CEMENTING A CIRCULAR FUTURE

Catherine Plitzko-Kerninon, EUROSAC, and Elin Gordon, CEPI Eurokraft, examine opportunities to enhance circularity in the cement industry through the recovery and recycling of paper sack waste.

One environmental policy tool impacting the cement industry is 'extended producer responsibility,' or EPR. It requires producers of cement and building materials to take responsibility for the environmental impact of their products throughout their entire lifecycle, from production and usage to disposal. Among other things, manufacturers will have to ensure that their packaging is recyclable and to finance the collection, sorting, and recycling through EPR fees. EPR obligations for packaging derive from broader EU legislation. With the new EU Packaging and Packaging Waste Regulation (PPWR) in effect since February 11, 2025, the requirements are becoming

even stricter. By 2040, packaging waste should be significantly reduced, and from 2030 onward, stricter recyclability standards will apply. A crucial aspect for manufacturers: starting in 2028, EPR fees will be adjusted based on how recyclable their packaging is. This so-called recyclability performance will be defined by delegated acts.

Future-proofing cement packaging

With these evolving regulations, how can the cement and building materials industry ensure its packaging remains compliant? And more importantly, how does this effort translate into business advantages? The answer lies in innovation. Now is the time for the cement and building materials industry to rethink its packaging to avoid costly adjustments tomorrow and turn compliance into a competitive advantage. Compliance not only safeguards businesses from regulatory risks but also strengthens brand reputation, cost efficiency, and environmental impact.

Figure 1. More than 3 billion paper sacks for cement and building materials were placed on the European market in 2024.

Table 1. Starting from 2030, packaging with a recyclability performance score lower than 70% will be banned from the market.

Recyclability performance score	Recyclability grade	
	2030	2038
Higher or equal to 95%	A	A
Higher or equal to 85%	B	B
Higher or equal to 70%	C	Ban from market
Lower than 70%	Out of market	Out of market

Paper cement sacks: perfectly recyclable

Industrial paper sacks are widely used for cement and other building materials. In 2024, more than 3 billion sacks were placed on the European market.[1] While Germany and Spain already have established providers for paper sack collection and recycling, there is no unified, Europe-wide system in place. As a result, paper sacks are often collected within a mixed stream of paper packaging for recycling. Therefore, ensuring their compatibility with standard mill recycling processes is essential. A recent lab study,[2] commissioned by EUROSAC and CEPI Eurokraft, found that both used and unused cement paper sacks – with or without plastic film layers – are fully recyclable under the conditions of standard high-volume recycling mills, as per industry standard.[3] Furthermore, the study revealed that the inclusion of sack kraft fibres in the recovered paper fibre mix enhances the quality and strength of the recycled material. It may also bring processing benefits as it improves yield and lowers drying energy requirements when used in paper manufacturing.

Improving design for recyclability

Ensuring recyclability plays a very crucial role with the new legislation. All packaging with a recyclability performance that scores lower than 70% will be banned from the market by 2030. By 2038, the recyclability performance score must be at least 80%. Adding to that, the recyclability performance score will influence EPR fees. They will be adjusted according to the environmental performance of materials and the recyclability grade. To equip paper sack fillers, sack kraft

paper producers, and paper sack converters with insights into how material and design choices impact recyclability, EUROSAC and CEPI Eurokraft have published design for recyclability guidelines.[4] These guidelines enable producers to maximise the recyclability of the paper sacks they place on the market. Beyond achieving a strong recyclability performance score, by 2035, all packaging must be recycled at scale. This means that collection, sorting, and recycling systems must be fully established and operational across all relevant regions in Europe. Fortunately, there are already different solutions from the sack kraft paper and paper sack industry in place that can function as a role model for future expansion. They all show that collaboration along the value chain is key when it comes to establishing an efficient circular system.

Established take-back system in Germany

REPASACK, Germany's collection and recycling system for used industrial and commercial paper sacks, stands out as a successful example of how an industrial recycling initiative can close the material loop efficiently. REPASACK was founded more than 30 years ago by German paper sack manufacturers and European sack kraft producers. REPASACK set out to close the material cycle and relieve sack fillers of their legal recycling obligations. Today, REPASACK works with 70 paper sack producers and 800 paper sack fillers, mainly from the building and chemical industry, which sell their products on the German market. They represent approximately 60 – 70% of industrial paper sacks used in Germany. The sacks in the scheme are collected by type. Therefore, they are labelled with one of three REPASACK symbols according to their filling material and a customer specific registration number. The manually dedusted post-consumer material can either be brought to different collection points or can be picked up by disposal partners. Under the system, the paper sack filler benefits from the fulfillment of the legal collection and recycling obligations. The consumer can also return the used sacks free of additional charge. At the disposal partner's site, the post-consumer sacks are sorted into filling material categories. They are emptied, dried, and freed of impurities before they are shredded and prepared for recycling in the REPASACK sorting and processing plant. Shredding post-consumer sacks helps

Figure 2. Paper sacks for cement and building materials receive a special REPASACK label.

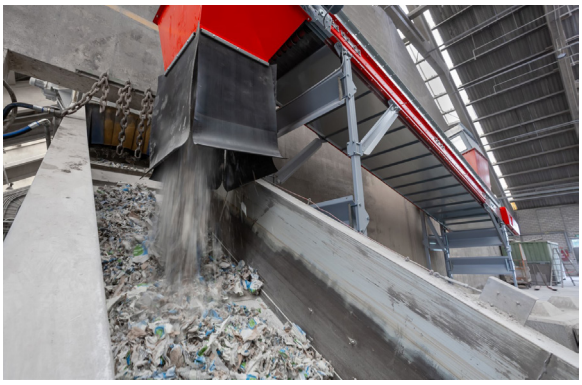

Figure 3. The used paper sacks are shredded and thoroughly cleaned in the unique cleaning plant.

Figure 4. Paper sacks only make up a tiny proportion of the waste cumulated at a construction site.

Figure 5. The construction waste is separated and collected on each floor of the construction site.

Figure 6. The used paper sacks are waiting for pick up by a collector of construction and demolition waste.

Figure 7. The waste treatment plant can valorise paper sacks that have previously been lost into landfills.

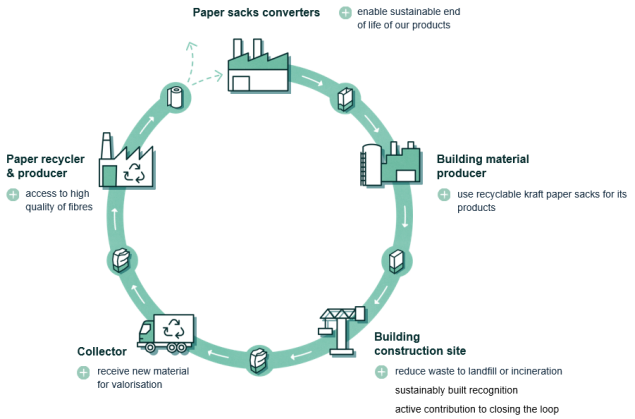

Figure 8. The circular model created by Paper Sacks Go Circular Spain.

to separate paper from plastic liners and simplifies sieving of the product residues. The material is brought to specialised paper mills to produce high-quality recycled kraft papers. It can replace some of the virgin fibres used in the paper production process, thus saving valuable resources and reducing emissions. Thanks to paper sack recycling under the REPASACK scheme, 7050 t of greenhouse gases were saved in 2023.[5] There are plans to expand this model across Europe to scale its success. Currently, REPASACK is examining the legal framework for pilot collection projects in Austria, Italy, and Poland. In the next step, REPASACK is looking for partners along the construction industry's supply chain who are interested in joining a pilot. The aim is to separate dry, used, and emptied kraft paper sacks at construction sites and organise their transport to a paper mill. As experience has shown, this will require cross-industry collaboration along the supply chain.

Construction goes circular

Cross-industry collaboration is also key for the Spanish Paper Sacks Go Circular project.[6] The project started as a pilot in the end of 2023 to build a collection and recycling system for paper sacks from the construction sector in Spain. The project implemented a circular model that meets environmental and economic interest, while ensuring regulatory compliance and allowing stakeholders along the whole value chain to participate – from building material producers, construction companies, specialised waste management companies, recyclers, industry associations, and EPR systems. It quickly became clear that it was beneficial to include other waste materials in the circular model as well. This is because paper sacks for building materials, such as cement, mortar, and plaster, usually only make up a very small proportion of the waste generated at construction sites. Whereas other construction waste, such as insulation materials, plasterboard, and other packaging waste is produced in much higher proportions and mostly ended up in landfill so far. Therefore, the alliance sought to create synergies with other construction waste streams to boost volumes and achieve economies of scale.

How it works in practice

One of the construction companies which joined the alliance installed a sorting process for waste material on their construction sites. The different

materials are first separated and collected in big bags by the workers and later brought to containers. In the beginning, it involved education of the workers, but the effort has proven to be worthwhile. The company reduced its environmental impact by decreasing the waste going to landfill or incineration; it can meet its investor's green building targets and finally, it reduced costs. Instead of paying for the disposal of the mixed waste, thanks to separation, it now creates value from the collected waste by selling it to waste management companies. With the introduction of EPR schemes in Spain, new possibilities will arise with the goal to provide further incentives for recycling. For example, by re-directing EPR fees – in addition to the economic market value of segregated, upgraded, and sorted materials, on top of the economic value of segregated materials – the circularity of industrial packaging can be further incentivised. The other partners along the value chain benefit from this model as well. The sorted waste is picked up by a collector of construction and demolition waste and transported to a waste management company. At the waste treatment plant, the paper sacks are processed further and prepared according to the specifications from the recycling companies. Receiving the used paper sacks already separated from other construction waste makes it much easier for the waste treatment plant to prepare them for recycling. Additionally, they receive material that has previously been discarded into landfills, which can now be processed and reused. For the recycling plants, sack kraft paper is a very valuable raw material for paper mills. Moreover, the polyethylene used as a barrier in some paper sacks can be processed into granules and reintroduced to the market. Thanks to this alliance, the recovery of construction waste is driving the development of a new circular economy – creating benefits and incentives for all parties involved. Currently more than 50 companies and 170 construction sites are participating in the Paper Sacks Go Circular Spain alliance. Over 600 t of paper sacks have been collected and recycled, and 2000 t of other waste materials have followed a similar circularity path. The system is now being expanded to other European countries. In Austria, 15 industry leaders have taken first steps to set up collection and recycling routes for used paper sacks for building materials and other construction waste. A pilot is also due to be launched in Italy this year.

Conclusion

The cement and building materials industry is under increasing pressure to adopt sustainable practices due to strict EU legislation, such as the PPWR. Choosing recyclable packaging, like paper sacks, and building effective recycling systems will become essential. Initiatives like REPASACK in Germany and Paper Sacks Go Circular in Spain demonstrate that collaboration across the value chain can successfully close material loops, cut emissions, and create economic benefits. By following these examples and investing in circularity models, the industry can comply with regulations, reduce costs, and enhance sustainability – ensuring a future-ready approach. ■