

REFFIBRE - Tools for Resource-Efficient use of recycled FIBRE materials

Ulla Forsström, VTT

Workshop on 6th of October 2015,
Valencia, Spain

Welcome!

- REFFIBRE project team welcomes You to hear the first results



Program

- Actions for paper industry sustainability in Spain, David Barrio, ASPAPEL
- Overview of Reffibre project
- Fibre flows in Europe and in five different European regions, how the future of European fibre will look like?

Break at 11.00-11.15

- Whole value chain based resource efficiency indicators: their use and development in Reffibre-project
- Side stream valorisation and novel products in papermaking from recovered paper

Break at 12.20-12.35

- Economic opportunities calculation and preliminary assessment of one test case
- Expected benefits of innovative tools implementation for a paper company

Discussion at 13.30, conclusions and lunch

REFFIBRE - Tools for Resource-Efficient use of recycled FIBRE materials - Overview

Ulla Forsström, VTT

Workshop on 6th of October 2015,
Valencia, Spain

Main facts

- European Community's Seventh Framework Programme (FP7-NMP 2013.3.0-1SMALL) under Grant agreement no: 604187 REFFIBRE (www.reffibre.eu).
- Budget 3 973 k€, funding from EC 2 786 k€.
- Duration of the project: 1.11.2013-31.10.2016.

- NMP.2013.3.0-1 CALL = Tools for Monitoring and Assessing Resource-efficiency in the Value Chain of Process Industries

19.10.2015

5

Main aims

- To develop tools and knowledge, which are needed for the “eco-design” of the resource efficient paper and packaging material production chains,
 - as main raw material resources “paper for recycling” and waste fractions from the processing and
 - with bio-based products such as paper, board and novel by-products (multiproduct mill concept).
- To validate the modeling results/tools by several demonstrations

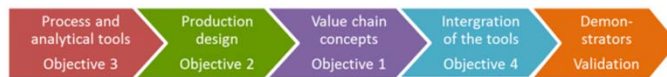


19.10.2015

6

Main Objectives

1. Develop methodologies and models for environmental and economic assessments (Life Cycle Assessment & techno-economic analysis of the value chains).
2. Develop methodologies and tools for eco-designed paper production (paper production design models).
3. Develop process modelling tools and innovative analytical tools to control production in multi-product mill concept (physical process models, analytical tools and novel by-products).
4. Integrate and validate tools to the practical guide for decision makers and control systems for multi-production units (multi-product mill concept cases).



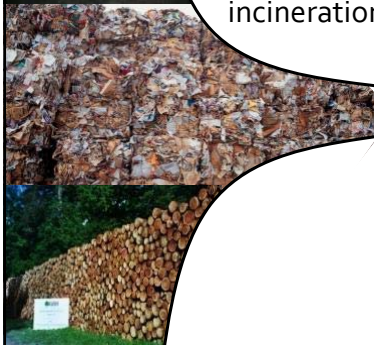
19.10.2015

7

Situation today - Single product mills

Characteristics:

- Product maximization and waste minimization
- Waste is expensive (Landfill or incineration)



Landfilling : technology used mainly in past- resource recovery 0.0

Waste-to-energy: resource recovery 1.0

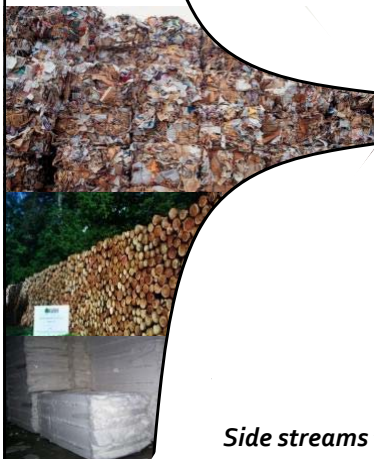
IMPACT: The results of this project will help to

create the conditions that will enable complete value chains of paper and board industry, converting industry and end users, to

- decrease their overall waste production and improve resource efficiency,
 - Better runnability, zero waste – waste converted to novel products
- increase competitiveness and
 - Multiproduct mill concept, novel products
- approve with a standardised way that the final impact on the environment is reduced.
 - Methodologies for pulp and paper applications will be developed, e.g. how to allocate the burdens between different life cycles

Future - Multiproduct mills

Raw materials



Characteristics:

- Side streams are turned into products
- Formation of new value chains



Side streams to products: resource recovery 2.0

Reduction of overall waste production and improvement of resource efficiency

- Improved quality of the secondary raw material (paper for recycling) achieved by dry-sorting or fractionation / separation in wet stage contributes to final product quality and improves resource efficiency.
- REFFIBRE will demonstrate the **benefits of adoption of separation/fractionation of material resources for efficient application and novel applications of by-streams.**
- Furthermore, these novel cases from by-streams will greatly reduce the amount of waste produced.

Competitiveness of greener process industries

- The European pulp and paper industry must become more knowledge based in all aspects of its operations.
 - be able to implement, faster than others, new radical process technologies.
- **The results generated and demonstrated will be exploited to other European paper and packaging companies.**
- This will help safeguard the jobs of over 220 000 employees presently working directly in 65 companies in this sector.

Standardisation of indicators for environmental performance

- The value chain studies will be carried out including impact assessment studies to evaluate environmental and economic impacts as well as the suitability of the innovative technologies for application within the EU.
 - **Allocation of the burdens between different life cycles** (background processes, co-product allocation, number or reuse cycles for fibre recycling, etc.) is one of the debated issues in LCA standardisation.
 - **A methodology for pulp and paper applications will be developed and positions in response to draft standards and technical guidance will be formulated.**

Acknowledgement

The research leading to these results has received funding from the European Community's Seventh Framework Programme under grant agreement n° 604187.

Thank you for your attention!