

## PressRelease

# Breakthrough technologies set to revolutionise paper and pulp industry and provide climate solution

## Industry calls for breakthrough technologies to be at the heart of the 2030 climate and energy package.

The European pulp and paper industry has searched for, and now found, breakthrough technology concepts which can enable a competitive future in Europe. The example is a fascinating case study from one of Europe's energy intensive industries.

The European paper industry supplies a quarter of the global market, employs 185,000 people in 520 companies with a turnover of 75 billion per year.

At this year's European Paper Week gathering in Brussels, the Confederation of European Paper Industries (CEPI), unveiled eight concepts for breakthrough technologies that provide solutions which can enable the future of the industry in Europe. Each solution offers opportunity to create value, reduce costs, improve margins, radically change sector operations and allow massive decarbonisation.

In March 2011 the European Commission set a challenging target of -80% CO<sub>2</sub> reductions by 2050. In November 2011 the paper industry launched its own 2050 Roadmap that analysed how to achieve this decarbonisation target while increasing value in the sector by 50%. One year later, the industry followed up by launching the Two Team Project which brought together the teams who have developed the eight concepts announced today.

In this year-long competition, two teams comprising of scientists, companies, suppliers and outsiders worked to identify viable concepts that would help the industry achieve its objectives. Climate Action Commissioner Connie Hedegaard announced the winning team and winning concept from among the eight finalists. She praised the efforts of the sector: *"Global markets for resource and energy efficient solutions will grow. CEPI Roadmap 2050 and the ideas prepared in the Two Team Project show that the European pulp and paper industry is 'technology conscious' and ready for the future challenges. It's an example to be followed by other sectors."*

The winning concept is known as "deep eutectic solvents". It is a brand new technology which, at low temperatures, breaks biomass down into constituent parts which can then be used in the paper and pulp industries. If utilised at scale this technology could radically change pulp and paper production around the world and replace some of the most energy intensive parts of the current process. Deep eutectic solvents have seen remarkable results at the laboratory scale. In the coming months and years, they will need to be further studied and developed.



Commenting on the outcome of the competition, Teresa Presas, CEPI Director General, said: “The results are beyond expectations. While we have announced a winner, we are confident that all the shortlisted concepts have an important role to play. We believe the teams have found the key to the largest industrial breakthroughs in decades in our industry. Now policy must be developed to support the development of these technologies.”

Teresa Presas, CEPI Director General, went on to say: “Policymakers once thought targets could be met with existing technology and behavioural change. That is wrong. Breakthrough technologies are needed to meet low carbon targets. Investments in innovation need to focus on breakthroughs, not on incremental growth. CEPI’s Two Team Project perfectly illustrates this”

Little effort is given to developing breakthrough innovations for the manufacturing sectors of tomorrow and industrial and climate policy have left this area untouched.

The Two Team Project went as far as any industry sector can go in organising an open innovation process and providing pre-competitive leads. It is now up to individual companies to take the next step and develop the concepts. This will need new forms of cooperation, and the support of European and national policy makers. The right conditions must be put in place to enable research, pilot, demonstration and investments.

The announcement of the winner will be followed by a seminar on Thursday 28<sup>th</sup> November in which eight finalists will have an opportunity to present their concepts to European Paper Week attendees.

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## Notes to the Editor

### CEPI aisbl - The Confederation of European Paper Industries

The Confederation of European Paper Industries (CEPI) is a Brussels-based non-profit organisation regrouping the European pulp and paper industry and championing industry’s achievements and the benefits of its products. Through its 18 member countries (17 European Union members plus Norway) CEPI represents some 520 pulp, paper and board producing companies across Europe, ranging from small and medium sized companies to multi-nationals, and 950 paper mills. Together they represent 23% of world production.

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**The eight breakthrough technologies** are a combination of new ideas and of ideas that work in other sectors, but have never been utilised for the paper and pulp sector before. They include some cutting edge research findings as well as innovations that have not yet made it to the market. The solutions are not only found in technology, but also in new ways of working and even changes to the way production is measured today. More importantly, they can open up entirely new product portfolios for the future. They are:

#### **Deep Eutectic Solvents – the winner**

A ground-breaking discovery: Deep Eutectic Solvents (DES) produced by plants, opens the way to produce pulp at low temperatures and at atmospheric pressure. Using DES, any type of biomass could be dissolved into lignin, cellulose and hemicellulose with minimal energy, emissions and residues. They could also be used to recover cellulose from waste and dissolve ink residues in recovered paper.

#### **Flash condensing with Steam**

Waterless paper production? Very nearly. Largely dry fibres would be blasted into a forming zone with agitated steam and condensed into a web using one-thousandth the volume of water used today.

#### **Steam**

Using more energy to use less? You read it right. Using the full power of pure steam for superheated steam drying would save energy as most heat could be recovered and recycled. Steam will then be used as fibre carrier for making and forming paper.

#### **Supercritical CO<sub>2</sub>**

Neither gas nor liquid but somewhere in between, Supercritical CO<sub>2</sub> (scCO<sub>2</sub>) is widely used in many applications, to dry vegetable, fruits and flowers, extract essential oils or spices. Suppliers for large consumer items use it to dye textile. Coffee and tea have been decaffeinated with scCO<sub>2</sub> since the early 80s. We could use it to dry pulp and paper without the need for heat and steam, and why not dye paper or remove contaminants too, while we're at it?

#### **100% electricity**

Shifting pulp and paper production to energy-efficient technologies using electricity rather than fossil fuel power to generate heat will cut all CO<sub>2</sub> emissions as the power sector shifts to renewable energy. The sector would also provide a buffer and storage capacity for the grid, storing energy as hydrogen or pulp.

#### **DryPulp for cure-formed paper**

Imagine a papermaking process that uses no water. This is it. Fibres are treated to protect them from shear, and then suspended in a viscous solution at up to 40% concentration. The solution is then pressed out and the thin sheet cured with a choice of additives to deliver the end-product required.

#### **Functional Surface**

The key to unlocking greater added value from fewer resources depends on a shift to producing more lightweight products, and selling surface area and functionality rather than weight. Advances in sheet formation and new cocktails of raw materials will lead the way to the lightweight future.

#### **The Toolbox to replicate**

What about the great ideas that never make it? Put together a combination of process, material and equipment innovations as a toolbox of stepping stones to 2050 and the pathway becomes clearer, boosting sector and investor confidence.