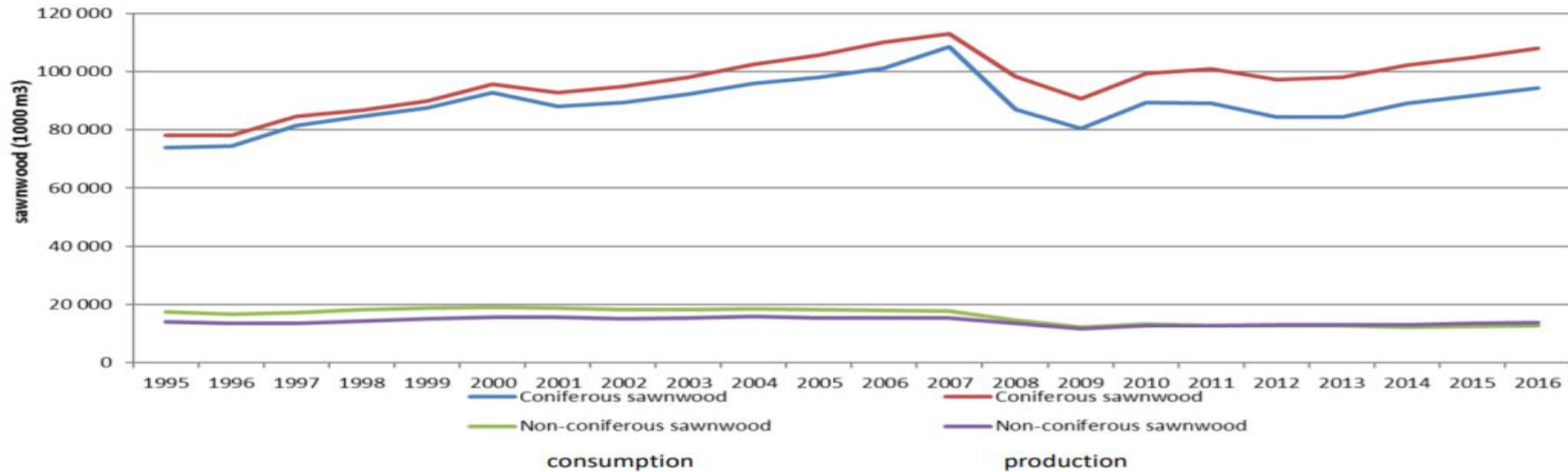


# Sawnwood consumption and production, 1995-2016

LAS 2017



Slow growth



UNECE



Food and Agriculture Organization  
of the United Nations

Source: Bill Moore, Moore and Associates, 2016.

20

Source: [https://www.unece.org/fileadmin/DAM/timber/meetings/20171009/Presentations/Item\\_2\\_j](https://www.unece.org/fileadmin/DAM/timber/meetings/20171009/Presentations/Item_2_j)

.4 European Market Overview - Nilsson.pdf

# Circular wood construction-*How to boost the sustainability trend?*

(Some FORBIO outcomes)



2020

- High quality forest management → high quality wood
- Evidences of safety and health benefits → Info to policy makers, consumers

2025

- Global policies: Strict taxation on fossils, GHG emission-based price
- Education in wood construction renewed and branded flexible, attractive

2035

- Optimisation in sawing techniques: Cross-sectoral cooperation opens more funding possibilities
- Carbon footprint added in the construction regulation, decommission of wood construction restrictions
- Ecolabels and cascading labels, city planning boosts the public wood construction

2040

- New business models and markets for waste wood (circular local&global economy)
- Innovation funding has enabled new recycling techniques and systems

2050

- Responsible construction and consumption is a megatrend among the consumers and the companies



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**Thank you!**

# European Forum on Urban Forestry

## URBAN FORESTS FULL OF ENERGY

BOOK OF ABSTRACTS

Cologne 2019  
May 22-24



- European Forum on Urban Forestry - [www.efuf.org](http://www.efuf.org)
- Yearly meeting place for practitioners, decision-makers and researchers on urban trees, urban forestry and urban greening
- Follow this year's forum on Twitter (@EFUrbanForestry), Facebook (@EFUrbanForestry) and at <http://2019.efuf.org>.

### MoU between EFI and EFUF





# CLEARING HOUSE (CH)

- Collaborative **L**earning in **R**esearch, **I**nformation-sharing and **G**overnance on **H**ow Urban forests as nature-based solutions support **S**ino-**E**uropean urban futures

- **Objectives**

We will **analyse & develop the potential of UFBS for enhancing the resilience of cities** facing major ecological, socio-economic, and human wellbeing challenges:

- Analyse current frameworks, **public perceptions and demand** towards UFBS.
- Evaluate **impacts on urban societies**, including aspects of socio-environmental justice and gender, cost-effectiveness and replicability for diverse contexts.
- Facilitate a **collaborative learning process** on UFBS, connecting practitioners, businesses, policymakers and scientists.
- Develop **decision support tools** and **guidelines** for cost-effectively expanding, governing and managing UFBS.
- Increase **awareness** on the benefits of UFBS and **disseminate** it among governments, businesses, civil society and academia.

# CLEARING HOUSE Case studies in EU and CN

EUROPE	CHINA
 Brussels	Beijing   
  Leipzig-Halle	Guangzhou+Shenzhen  
 Krakow	Hangzhou   
  Gelsenkirchen	Huaibei  
  Barcelona	Xiamen  



Inner-city afforestation



Urban-rural linkages



Air purification



Heat wave mitigation



Outdoor recreation



River catchment restoration



Increasing attractiveness & aesthetics



Restoring former industrial sites



Urban regeneration



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*Connecting  
knowledge  
to action*