



HUMAN RESOURCES AND MOBILITY (HRM)
ACTIVITY
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**Towards optimized and harmonized strategies
for the recovery and re-utilisation of
paper and board in Europe
“RECOPA-NET”**

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The research Project



Europe undoubtedly has the longest history in paper board recycling – and the most advanced technologies. In fact, without an extensive utilisation of recovered paper as raw material many European countries could no longer compete with paper producing countries in many parts of the world. A number of European countries are today considered as world technology leaders in paper and board recycling. In view of the increasing importance and of the intensified competition in this area this is a very important asset of Europe which should be thoroughly maintained and further developed.

The attractiveness and the value of recovered paper and recycled pulp however are rather complicated functions of:

- the price of recovered paper compared with that of virgin raw materials (wood).
- the cleanness of the recovered paper in terms of the amount of undesirable components.
- the quality in terms of strength properties of the paper products collected
- the state of the art of recovered paper treatment technologies.
- the accepted level of impurities in the finished pulp.
- the accepted level of residues produced during recycling.

The S&T objectives (I)



Against the background of the above mentioned developments the main objective of the research programme envisaged are to pave the way for as efficient as possible strategies for the recovery and the reutilisation of paper and board in Europe in order to safeguard the availability and the quality of this raw material for the European paper industry in a future raw material market which will be governed by a strongly enhanced world-wide competition.

In detail, the project aims at

- evaluating the state of the art of paper & board recycling within Europe
- identifying and assess not yet exploited resources of paper & board
- developing recommendations for the best strategies for paper & board recovery
- making t o
- predicting the development of paper & board recycling within Europe.

The S&T objectives (II)



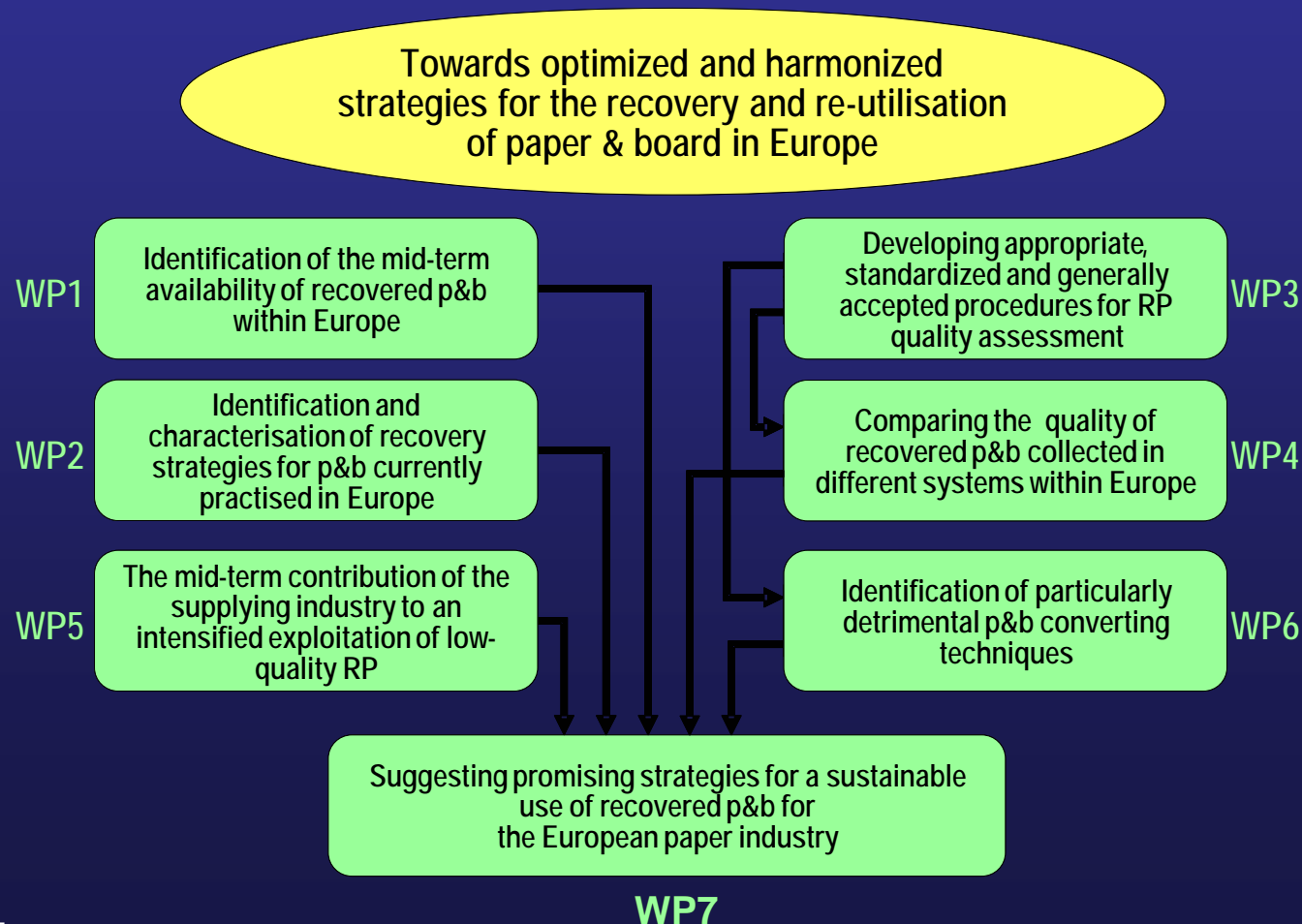
This approach is **highly innovative and original** because for the first time experienced experts of paper recycling from countries with a long tradition in this area are brought together with early stage and experienced scientist from European countries in which paper recycling is still a developing issue and in which powerful organisations able to organise a more economical paper and board management still do not exist. The S&T objectives are truly **integrating a broad variety of disciplines** among which the most important are

- mechanical, chemical and thermal process engineering, as a general issue,
- information technology as far as data acquisition and processing is concerned
- sensor technology for monitoring e.g. recycled paper and recycled pulp quality,
- simulation techniques for the assessment of production chains,
- separation techniques for liquid-solid multiphase flows,
- colloidal and nano-chemistry, particularly interactions between process chemicals and pulp ingredients,
- socio-economic sciences as far as recovery strategies and their acceptance by the society are concerned as well as further developing society's awareness towards environmental compatible technologies.

The methodology of the work within the project (I)



The research objective defined above shall be achieved through a work programme comprising 7 work packages (WP), which are described in what follows.



The main research performers (I)



As it is the most prominent objective of the envisaged project to develop a Europe-wide view of the future of paper recycling the majority of the work described above would be performed in **internationally acknowledged research institutes** and university department which have a substantial and widely acknowledged degree of expertise in the field.

These research partners represent the most advanced and comprehensive knowledge in paper & board recycling not only in Europe but in the whole world. A considerable amount of work would be directed and evaluated by **experienced researchers (ER)** i.e. usually permanent staff from these institutes who would lead groups of ESR from their own and all other participating countries. These major research institutes are listed in the table next page.

The main research performers (II)



CTP

(Centre Technique du Papier)
Grenoble, France

CTP operates the most advanced pilot plant for RP treatment in Europe and organizes (jointly with PTS) a number of well-established advanced training courses and conferences. It has a long-established experience in carrying out research programmes in paper recycling.

PTS

(Papiertechnische Stiftung)
Munich, Germany

PTS has been working in particular in the area of RP de-inking technologies for almost 30 years. PTS offers a wide variety of high quality education and training events (jointly with CTP in some cases) and has been actively involved in research work sponsored by INGEDE.

EFPG

Ecole Francaise de Papeterie et des
industries Graphiques
Grenoble, France

EFPG offers advanced training in the field of pulp and paper science, converting and printing of paper-based products. The EFPG laboratory has a more specific experience in recycled fibre chemistry and is currently developing new processes for de-inking and bleaching of RP.

PMV

Papiererzeugung und Mechanische
Verfahrenstechnik
Darmstadt University of Technology
Darmstadt, Germany

PMV has more than 30 years of activities in graphic paper recycling during which a vast number of research projects were carried out, many of which were financially supported by INGEDE, the international de-inking research organisation.

LPT

Lehrstuhl Papiertechnik Dresden
University of Technology
Dresden, Germany

LPT has comprehensive experience in the assessment of recycled pulp as well as in modelling and simulating production chains in paper manufacturing. It has organised a number of acknowledged training courses in the field.

UCM

Complutense University
Madrid, Spain

Scientists at UCM have been responsible for the successful work within COST Action E1 "Recycling" and since then have conducted a large number of national and international research projects on paper recycling and paper chemistry.



Other research partners

The European perspective of the project and the expected benefit for the European paper industry can only be achieved if a representative number of research organisations across Europe are included – no matter whether they have already been active in the field or not. Such a strategy is the prerequisite for the envisaged knowledge transfer.

In the initial phase of the project the contribution of these partners would be the collection of data and information within their respective countries. Simultaneously the local early-stage researchers (ESR) involved in these activities would participate in the comprehensive training and education programme which forms the second part of the project. The following organisation have confirmed their interest to participate in the network

- Kenniscentrum Papier en Karton (KCPK) (Arie Hooimeijer) – The Netherlands
- Paper Research Institute, (PRI) (Piroska Karolyine-Szabo) – Hungary
- University of Wageningen (WUR) (Henry Van der Valk) – The Netherlands
- PIRA, (Graham Moore) - United Kingdom
- PPI (Vera Rutar) – Slovenia
- Stazione Sperimentale Carta Cartoni e Pasta per Carta (SSCCP) (Giorgio Capretti - Italy
- VUPC as – (Stefan Bohacek) Slovakia
- Institute of Papermaking and Printing (IPiP) (Pawel Wandelt) - Poland

Industrial partners



It goes without saying that an assessment of optimised and harmonised strategies for the recovery and re-utilisation of paper and board in Europe can only be performed in close cooperation with industrial partners. Their contribution would be manifold.

The following partners from the Paper producing industry (PP) as well as suppliers of chemicals (CS) and machinery (PM) have confirmed their readiness and interest to participate in the project:

- Smurfit Worldwide Research Europe (Joel Poustis) (PP) – France
- Holmen Paper AB (Per Engstrand) (PP) - Sweden
- BASF AG (Thomas Wirth) (CS) – Germany
- Voith Paper (Ulrich Begemann) (PM), Germany

The training programme (I)



The training programme is the crucial part of the whole project. It aims at enabling young researchers from all participating organisations to understand the importance and to use appropriate tools and technologies to better organize the collection and utilization of paper and board in their own countries.

The training programme would consist of three parts:

Theoretical training activities

particularly for ESR with no specific background in paper technology.

Practical training

in laboratories and pilot plant facilities with the aim of applying the theoretical knowledge and to become familiar with specific test procedures and pilot plant trials

Training through research

for all ESR depending upon their main interests

The training programme (I)



The training programme is the crucial part of the whole project. It aims at helping young researchers from all participating organisations to understand the importance and to use appropriate tools and technologies to better organise the collection and utilisation of paper and board in their own countries. The training programme would consist of four parts:

Theoretical training activities

On the basis of training courses that already exist in a number of participating organisations (however predominantly in the respective local language), a well-balanced education programme (in the English language) would be developed in co-operation between the leading education and research centres.

Practical training courses

The practical training activities would include targeted courses aimed at imparting the knowledge concerning the methods and techniques by which the quality of recycled paper and pulp can be assessed in lab trials and pilot plant trials respectively. These activities would be concentrated in those participating organisations which have the most advanced equipment at their disposal. The courses would be supplemented by visits to industrial plants including plants from supplying industries (machinery) as well as the participation in application-oriented customer training courses.

Training through research

This part of the education programme would take up most of the time of the ESR involved in the project. As in many cases – prior to becoming involved in the research work – they have to pass the whole or part of the training programme these activities would typically start only in the second year of the projects duration.

The training programme (I)



Theoretical training activities particularly for ESR with no specific background in paper technology.	Basic courses	Duration
	<ul style="list-style-type: none"> • Pulp preparation (virgin pulps) and pulp properties 	1 week
	<ul style="list-style-type: none"> • Paper manufacturing 	2 weeks
	<ul style="list-style-type: none"> • Paper chemistry 	1 week
	<ul style="list-style-type: none"> • Coating, laminating and combining paper and other materials 	3 days
	<ul style="list-style-type: none"> • Water management in paper mills 	2 days
	<ul style="list-style-type: none"> • Paper converting 	3 days
	<ul style="list-style-type: none"> • Modelling and Simulation of fibre processing techniques (two-day course) 	3 days
	<ul style="list-style-type: none"> • Statistical analysis (two-day course) 	2 days
	Specific courses	
	<ul style="list-style-type: none"> • Advanced Training Course on Paper and Board Recycling Technology (CTP) 	1 week
<ul style="list-style-type: none"> • Advanced Training Course on De-inking Technology (CTP) 	1 week	
<ul style="list-style-type: none"> • Quality assessment and utilisation of recovered p&b 	3 days	
<ul style="list-style-type: none"> • Optimisation strategies for recovered p&b treatment plants (PTS) 	3 days	
<ul style="list-style-type: none"> • Treatment and disposal of production residues from recycled pulp mills 	2 days	
Practical training activities for ESR and ER	in laboratories and pilot plant facilities of selected participating organisations with the aim of applying the theoretical knowledge and becoming familiar with test procedures and pilot plant trials specific to recovered p&b	
Training through research for ESR and ER	for all ESR on site with the major research performers (see above) in the frame of subtasks of the collaborative research project depending upon their main interests and under supervision of experts.	
Transfer of knowledge activities for ESR and ER	ESR and ER will develop skills for the purpose of knowledge transfer becoming actively engaged in events on the subject, e.g. <ul style="list-style-type: none"> • Workshops and symposia of COST Action E48 • PTS-CTP De-inking Symposium 2008 and 2010 	

The organisation of RECOPA-NET (I)



The management activities are carried out in a two-tiered structure consisting of a **General Assembly (GA)** in which all partners will have one seat and a **Network Board (NB)** consisting of representatives from the leading universities and institutes. The network management will be supported by a network coordinator dealing with day-to-day management activities and administration including the organisation of meetings, financial and administrative tasks and the preparation of the periodic and final project reports.

General Assembly (GA)

A general assembly will be formed in which all partners will have one seat. The GA shall meet at least once a year and decide on the management plan as well as on the overall and yearly network budget. In principle, the general assembly will take decisions at the suggestion of the NB. The GA will choose a chairman out of the GA members. However, the chairman cannot be involved in Network Coordination or the NB.

The organisation of RECOPA-NET (I)



Network Board (NB)

which will be formed from the leading research partners and universities for scientific and technical management. The NB will ensure the scientific and methodological harmonisation of research, effective flow of information between partners and, in co-operation with the network coordinator, facilitates the efficient dissemination of the RECOPA-NET results. The NB provides the overall quality control of all scientific and technical research activities and co-ordinates all activities which require stakeholder involvement. In the NB there will be equal representation on behalf of the institutes and universities. The network coordinator, will give support to the NB. The preliminary composition will be:

- Dr. Alain Cochaux, CTP, Grenoble, France
- Werner Foerster, PTS, Munich, Germany
- Dr. Piroska Karolyine – Szabo, PRI, Budapest, Hungary
- Prof. Angeles Blanco, University Complutense de Madrid, Spain
- Dr. Nathalie Marlin, EFPG, Grenoble, France
- Prof. Harald Grossmann, University of Dresden, Germany

Prof. Grossmann will act as chairman of the NB. The NB will be supported by the network coordinator with secretarial and management assistance. The members 1 to 3 will have a specific focus towards the institutes and will be responsible for the acceptance of the deliverables, including endorsement of the reports, of the institutes. Members 4 to 6 will have a specific focus towards the (output of) the universities

Network Coordination



The network will be coordinated by **Kenniscentrum Papier en Karton (KCPK = Centre of Competence Paper and Board)**, an organisation of the Royal Dutch paper industry which has the personal and technical facilities necessary for the successful management of such a network.

KCPK will be dealing with day-to-day management activities and administration including organisation of GA and NB meetings, finance and administration and the preparation of the periodic and final project reports. KCPK will support the network management and perform all necessary administration work at the network level. The person within KCPK responsible for Network management is Arie Hooimeijer, General Manager of KCPK. Ineke Gietema, office manager of KCPK, will take care of the administration work and the organisation of meetings etc.

