

Analysis of Resource Management: Wood waste trends in the EU and Croatia as a basis for circular business models development

**Andreja Pirc Barčić, Domagoj Kovačević, Jelena Crnojević, Ivana Perić,
Kristina Klarić, Darko Motik, Karla Vukman, Denis Jelačić**

Department for Production Organization
University of Zagreb Faculty of Forestry and Wood Technology



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WHY THIS MATTERS

Resource pressure is shifting industry toward circular use

Increasing pressure on natural resources, climate change and environmental concerns have intensified the need to use materials more efficiently. Circular economy strategies retain resource value through reuse, recycling and recovery.

THE LINEAR MODEL LOSES MATERIAL VALUE

TAKE → MAKE → DISPOSE



THE ROLE OF THE WOOD SECTOR

Wood products retain both material value and stored carbon

- Wood products store carbon throughout their life cycle and can replace more carbon-intensive materials such as concrete and steel.
- Their contribution depends on extending material life and using primary and secondary raw materials efficiently.



Renewable resource • carbon storage • material substitution



FROM WASTE STREAM TO RESOURCE

Wood waste becomes valuable when it returns to production

- Residues from processing, manufacturing, construction, and end-of-life products can reduce dependence on virgin raw materials when they are reintroduced into production systems.



Long-life applications → reuse and recycling → energy recovery

AIM AND ANALYTICAL APPROACH

The study links long-term trends with their sectoral sources

Aim

To identify and compare wood waste trends in the **EU-27 and Croatia** and assess their relevance for **circular resource management and circular business models**.

Data & method

Secondary statistical data from **Eurostat**, EU-27 and Croatia, **2004–2022**. Descriptive statistics: annual quantities, percentage changes and NACE Rev. 2 sectoral shares.

1 **EU-27 TREND**

Annual wood waste quantities and percentage changes

2 **CROATIA TREND**

Annual wood waste quantities and percentage changes

3 **SECTOR SOURCES 2004–2022**
averages + C16 focus (2022)

NACE Rev. 2 sectoral distribution and wood-products industry

Descriptive analytical approach · No econometric or inferential modelling



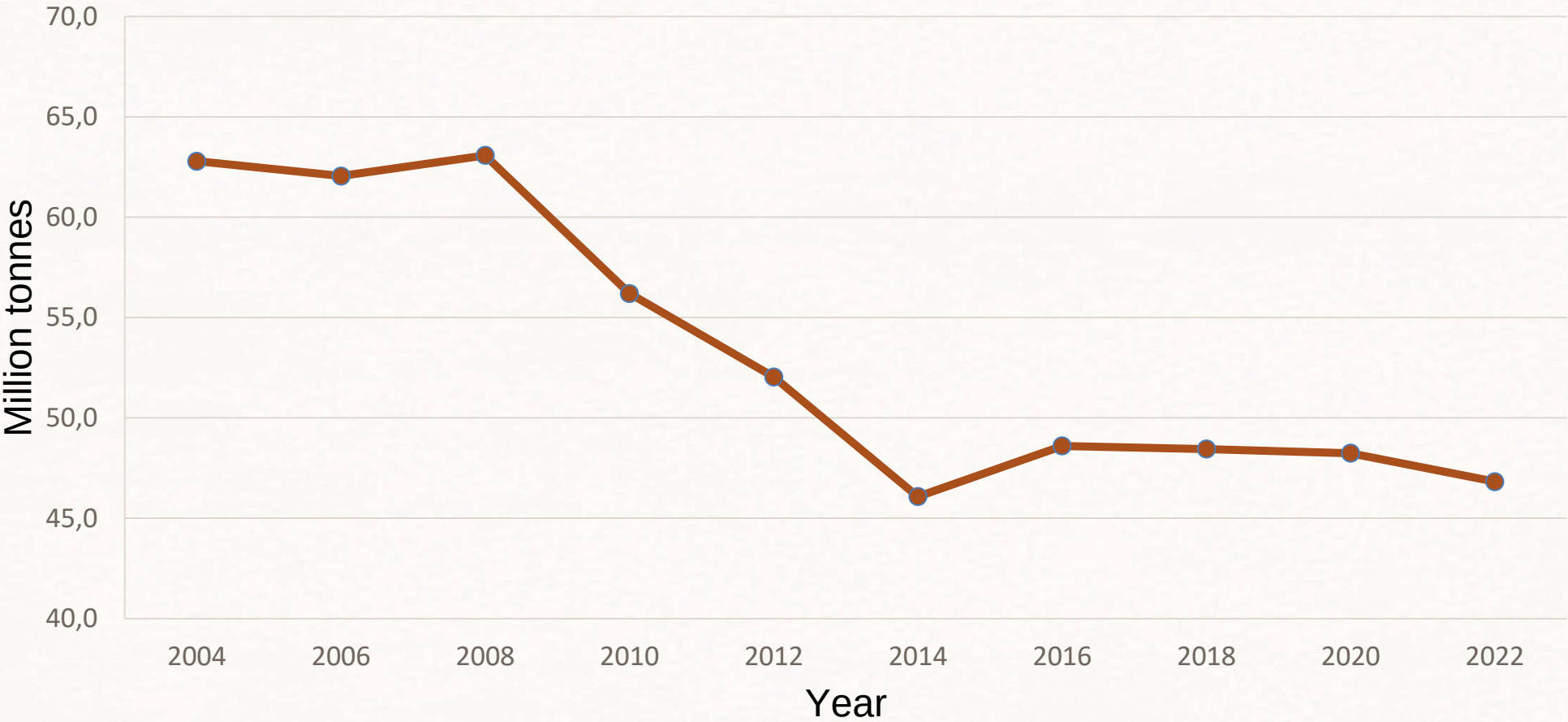
RESULTS • LONG-TERM TREND

EU wood waste fell by about one quarter

1 EU-27 TREND

-25.4%

62.79 → 46.82 Mt
2004-2022



Source: Eurostat (2025), env_wasgen; authors' calculations.

Wood waste decreased from 62.79 million tonnes in 2004 to 46.82 million tonnes in 2022. The sharpest decline occurred between 2008 and 2014, after which annual generation stabilized below 50 million tonnes.

2

CROATIA TREND

3

SECTOR SOURCES

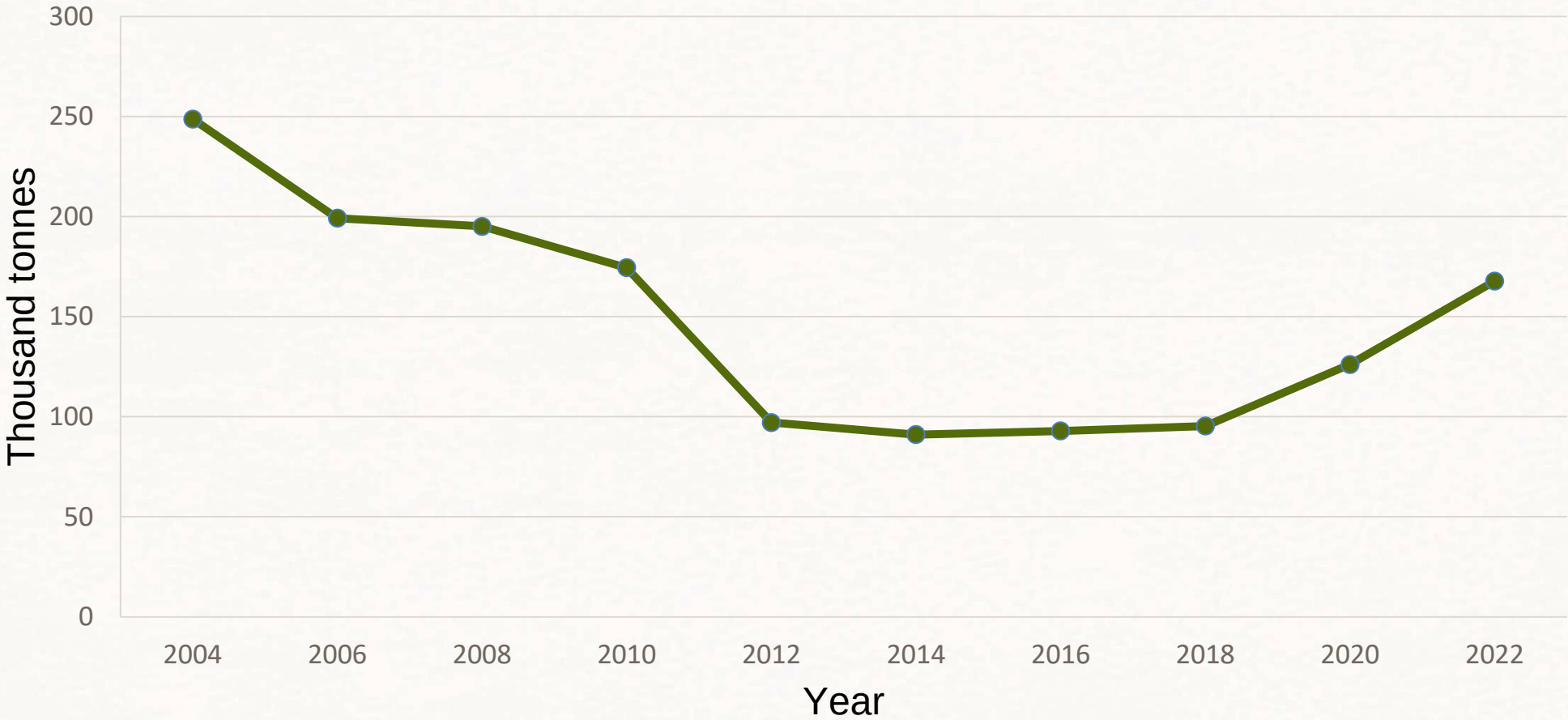
RESULTS • LONG-TERM TREND

Croatia followed the decline, but with a stronger rebound

2 CROATIA TREND

-32.5%
+84.2% since 2014

248.7 → 167.8 kt
2004-2022



Source: Eurostat (2025), env_wasgen; authors' calculations.

Croatia declined from 248.7 thousand tonnes in 2004 to about 91 thousand tonnes in 2014, followed by an 84.2% rebound by 2022. The Croatian pattern is more volatile than the EU trend.

1 EU-27 TREND

3 SECTOR SOURCES

RESULTS • SECTORAL DISTRIBUTION

Manufacturing is the largest source of wood waste in both regions

3 SECTOR SOURCES

CROATIA



EU-27



Manufacturing Waste management Construction Other

Sectoral shares based on average annual quantities, 2004–2022

Source: Eurostat (2025), env_wasgen; authors' calculations.

Manufacturing generated 47.26% of EU wood waste and 49.36% of Croatian wood waste. Croatia is more concentrated in waste-management activities, while construction contributes far less than in the EU.

1 EU-27 TREND
2 CROATIA TREND

RESULTS • WOOD PRODUCTS INDUSTRY

Within manufacturing, C16 is dominant, especially in Croatia

3
SECTOR SOURCES

EU-27



58.4%

10.21 million tonnes

CROATIA



83.7%

58,639 tonnes

1 EU-27 TREND
2 CROATIA TREND

Source: Eurostat (2025), env_wasgen; authors' calculations.

In 2022, C16 generated 58.4% of manufacturing wood waste in the EU and 83.7% in Croatia. The substantially higher C16 share in Croatia indicates a stronger concentration of **manufacturing-related wood waste** in the wood-processing industry.

FROM EVIDENCE TO BUSINESS MODELS

Wood residues can become valuable secondary resources

The cascading-use principle prioritizes material applications before energy recovery, so that wood remains in productive use for as long as possible.

58.4% EU**83.7% Croatia****1 RECYCLING**

Return residues into material use.

2 CASCADING USE

Retain material value through successive uses.

3 RESOURCE-EFFICIENT PRODUCTION

Use secondary wood resources more efficiently

DISCUSSION AND CONCLUSION

Wood waste is a strategic secondary raw material

- Wood waste generation declined overall (2004–2022).
- Manufacturing was the largest source in both regions.
- C16 dominated manufacturing wood waste in 2022.

58.4% EU

For Croatia, the 83.7% share of C16 identifies wood-processing companies as the main intervention point for circular resource management.

83.7% Croatia

MONITOR FLOWS

REINTEGRATE RESIDUES

RETAIN MATERIAL VALUE



*Thank you for your
attention!*

Assoc. Prof. dr. sc. Ivana Perić, PhD
Email: iperic@sumfak.unizg.hr



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