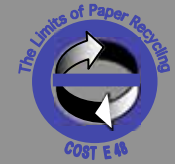




Developing Scenarios on the Future of Paper Recycling within E48

Harald Grossmann

Bilbao, May 2007



The background

According to the MoU of COST E48:

The main objective of the Action is

to develop scenarios which describe the future use of recovered paper within the European paper industry in order

- **to provide a better background for focussed research activities in the field**

as well as

- **to facilitate investment decisions or future company strategies concerning raw material markets.**



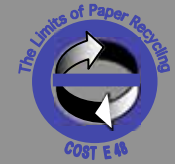
Objectives and Benefits of E48 (I)

The main objective of the Action is to collect facts, data and experiences to develop on the basis of these **scenarios** which are able to – in a meaningful way – **predict the future ecologically and economically optimised utilisation of recovered paper within the European paper industry.**

In order to do this it is important to identify ecological and economical limits beyond which paper recycling would no longer be a reasonable option. Once these limits are identified the paper industry will be in the position to undertake targeted approaches aiming at extending these limits – or to make in-time decisions to prepare for a gradual re-substitution of recycled fibres

The availability of such well and comprehensively investigated scenarios are an important prerequisite for the paper industry to undertake means which allow to maintain an as high as possible level of sustainability and competitiveness in world markets.

Thus E48 will contribute to paving the way for targeted approaches to safeguard the raw material base for the European paper industry and, at the same time help the industry on its way towards full sustainability.



Objectives and Benefits of E48 (II)

- The benefits of the outcome of this action shall be a sound basis:
 - for targeted research activities on recovered paper treatment technologies
 - providing arguments necessary for the discussion with governmental organisations and the government in order to avoid further obstacles reducing the attractiveness of recycling used paper products
 - for developing guidelines for the design of recycle-friendly paper product
 - For developing guidelines for more effective, tailor-made collection strategies for used paper products
 - for a background for investment decisions taking into account likely changes in raw material markets...



Objectives and Benefits of E48 (III)

In order to achieve these benefits, it will be necessary to collect data and gain a better understanding of the following fields:

- mid-term development of the European paper industry's raw material markets
- expected improvements in existing process technologies
- pros and cons of established or planned collecting system
- quality of recovered paper resources not yet exploited
- the future composition of recovered paper with respect to potentially detrimental substances
- feasible development in national and European legislation relevant to paper recycling.
- mid-term development of quality standards for all major paper and cardboard grades, including upcoming new qualities



Some basic ideas about the scenarios (I)

Scenarios are not predictions.

In fact, the scenarios to be developed within our COST Action are meant to provide the context in which the challenges of paper recycling in Europe can be discussed and conclusions can be drawn in order to avoid to an as large as possible extent any negative impacts on our industry.

The scenarios shall therefore not only highlight important trends, possible trend-breaks, critical challenges and opportunities but shall also suggest means and ways how to overcome potential obstacles.

And – in all cases – the scenario building process which we have to set up in the next few months shall pay particular attention to the goals and objectives of E48.



Some basic ideas about the scenarios (II)

General forms of scenarios.

There are different ways ohow to set up scenarios but in view of what we already know today and what me might learn in the the frame of our Action we should base our scenario efforts on both

Qualitative (narrative) scenarios, which describe relationships and trends for which few or no numerical data are available and which therefore incorporate human motivations, values and behaviour

and

Quantitative, which are based on numerical data in form of tables and figures and might provide greater precision and concistency of past, present or future trends.



General conditions for setting up the scenarios

The future of paper recycling is nothing which will develop entirely isolated from any other developments relevant to European policy, legislation, technological trends and the development of the European(?) society(ies?) but which will largely be influenced from all these areas.

It would therefore not be wise to try to develop such general scenarios on our own as there are quite a few very well developed scenarios reported in literature.

After a thorough analysis of such publications I would suggest to base the recycling scenarios on what has been developed as

The future of Manufacturing in Europe 2015-2020

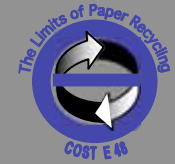
– The challenge for sustainability

by the Institute for Prospective Technological Studies (IPTS), a joint research centre of the European Commission

The frame scenarios

The ipts-study addresses in the first place the question in which areas related to manufacturing Europe will have to be competitive in order to meet its' citizens needs and the challenge of sustainability within the next two decades. Although – not astonishingly – paper is not among those areas, the study provides very useful frame scenarios.

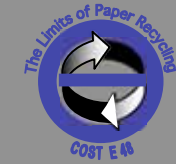




The Focus Europe Scenario

In the Focus Europe scenario,

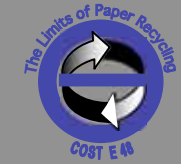
- regulation provides incentives for industry to invest in sustainable manufacturing solutions
- Innovation is geared towards resource efficiency and clean production.
- Well designed and coordinated policies drive technology development towards lower carbon dioxide-intensity.
- Strong policy support for large scale European research leads to more top-down innovations. Developments along existing application trajectories are favoured.
- Opportunities offered by new technology cannot be fully exploited, since short-term cost-effectiveness does not favour radical innovation for sustainability and consumer attitudes do not support them either.
- The priority given to strategically important sustainable technology development strengthens Europe's competitive advantage in advanced manufacturing technologies.
- Industry works hard to attract and keep personnel experienced in using advanced manufacturing tools, managing virtual factories, using simulation methods, etc.



The Global Economy Scenario

In the Global Economy scenario,

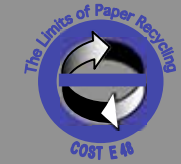
- Industry structure is highly specialised and diverse.
- Product liability compensates for safety and environmental standards.
- Court litigation becomes a source of innovation – and a reason for the lack of it.
- Voluntary industrial agreements and self-compliance of industry on basic standards are the main policy instruments to stimulate sustainability.
- The adoption of nanotechnology is rather slow because there are no incentives to establish international standards.
- Short-term industrial research activities are favoured.
- Energy intensity of production remains relatively high, though energy and resource efficiency improve since manufacturers aim for cost reductions.
- There is little prospect for the adoption of radically new approaches.
- Problems in the enforcement of recycling practices inhibit the adoption of recycling.



The Local Standard Scenario

In the Local Standard scenario,

- implies both the centralisation and the centralisation of manufacturing operations depending on sectors, processes and products.
- Regional demand structures require new solutions for flexible specialisation in manufacturing.
- Industry adopts new design strategies to focus on modular, simpler, and robust components.
- Intelligent logistics plays a key role.
- In some regions consumer choice drives manufacturers towards flexible specialisation and cleaner, more socially responsible production.
- At regional level specialised advanced technology clusters emerge, though overall public acceptance of new technology which might cause negative second order effects remains rather low.
- Since there is little trans-regional co-ordination of policies broader transitions such as the hydrogen economy are unlikely to materialise in this scenario.



The Sustainable Times Scenario

In the Sustainable Times scenario,

- the notion of competitiveness is broadened and takes into account environmental and social aspects of production and consumption.
- Industry seeks major technological breakthroughs in order to de-couple material and energy use from production (e.g. bio-materials, renewable resources).
- Renewable energy and bioresources help reduce greenhouse gas emissions.
- The industry strives for the optimisation of product life-cycles, introducing full lifetime control and management for their products.
- The manufacturing industry strongly pursues service-orientation in product design, and the product becomes less important within the value chain.
- a highly qualified labour force with new skills to operate and manage sustainable production is required.
- Rebound effects due to lack of public acceptance of new technology (e.g. ICT applications or nanotechnology) are unlikely since governments and industry pay attention to the environmental and social implications of new technology when designing and implementing their strategies.



E48 specific aspects of these scenarios

Environmental awareness

Collection strategies

Sorting technologies

Stock preparation techniques

Waste issues

Energy competition

Converting techniques

Printing techniques

Consumer's behaviour

The role of paper in Communication

Paper consumption trends

Recycling legislation

Composition of RP

RP import/export situation

Importance of sustainability

Structure of the EU paper production

Waste legislation

Product liability policy

The speed of harmonization within the EU

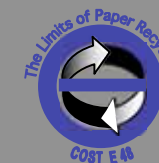
Acquisition & merging in the p&p industry

Association's policies

Consumer education

Transport cost development

Mill size trends



The work which lies ahead of us:

	Focus Europe	Global Economy	Local Standard	Sustainable Times
Environmental awareness				
Collection strategies				
Sorting technologies				
Stock preparation techniques				
Waste issues				
Energy competition				
Converting techniques				
.....				



How the work could be organised:

The data necessary for establishing these scenarios has - to large extent – to be provided by the WG of E48 as well as by external partners.

The idea is to perform the scenario developments in the frame of a task force „TF Scenarios“ consisting of members of E48 who have the experience and hopefully also the necessary time to deal with this very crucial issue of E48 in a very dedicated way.

The work progress of this task force shall – from now on – be presented and critically discussed in each E48 meeting.



In the Focus Europe scenario, regulation provides incentives for industry to invest in geared towards resource efficiency and clean production.

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