

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

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Framework Programme
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Duration of the project: 1.11.2013-31.10.2016
<http://reffibre.eu/>**

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



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Main Objectives

1. Develop methodologies and models for environmental and economic assessments
2. Develop methodologies and tools for eco-designed paper products/production
3. Develop process modelling tools and innovative analytical tools to control production in multi-product mill concept
4. Integrate and validate tools to the practical guide for decision makers and control systems for multi-production units



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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
 - 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



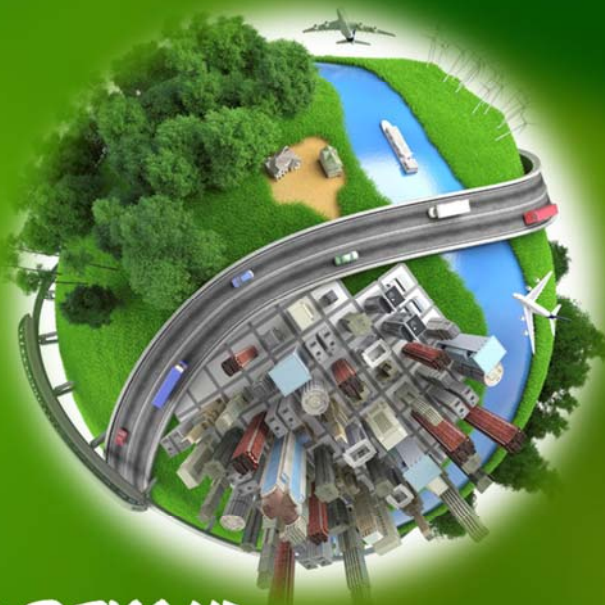
Our finite resources drive a global change

Finite raw material resources

Limited energy availability

Increasing rate of consumption

Limited land resources for
landfilling and zero waste policy



IT'S TIME TO LOOK BEYOND.

Situation today - Single product mills

Raw materials

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

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

Bring your business to the next level



- ✓ Design out waste
- ✓ Optimise value chains instead of processes
- ✓ Switch to energy from waste fractions
- ✓ Keep the materials at their highest value at all times
- ✓ Implement circular material flows and cascading business models



Program

- **Circular economy in paper/board value chains**
 - Prediction of Paper for Recycling quality on a regional level by using fibre flow models, Lydia Tempel, PTS
 - Environmental indicators for paper/board value chains based on paper for recycling – Challenges of allocation methods, Catharina Hohenthal, VTT
- **Challenges due to increased recycling**
 - How does increased filler amount affect properties of graphical and packaging papers? – Modelling studies, Gert Meinel, PTS
 - Main properties of recycled fibres reducing strength of paper – How to measure the strength potential? Elias Retulainen, VTT

Program

- **Towards production with zero waste: The Multiple Output paper mill concept**
 - How to estimate the effect of increasing rejects in stock preparation for side stream applications – Process model approach, Samuel Schabel, TU Darmstadt
 - Valorisation of side streams and novel products from papermills using paper for recycling, Spyros Bousios, BUMAGA
 - Potential use of side streams in composites, Lisa Wikström, VTT
 - Concluding remarks

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