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**CRISIS MANAGEMENT AND SAFETY FORESIGHT IN FOREST-BASED SECTOR AND
SMES OPERATING IN THE GLOBAL ENVIRONMENT**

THE ROLE OF THE FORESTRY AND WOOD PROCESSING COSTS IN THE WOOD VALUE CHAIN



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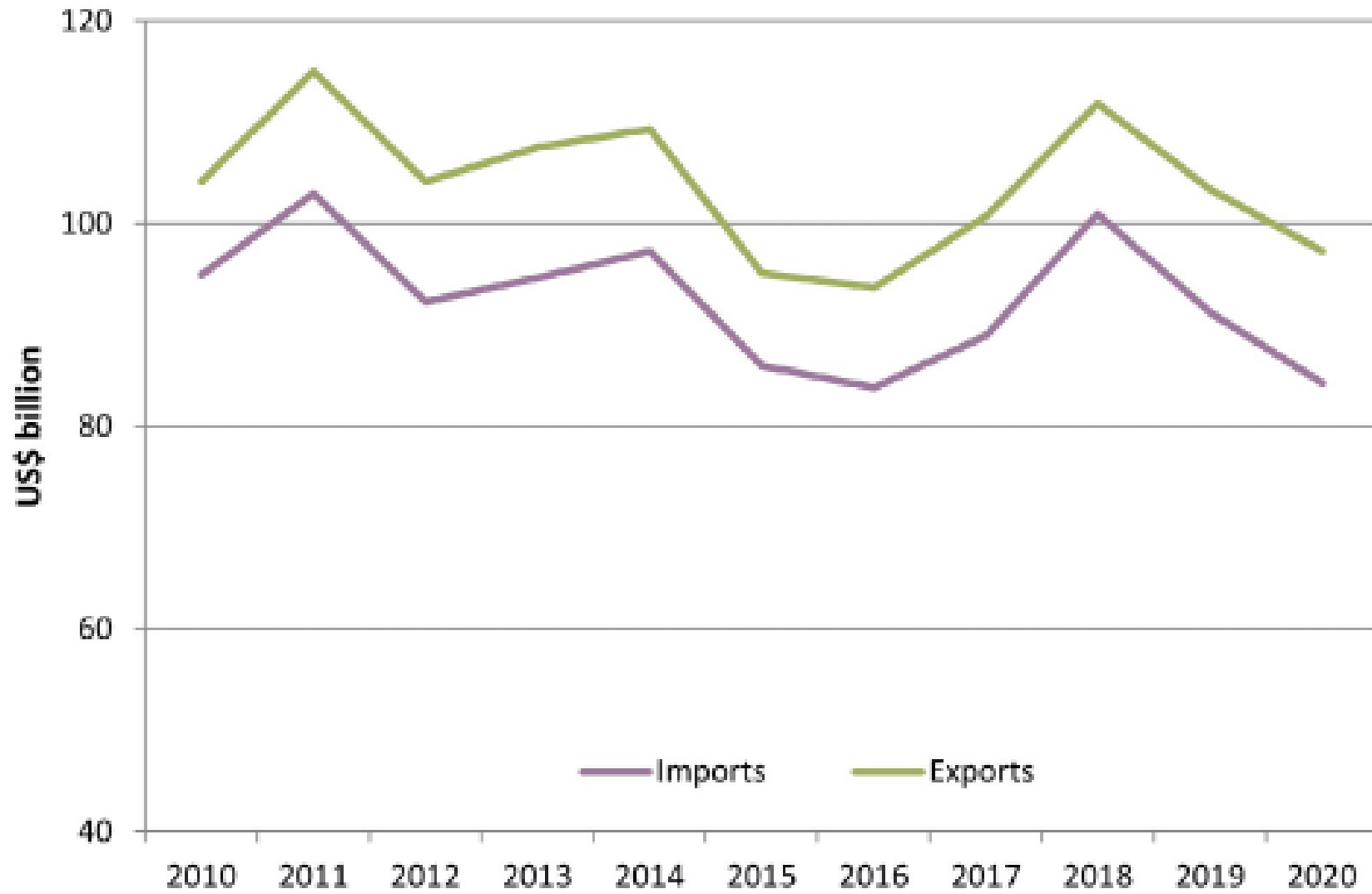
1. Introduction

- The most effective cost management is reflected through business process management.
- In forestry, labor costs have a significant share in the cost of the product.
- Products have a significant impact on competitiveness, because of that it is important to calculate the price cost correctly.

Cost management

- important in wood production
- Value chain refers to the way a business process is viewed as a chain of activities that converts inputs into outputs as value to the customer. (Buble, M., 2005).
- The contribution margin represents the ability of an enterprise to earn above the sum of variable costs

Figure 8. E.U.-28 trade of wood and paper products, 2010-2020.



Note: E.U.-28 including United Kingdom for all years.

Source: FAO, 2021.

Figure 11. Impact of COVID-19 on the exports from the Western Balkans, 2020.



Source: Glavonic, B. COVID-19 impacts on the forest sector in countries in the Western Balkans. Geneva Timber and Forest Discussion Paper 89, UNECE/FAO, 2021.

2. Material and method

- UŠP Delnice located in the Primorje-Gorski Kotar County.
- The forests are managed in compliance with environmental, economic and social standards, FSC certificate.
- The most common tree species are conifers and beech.
- Fir makes up about 88% of the coniferous wood supply, and beech about 85% of the deciduous wood supply.

Research polygon A

- divided into six departments (work units): preparation of raw materials, sawmill, planning mill, finishing, finals and pellet mills,
- 86 workers.
- In accounting, two work units: Sawmill and Pellet Plant.
- Produces sawn fir and beech timber, fir elements for pallets, pallets, elements for parquets and boards, various wall coverings and floors (paneling, floor boards and rustic floor) and pellets.

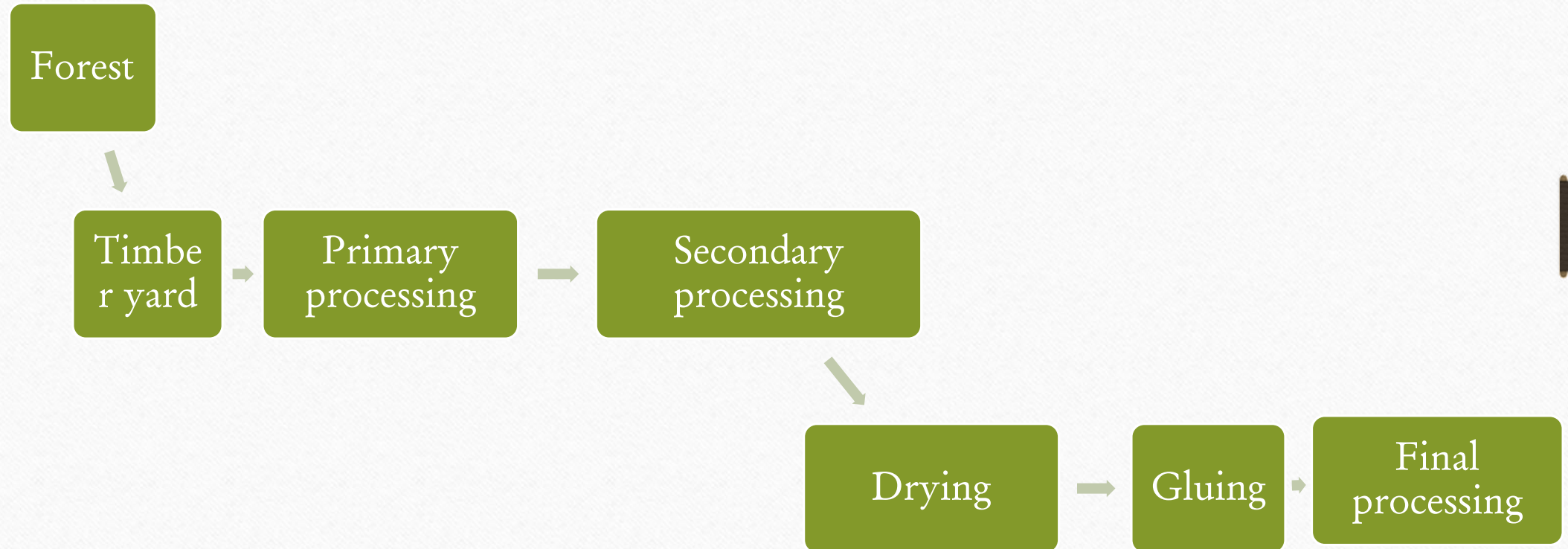
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- In the production process, 90% of fir and 10% of beech raw materials are processed.
 - The research site has FSC, ISO 9001 and ISO 18001 certificates



3. Method

- the contribution margin per unit of product will be calculated, on the example of a wood processing plant that produces sawn timber and pellets as the final product.
- Total revenue
- The cost price

ADDED VALUE CHAIN





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Forest tax



Transport costs

Wood processing

Final products



Selling costs, marketing mix



4. Results

		Costs allocated per working units			
Cost types	Costs in EUR	Sawmill costs	Share in total costs	Pellets production costs	Share in total costs
raw material	2 284 820,44	1 878 348,19	39%	406 472,25	9%
other materials	319 172,96	189 120,5	4%	130 052,46	3%
el. energy	316 511,23	129 920,23	3%	186 591	4%
services	641 085,25	496 060,92	10%	145 024,33	3%
depreciation	155 982,19	74 935,13	2%	81 047,06	2%
intangible costs	140 024,62	107 864,24	2%	32 160,38	1%
salaries	881 824,14	668 335,87	14%	213 488,27	4%
Total costs in production	4 739 420,82	3 544 585,08	74.15%	1 194 835,73	25%
other business expenses	41 085,03				
Total Costs	4 780 505,85				

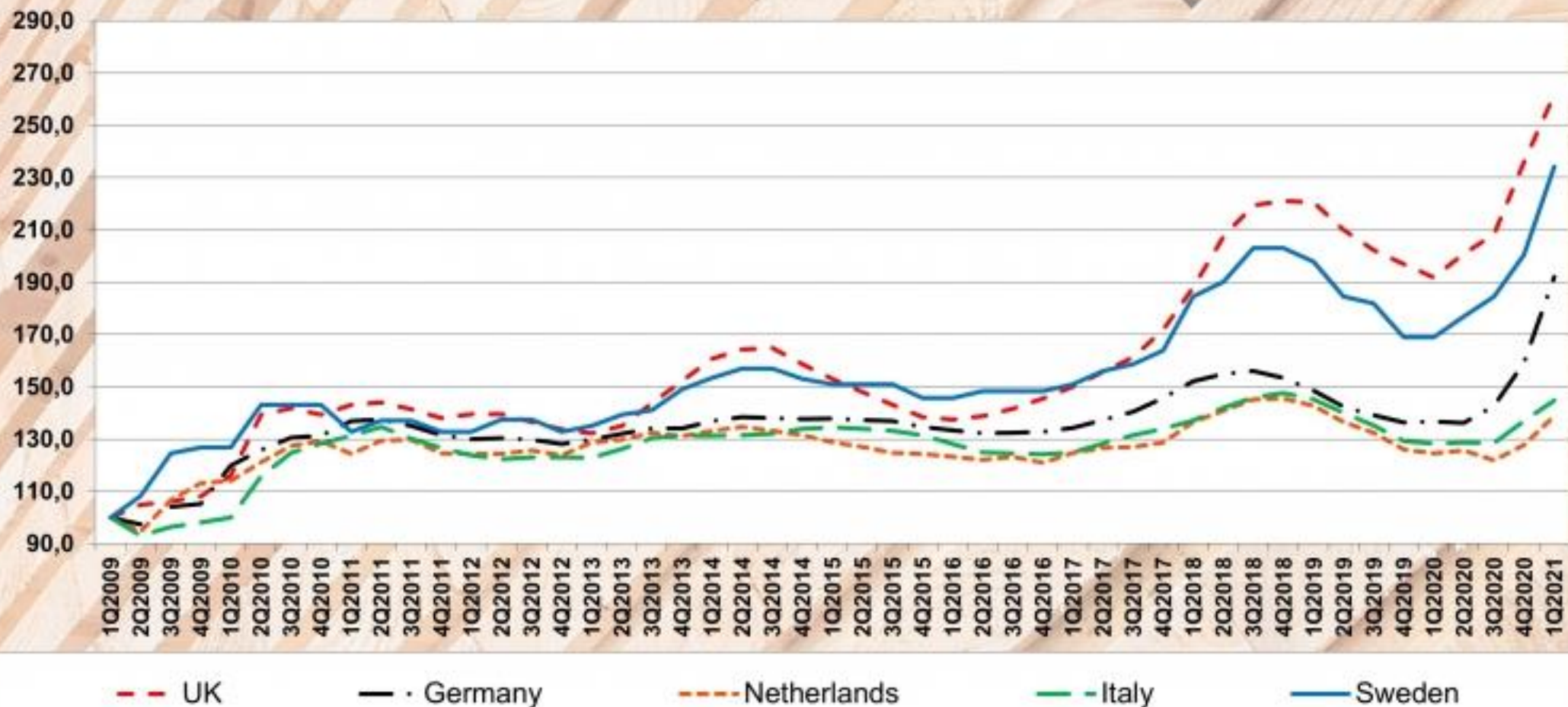
- Total income in sawmill production = 3 097 720,21 EUR, and 1 111 875,17 EUR for pellets production.
- Total amount of processed raw materials in the sawmill = 19,189 m³ / year, and the total production costs are 4,780,505.85 EUR.
- The total amount of pellets produced = 7,329.84 t / year.
- For variable costs: raw material costs, employee salaries, and other raw material costs were taken into account.
- The average price of assortments in the sawmill = 161,43 EUR/m³
- The average price of pellet production = 151,69 EUR/ tons

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- The cost price of the product in the sawmill is 184.72 €/m³.
 - The cost price in pellets production is 163 EUR/tons.
 - The contribution margin in pellet production is total income minus variable costs: 49,37 EUR/tons
 - The contribution margin in sawmill production is: 18,86 EUR/m³

5. Conclusion

- The paper analyzes the types of costs in the production of fir and beech products
- significant share of costs in the sawmill depend on raw materials (39%) and wages of workers (14%).
- The calculation of the contribution margin indicated higher added value in the production of pellets, ie products with a higher degree of processing.
- Currently, raw material prices are rising, and demand for renewable energy sources such as pellets has increased even more significantly.

FEFPEB Pallet timber price indices Q1 2021 (Q1 2009 = 100)



Pallet Timber Price Indices

These are not the absolute prices per m³, but from the national timber price indices of the UK, Germany, Italy, Sweden and The Netherlands, comparable pallet wood sizes are taken and the same base year determined (2009) to make them comparable. The FEFPEB pallet timber price index indicates a trend in the development of the wood prices for pallets in Europe.

Company strategy

- Smart specialization - S3: investing in research and development
- Selection of strategic goals for each sector in a changed environment
- Assistance to small and medium-sized enterprises, especially in rural areas – KET (nanotechnology, biotechnology..)
- High value added product development - DIVERSIFICATION
- Development and acceptance of new technologies and trends in the wood industry (IOT, VR, AR ..)
- developing markets and competitiveness in biomass-based sectors

Thank you for your attention!

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