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D8.2: New wood-based products (EFI-STT)

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SUMMARY:
This case study deals with the emerging markets for new forest products. Nine products were reviewed from five categories focusing on feedstock requirements, sustainability aspects, and compatibility with existing value chains. Several innovative wood-based products are already produced at an industrial scale in the EU, and it can be expected their market share will increase in the coming years. Other up-and-coming products are not yet produced at an industrial scale but are entering mature markets and in many cases, they can fully drop into established value chains. The ease of market introduction of new innovative products relies heavily on the products' ability to take advantage of existing value chains. Products requiring adjustments to production lines or methods are less likely to get into the market without strong external drivers that push for bio-based alternatives. Only a few of the reviewed products are completely new and thus require new value chains. They are generally not replacing fossil-based alternatives but rather creating new, specialized market segments.

RESEARCH QUESTIONS:
What are the main new wood-based products that could be economically produced in the EU from lignocellulosic biomass from forests in the near to medium future? What fossil-based chemicals or materials could these products substitute? What are the requirements for biomass quality and quantity? To which extent are these products compatible with existing value chains?

CASE:
Emerging markets for wood-based products in the EU

BIO-BASED PATHWAYS:
Wood-based construction materials, textiles, chemicals, bioplastics, and composites

DEVELOPMENT STAGES:
Drive to maturity; Mature

DATA SOURCES:
Literature; Websites; Questionnaire; Interviews

DATA ANALYSIS:
Qualitative content analysis

GEOGRAPHICAL SCOPE:
All EU member states

TIME REFERENCE:
Near to medium future (5-10 years)

AUDIENCE:
Policy-makers; Statistical officers

KEY RESULTS:
- Main innovative new wood-based products and their main uses (in parentheses) include cross laminated timber (building elements), wood foam (insulation), lignin-based adhesives (glues for panels), glycols (bioplastics and anti-freeze liquids), bioplastics from ethylene and from tall oil (packaging), wood-based composites (objects and furniture), staple fibres using lyocell and the ionic liquid technologies (textiles).
- Their supply is not a limiting factor considering that most of them can use virgin biomass as well as wood residues and/or by-products from industrial side streams as feedstock.
- Obstacles for these products are technical difficulties, the upscaling to industrial scale, and the customer preference for traditional products.
- EU policies, less bureaucracy, support for pilot-scale to full-scale production, and subsidies for bio-based alternatives (as well as bans on fossil-based alternatives) could alleviate these difficulties.

CONTEXT:
- Increasing demand for renewable and sustainable alternatives to fossil-based feedstock.
- Wood has a significant advantage as bio-based feedstock over agricultural crops considering that it can be grown on soils that are unsuitable for food and feed production.
- New wood-based products development occurs mostly in countries with a traditionally strong forest industry.
- The support systems and legislation, both at national and EU-level, affect new wood-based products.
- Other factors that could potentially have an influence are access to suitable testing sites, educated staff, and customer demand.

LIMITATIONS:
- The wide variety among products makes it difficult to group them as a whole unit for analysis.
- Grouping by product category is not a feasible approach for quantitative analysis because the sample size is too small given the rather immature market for most of these products.

GOOD PRACTICES:
- Building up a network of contacts within the field of interest may help keep stakeholders engaged during the development of the study.
- If a personal connection is not available, try to establish a familiarity with the stakeholders approaching them in their native language.
- If physical meetings are not possible, make sure that there are several options to connect as some organisations do not allow specific online platforms.
- Do not heavily rely on technical equipment or on the ability to record interviews. Telephone and pen and paper are still very reliable tools.
- Conducting interviews with two interviewers, as one person can drive the discussion while the other can focus on documentation.

FEEDBACK and RECOMENDATIONS to other WPs

WP2-3 Data collection:
This case study supported the identification of bio-based sectors that require extending the Statistical Classification of Economic Activities in the European Community (NACE) and the National Accounting Systems (NAS). The background information on the wood-based products reviewed in this case study report can be used to propose extending PRODCOM (CPA) codes and Combined Nomenclature (CN) codes for specific bio-based products.

WP4-5 Model Toolbox:
The outcomes from this case study will be used to improve and extend the economic models with information on the production (technologies, efficiencies, etc.) of cross laminated timber, ethylene from wood sugars and textile fibers.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 773297.