

A roadmap without a map for the road

Strategic implications of the CEPI 2050 Roadmap on the Pulp, Paper and Packaging Industry

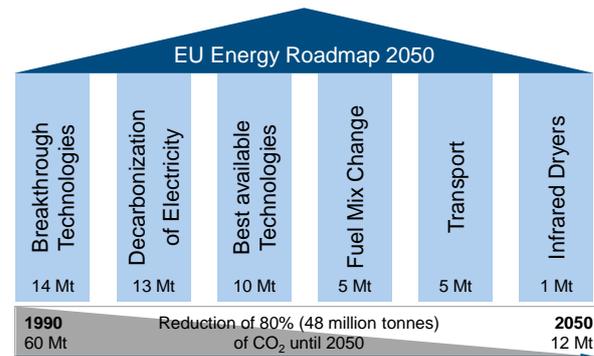
By Alexander Wirth and Joachim Klein

EU Energy Agenda and the CEPI 2050 Roadmap

In November 2011, CEPI (Confederation of European Paper Industries) published its 2050 Roadmap. The goal of the Roadmap is the reduction of CO₂ emissions by 80% by 2050. The basis for the CEPI Roadmap 2050 is EU Energy Agenda 2050. The roots of the Energy Agenda reach back to 2009, when leaders of the European Union and the G8 states announced the target to reduce greenhouse gas (GHG) emissions 80% below 1990 levels until 2050. “Decarbonization” is the key topic of this Agenda. It takes technical and economic feasibility and scenarios into consideration to maintain or improve today’s reliability of electricity supply, energy security, economic growth and prosperity.

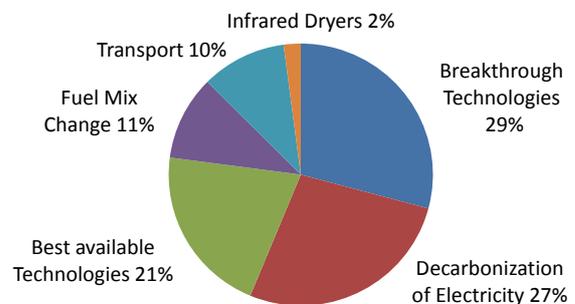
The “Roadmap 2050”, a study initiated by the European Climate Foundation, states that such a level of reduction is only possible by introducing nearly zero-carbon emitting power generation. The study states that a 80% GHG reduction means a transition to a new energy system, both, in the way energy is used and in the way it is produced – combined with lower operating costs compared to the baseline. The target is to increase the security of cheap and sustainable energy while in parallel becoming less dependent on crude oil by switching to renewable energy sources, reducing greenhouse gas emissions and reducing waste of energy while creating new jobs.¹ The main aspects to reach the 80% reduction of greenhouse gas emissions are:

- Realization of energy efficiency improvements up to 2% per year
- Achievement of nearly full decarbonization² of the power sector by relying on renewables, nuclear energy and carbon capture and storage (CCS)
- Replacement of fossil fuels in the building and transport sectors with decarbonized electricity
- Substitution of high-carbon materials with bio-based composites



EU Energy Roadmap 2050³

Potential short term impacts of the EU Agenda 2050 stated by CEPI are increasing prices for wood and energy and decreasing competitiveness of the European Pulp and Paper Industry compared to other regions of the world. Additionally, wood shortages of approximately 200 to 260 million m³ are forecasted⁴, until the sector will have fully adapted to the changed requirements and conditions. Further, CEPI states: “The European Pulp and Paper Industry is strongly in favour of renewable energy and wants to position itself as part of the solution. After all, our industry is an industrial leader in producing and consuming renewable energy.” Indeed, the CEPI Declaration of Intent on Renewable Energy Sources (RES) committed the industry already in 2001 to increase the share of biomass-based energy from 49% in 2001 to 56% in 2010⁵ (in 2010, the share was 54%⁶). Consequently, the CEPI 2050 Roadmap should be seen as an opportunity for the Wood, Pulp and Paper industry to take a central role in this ambitious renewable energy challenge.



Fraction of Levers for an 80% GHG emission reduction⁷

The industry is very well positioned. On the one hand, know-how about recycling and reusing fibers, bio-energy and biofuel, sustainable forestry, efficiency, reducing energy and avoiding waste of fiber is already available, on the other hand, there are few other industry segments which are so close to wood-fiber innovations. One main idea of the CEPI

¹ Roadmap 2050, A practical guide to a prosperous, low-carbon Europe, 2010

² Definition EU: Power sector emitting 5% or less of baseline GHG emission levels

³ Roadmap 2050, A practical guide to a prosperous, low-carbon Europe, 2010

⁴ Bio-energy and the European Pulp and Paper Industry – an impact assessment (by McKinsey & Pöyry)

⁵ CEPI Issue Sheet, 2008

⁶ CEPI Sustainability Report 2011

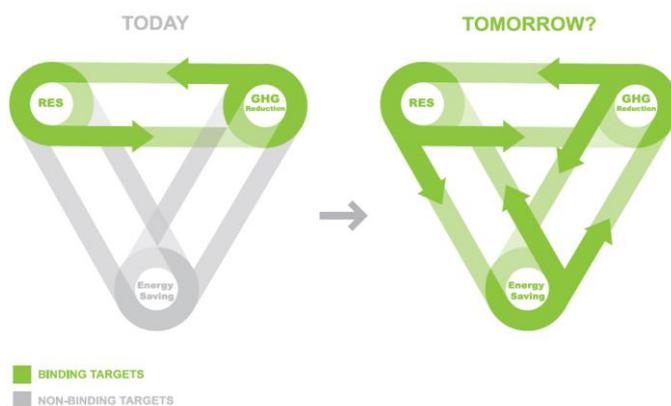
⁷ Roadmap 2050, A practical guide to a prosperous, low-carbon Europe, 2010

2050 Roadmap is the substitution of carbon intense products with fiber-based products. In this area the Pulp and Paper Industry should take the opportunity to take a leading role. Some illustrative areas for substitutions are⁸:

- Fuels (bio- instead of fossil fuels, made out of non-food raw materials e.g. black liquor)
- Textiles (carpets, fibers, upholstery)
- Health & Hygiene (cosmetics, detergents, pharmaceuticals)
- Communication (computer cases, LCD, pens)
- Housing (paints, varnishes, insulation)
- Packaging (beverage bottles, foils, preservatives)
- Recreation (protective equipment, CDs/DVDs, boats)

Currently, Europe has three interdependent climate and energy targets for 2020: GHG reduction, increase of renewable energy sources (RES) and increase of energy savings. While GHG and RES targets are binding, the energy savings targets are not (see figure below).

Commitment to Energy Savings is essential to meet EU Climate & Energy Goals
Integrated policies are an effective way to reach 80-95% decarbonisation



Climate & Energy Goals: Binding and non-binding targets⁹

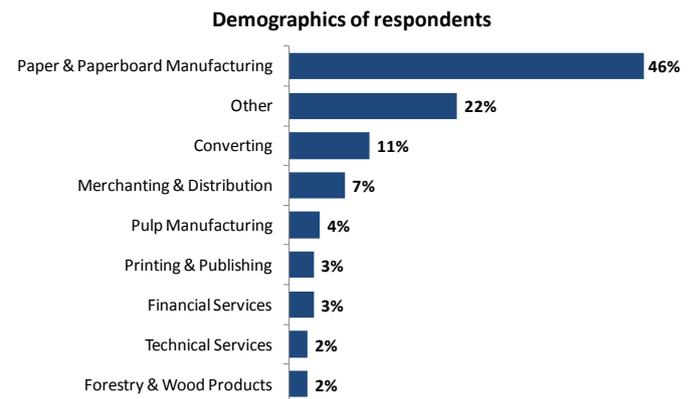
Overall, the Roadmap is a challenge for the industry but also provides a unique opportunity for transformation and differentiation. The target is still a long way ahead but only two paper machine cycles away. Starting now is important to secure a leading position and achieve the targets in time. The timeline to achieve the target still provides enough time to define a proper strategy and implement accordingly. However, taking too much time to prepare and get started may not be the best solution as others may claim the first mover advantage.

In order to get a view on the awareness of the 2050 Roadmap a survey was conducted among industry leaders. The results are described below and show that there is still

significant communication necessary to raise awareness levels.

Level of awareness within the Industry – Survey Results

StepChange Consulting conducted a survey among industry stakeholders regarding the awareness of the CEPI 2050 Roadmap in February 2012. Respondent demographics represent a wide spectrum of the industry including forestry & wood products, pulp manufacturing, paper & paperboard manufacturing, converting, merchants & distributors, financial services and management consulting.



Almost half (46%) of respondents work in the paper & paperboard manufacturing industry. Within this group, two thirds work for packaging/board producers and about one fourth for graphic paper producers. More than one third of respondents in the “Other” category are suppliers to the Pulp and Paper Industry, e.g. chemical suppliers or Fast Moving Consumer Goods (15%).

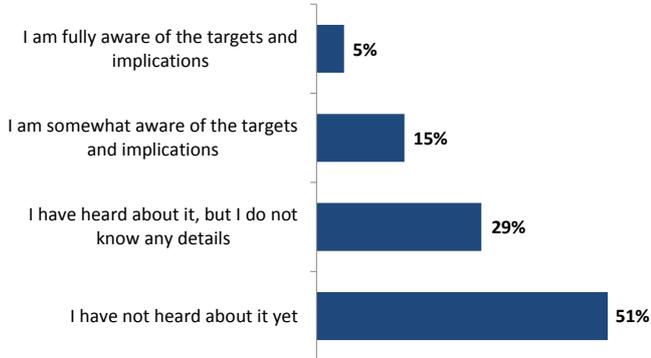
Summary results of the survey are:

- More than half of the participants have not heard of the CEPI 2050 Roadmap yet and only a very small number of respondents are fully aware of the targets and implications of the Roadmap
- Of respondents who have heard of the CEPI 2050 Roadmap, one third indicates that it is a topic in their organization
- Areas considered to achieve Roadmap targets are the reduction of energy usage together with the usage of renewable energy sources
- Of respondents who have heard of the CEPI 2050 Roadmap, 52% believe that the Roadmap targets are achievable and 45% believe that the Roadmap offers a competitive advantage for Europe
- More than 80% of respondents who have heard of the Roadmap believe that the Roadmap is necessary to sustainably reduce emissions, requires significant investments and that governmental support is necessary to accomplish the goals

⁸ CEPI 2050 Roadmap to a low-carbon bio-economy, 2011
⁹ ENERGY SAVINGS 2020 - a contributing study to Roadmap 2050, Wesselink, Harmsen, Eichhammer et.al., p.10

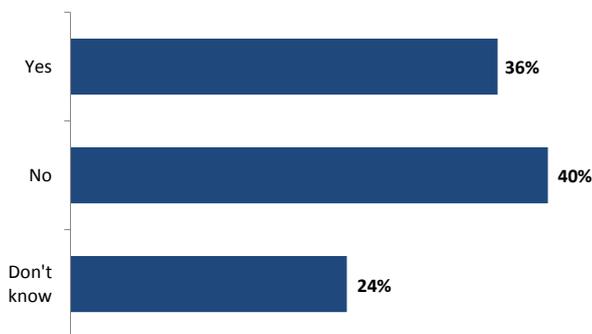
- While one fourth of respondents who have heard of the Roadmap share the opinion that the Roadmap 2050 will lead to a job loss in Europe, the majority is neutral

Are you aware of the CEPI 2050 Roadmap?



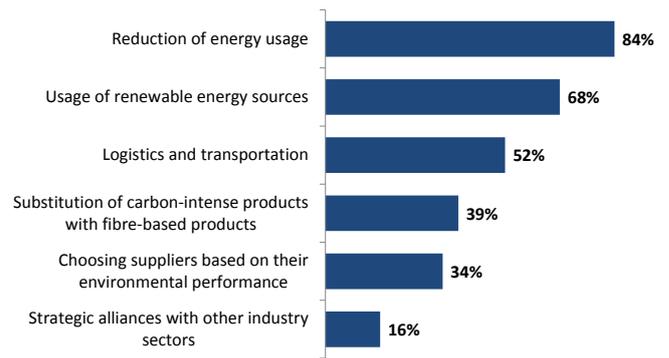
Almost half of the respondents of this survey (49%) indicate that they have heard of the Roadmap. However, only a minor percentage (5%) of respondents is fully aware of the targets and implications. More than one half of the respondents (51%) have not heard of it yet. The following results show details from the viewpoint of the respondents who indicated to be somewhat familiar with the 2050 Roadmap (the 49% who did not mark "I have not heard about it").

Is the CEPI 2050 Roadmap a topic in your organization?



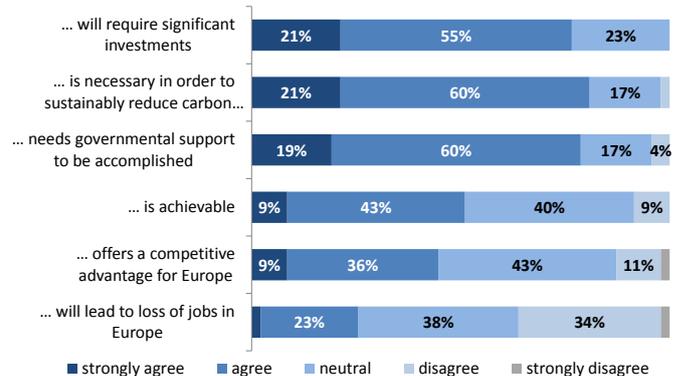
Even though the Roadmap is a fairly new topic for the entire Paper Industry, 36% of respondents (of the 49% from the previous question) answered that it is already a topic in their organization. 63% of respondents either don't know whether it is a topic (24%) or indicate that the Roadmap is not a topic for their companies (40%).

What are the key focus areas to achieve the 2050 Roadmap target of an 80% reduction of emissions



For respondents, focus areas for emission reductions are within the areas of energy usage and transportation. The Paper Industry is an energy-intensive industry. Reduction of energy usage and usage of renewable energy sources are seen as the two priority areas to achieve the Roadmap targets. 84% and 68% of respondents, respectively, see these areas as top priorities, followed by logistics and transportation (52%). Over one third (39%) of respondents indicate that the substitution of carbon-intense products with fiber-based products is an important step towards the reduction of emissions. Choosing suppliers based on their environmental performance is considered an option for a little over one third of respondents (34%). Strategic alliances with other industry sectors are only considered to be relevant by 16% of respondents.

How do you evaluate the following statements: "The CEPI 2050 roadmap with the goal of achieving 80% less emissions by 2050..."



The Roadmap seems to be an important topic for the majority of respondents. 81% of respondents either agree (60%) or even strongly agree (21%) that the Roadmap is necessary in order to sustainably reduce carbon dioxide emissions. More than one half of the respondents (52%) indicate that the goal stated in the Roadmap is achievable and only 9% disagree. 76% of respondents strongly agree (21%) or agree (55%) that significant investments are required to reach the 80% emission reduction goal by 2050. An even higher number (79%) states that governmental support is needed to achieve the desired results. About one fourth (25%) of respondents shares the opinion that the Roadmap will lead to

the loss of jobs in Europe. However, 36% of respondents either disagree (34%) or strongly disagree (2%) with this statement. In the end, almost half of the respondents (45%) believe that the Roadmap will offer a competitive advantage for Europe and only a small number (13%) disagrees with this statement.

Taking a closer look at the respondents who indicate that the Roadmap will lead to the loss of jobs in Europe (25%), 58% still believe that the Roadmap offers a competitive advantage for Europe.

What does this mean for the industry?

Strategic Implications

The implications strongly depend on the individual competitive position and the size of a company, its level of specialization and integration, and previous efforts to reduce GHG emissions and usage of carbon neutral energy. The central challenge for companies in the industry is to find the most effective way to utilize opportunities and minimize risks. The main cornerstones for developing a company specific Roadmap 2050 plan are the following:

Products: Finally the necessary Value-Add

Diversified and adapted product portfolios within the Wood, Pulp and Paper Industry will lead to a change in competitive profiles and targeted customer groups and market segments. New logistical challenges will arise as the geographic delivery radius may become more important. This has severe impacts on a company's strategy and operational processes. Furthermore, the substitution of GHG intense products with fiber-based products requires a long term strategy on corporate level to ensure future success. Some first movers already replace plastic materials like transparent foils for food packaging with fiber-based ones that have very similar product characteristics. In this regard, the 2050 Roadmap is a regulation guideline that may provide the necessary push for the Pulp and Paper Industry to jumpstart the necessary development of value added products and services.

Procurement: Carbon Footprints to drive decision making

As one important focus point of the Energy Roadmap is energy production and energy consumption, production of "green" electricity through the utilization of rejects, wood chips, bark or black liquor will play a central role. In addition, biofuel based on non-food raw materials is a potential new product already produced by some players in the industry. Second generation biofuels have approximately 85% less emissions along the whole value chain compared to fossil fuels¹⁰. Utilization of sustainably produced energy from wood, stumpage and bark will be crucial – however with a focus on extracting the value-add from fibers first.

Raw material sourcing in general will play a key role, no matter whether it is wood, recycled paper or other fibers.

Indirect GHG emissions that influence the overall carbon dioxide balance in a value chain and an industry's Carbon Footprint may become increasingly important for supplier selection and evaluation processes. The forest products industry is generally very well positioned to offer carbon-neutral products in the future. This is a unique opportunity to outperform against products and services which are now harbored in a fossil fuel value chain. Big consumer goods companies may reevaluate their purchasing processes in favor of carbon-neutral suppliers providing a huge opportunity for the fiber-based value chain.

Research & Development: Start now - 2050 is only 2 machine cycles away

In order to achieve the targets, research expenditures will have to increase significantly. Increased competition may accelerate R&D projects and increase the drive to be the first to patent technical innovations. Alternatives to this challenge could be strategic R&D alliances across institutions to bundle expert knowledge, leverage experience and balance risks. Joint R&D will avoid redundancies and unnecessary financial expenditures. This would require a fundamental change of paradigms, allowing collaboration to at least partly replace competition. This can also be achieved if companies not competing in the same market segments collaborate. However, as the future is still undefined, current non-competitors may become competitors in the future. Additionally, it can be expected that some targeted segments will not naturally belong to the forest products value chain. New entrants will appear (or have already entered) to compete in the same segments – with potentially much larger access to financial funds.

Investments in reducing energy consumption and increased efficiency will require to make more (output) with less (energy input). Benefits on corporate level from reduced GHG emissions will primarily materialize if investments lead to reduced operating cost and increased energy efficiencies. In short, fossil fuel based value chains simply need to become uncompetitive compared to renewable value chains. Additionally, the governing control mechanisms such as emissions trading need to be transparent, cost effective and all-encompassing (e.g. standardized pollution assessment methods).

Additionally, there are increasing challenges for equipment manufacturers, technicians and engineers. Considering that 2050 is only 2 machine investment cycles away, quantum leaps are required to reach the ambitious GHG reduction targets.

The target is clear – the road to the target is wide open. It is clear that focus has to be put on innovation into technologies, products and processes. The industry does not have a good track record when it comes to innovations. Only minor innovations have been achieved in the last 20 years. The challenge to the industry will be to relaunch and reinvigorate innovation. Most likely this will also require a transformational approach within organizations. The current structures and processes will most likely not be the right ones

¹⁰ UPM.com

nor sufficient to address this challenge. Structured innovation management processes need to be installed in order to channel R&D efforts into the right areas. Additionally, stage-gate innovation processes (common in many other industries) have to be installed in order to allocate funds and resources properly. While the outcome of research is always unclear supporting frameworks and processes need to exist. The size of the prize is clear – funds will also be required. The Pulp and Paper Industry has historically low returns. Making the appropriate funds available is a challenge in itself which may also require cross-company and cross-sector collaboration. However funding from the EU will also be available for those who qualify.

Consolidation & realignment – A shift in paradigm required

The competitive landscape within and across industries will presumably change as there will be new competition for the same resources. This will also require different capabilities in order to be able to compete in the future. The current organizational set up and access to resources may not be sufficient. Therefore future M&A activity may be driven also on the basis of the requirements to reach 2050 targets in addition to consolidating current industry structures and improving current profitability. Access to innovation and R&D capabilities will become more important again and will increase the competition for the best talents. An industry with a low level of attractiveness to young talent will have to reposition and rejuvenate itself. However the 2050 Agenda also provides the necessary framework to attract and recruit new talent. The challenge to reach something that is currently not clearly defined may create the necessary momentum to mobilize resources and drive the innovation required.

Policies & regulations – A common framework required

Main points to be considered regarding policies, regulations & laws are¹¹:

- Efficient use of resources and energy
- Fair and equal sustainability criteria for biofuels and biomass
- Efficient use of land
- Improved mobilization of biomass
- The value and job creation through the use of raw material and resources

The role of the European Union to provide a general framework of rules, regulations and legislation authority valid for all member states will be crucial to the industry. Impartial tracking, transparency and unified measurement of the Carbon Footprint will be key to keep competition balanced. A holistic assessment of the Carbon Footprint must consider a wide range of factors of direct impacts (e.g. power generation, mill emissions) and indirect impacts (e.g. suppliers or transport). Objectivity of measurement, tracking and reporting will presumably play a key role. The ques-

tion is whether incentive systems or penalty payments will be sufficient in providing a suitable level of motivation for the industry (e.g. Emission Trading).

Sensitivity of the energy roadmap to future events such as the Fukushima nuclear disaster or the public debt crisis will presumably be high. These external factors may impact important short term parameters of the Roadmap such as the targeted exit from nuclear energy in Germany. Increasing public debt has led to a modification and reallocation of government funds such as the subsidy for solar energy. Such examples have a crucial impact on private enterprises with regard to planning reliability and strategic decisions. In order to have planning stability the industry (and its confederation CEPI) also needs to lobby policy makers to keep the focus and also provide financial or fiscal support to the industry in achieving the targets. Only a joint effort between industry, regulators, research institutions and the public will lead to success.

Next Steps – How to Start

As the industry survey unveiled, most in the industry are not aware of the roadmap or which implication the 2050 Roadmap will have. Therefore the first step needs to be broad based communication of the details of the Energy Roadmap to generate broad awareness within the industry. Organizations should allocate time to educate staff and define strategy review teams to define implications of the Roadmap on a company's strategy. Additionally, companies need to start detailing their own roadmaps to secure funds and EU support from the beginning. The EU Energy and CEPI 2050 Roadmap need to be seen as a challenging opportunity rather than a regulatory handcuff.

Conclusion

The European Parliament agreed in 2009 on a binding directive (2009/28/EG) that the share of renewable energy sources in electricity must reach 35% until the year 2020. Research and Development activities focusing on biofuels, bioenergy and GHG emissions reduction have been in place for decades. It is estimated that a 50% to 60% GHG reduction until 2050 would be possible by fully utilizing currently available and emerging know-how and technologies¹². The targeted reduction of 80% would need „Breakthrough Technologies“. Also, the Roadmap depends on global action: “As the Commission Roadmap has shown, the cost of Europe going alone on emission reductions will be too high for industry and governments to bear”¹³. Detailed realization concepts for the industry are widely missing; in order to develop them, the time is now for training, education and successive idea generation. As the survey unveiled, the level of urgency to generate attention within the industry is apparently high.

All in all, the Energy Roadmap will unveil a multitude of opportunities and risks for the Pulp, Paper and Packaging In-

¹¹ Compare CEPI IssueSheet, February 2008

¹² CEPI 2050 Roadmap to a low-carbon bio-economy, 2011

¹³ CEPI 2050 Roadmap to a low-carbon bio-economy, 2011

dustry. The next years will show which companies are able to leverage these opportunities to become economic and ecologic leaders. The overall foundation to successfully manage the challenges of the 2050 Roadmap is a structured review approach to adjust vision and strategy.

The challenge is now up to the industry in Europe to take the lead and generate a sustainable competitive advantage. Although the targets are still far away, the current situation provides a huge opportunity for differentiation by early movers. Additionally it has to be stated that although the targets seem regulatory, they simply provide a push into a direction that is inevitable anyhow. The long term approach will provide ample of time to adjust accordingly. However, it is essential to start as this will create the necessary momentum. Some companies have already implemented strategies that are consistent with the 2050 Roadmap. Either way – the time is now.

About StepChange Consulting

StepChange is an industry focused and independent management consulting company with a proven track record in supporting clients to achieve sustainable value. StepChange provides support to top tier organizations in the industry from strategy development to implementation of operational improvements. With an international team of industry experts StepChange can hit the ground running. StepChange provides innovative and yet pragmatic solutions, placing an emphasis on delivering measurable business results.

For further inquiries and comments regarding this Point of View please contact us at leapfrog@stepchange.com