European Commission

EMAS and the food and beverage sector

Case Study

EMAS

Environment

Luxembourg: Publications Office of the European Union, 2021

PDF ISBN 978-92-76-40665-5 doi:10.2779/589593 KH-02-21-974-EN-N

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:
– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
– at the following standard number: +32 22999696 or
– by email via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications at: https://op.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

Open data from the EU

The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

EMAS and the food and beverage sector

Case Study

Contents

RELEVANCE OF THE FOOD AND BEVERAGE SECTOR TO THE ECONOMY

Gastronomy has always been a way to promote the diversity and richness of a region, and Europe offers a long food tradition with an immense variety of products. The vastness of the European food and beverage sector and its presence in the international market (€110 billion of exports in 2017) reflects this variety, along with the sector's capacity for innovation.

The food and beverage manufacturing industry is a stable, robust and growing sector, comprising 294,000 companies in 2016. According to the available data, it is a major contributor to the European economy in terms of turnover (€1.115 billion) and value added (2.1% of EU gross value added). The industry is also the leading employer in the EU, employing 4.57 million people. In addition, the EU food and beverage sector has the highest capital spending (€38.5 billion invested in 2015)[1].

The EU food and beverage manufacturing sector is very diverse in terms of products and company types, and is characterised by a very large number of small and medium-sized enterprises (SMEs): nearly 290,000 or 99% of the total number of companies. Indeed, the average number of persons employed per company is 15 employees. SMEs in the food and drink industry generate almost 50% of the sector's turnover and value added[2].

Europe's food and beverage manufacturers deal with numerous challenges. Besides the need for ensuring human health and preserving food quality, they face demands to reduce food and packaging waste. The sector is also affected by the consequences of climate change, which increase the likelihood of more extreme temperatures and unpredictable weather events, which then can have a direct influence on the availability and prices of primary products.

Food waste is a particular challenge for the sector: according to the data available from EU research project FUSIONS (2016) and based on the year 2012[3], 173 kg of food waste per person is generated yearly in the EU. Food is lost or wasted throughout the supply chain, with households representing the largest share (53%), followed by food processing (19%). According to the same data, 170 million tonnes of CO_2 were emitted from the production and disposal of food waste in 2012 alone.

Other environmental aspects of food production that need to be considered include energy and water consumption, the use of refrigerants and chemicals, wastewater, odours and emissions. Water consumption in the sector, for example, accounts for approximately 1.8% of the total water consumption in Europe (FoodDrinkEurope, 2012).

1 Source: FoodDrinkEurope, 2018
2 Source: FoodDrinkEurope, 2018
3 Infographic Food waste: the problem in the EU in numbers.

Despite these numbers, food and beverage manufacturers in Europe can be at the same time key players in the prevention of food loss and waste. Currently, their sector associations are implementing various projects, campaigns and initiatives to address social and environmental problems. In this way, they contribute to achieving the United Nations Sustainable Development Goal 12.3 (i.e. cutting food waste in half by 2030), as well as the EU's Circular Economy Action Plan, which singles out food waste prevention as a priority area.

Food and beverage is strongly linked to other sectors, including agriculture, transport and logistics, retail and tourism. As an industry, it can have an important, positive impact along the value chain by introducing environmental policies in its own processes and business orientation.

THE FOOD AND BEVERAGE SECTOR AND ENVIRONMENTAL MANAGEMENT

Given its direct impact on human health, the food and beverage sector is subject to regulation by administrations at different levels and from different perspectives (e.g. food safety and environmental laws). Organisations can benefit from adopting the systematic approach provided by environmental management systems for the identification, analysis and implementation of legal requirements, as this leads to better levels of legal compliance. Moreover, third-party verification and an additional check from the Competent Body as per EMAS can provide further added value.

Generally speaking, a systematic approach can also be beneficial when implementing other schemes or tools related to the environment (such as a product's carbon footprint or organic farming regulations), as it provides a strong basis for the collection and analysis of data as well as robust operational controls.

EMAS can be an excellent tool for those organisations in the food and beverage sector that want to help achieve the UN's Sustainable Development Goals (SDGs) and the targets of the European Green Deal. The scheme helps organisations identify their significant environmental impacts and provides guidance for improvement while taking factors like context and stakeholders into account. In this way, companies can take relevant action and have a positive impact. EMAS ensures that these actions are not isolated, but framed within a broader vision of the company's management. More information is available here.

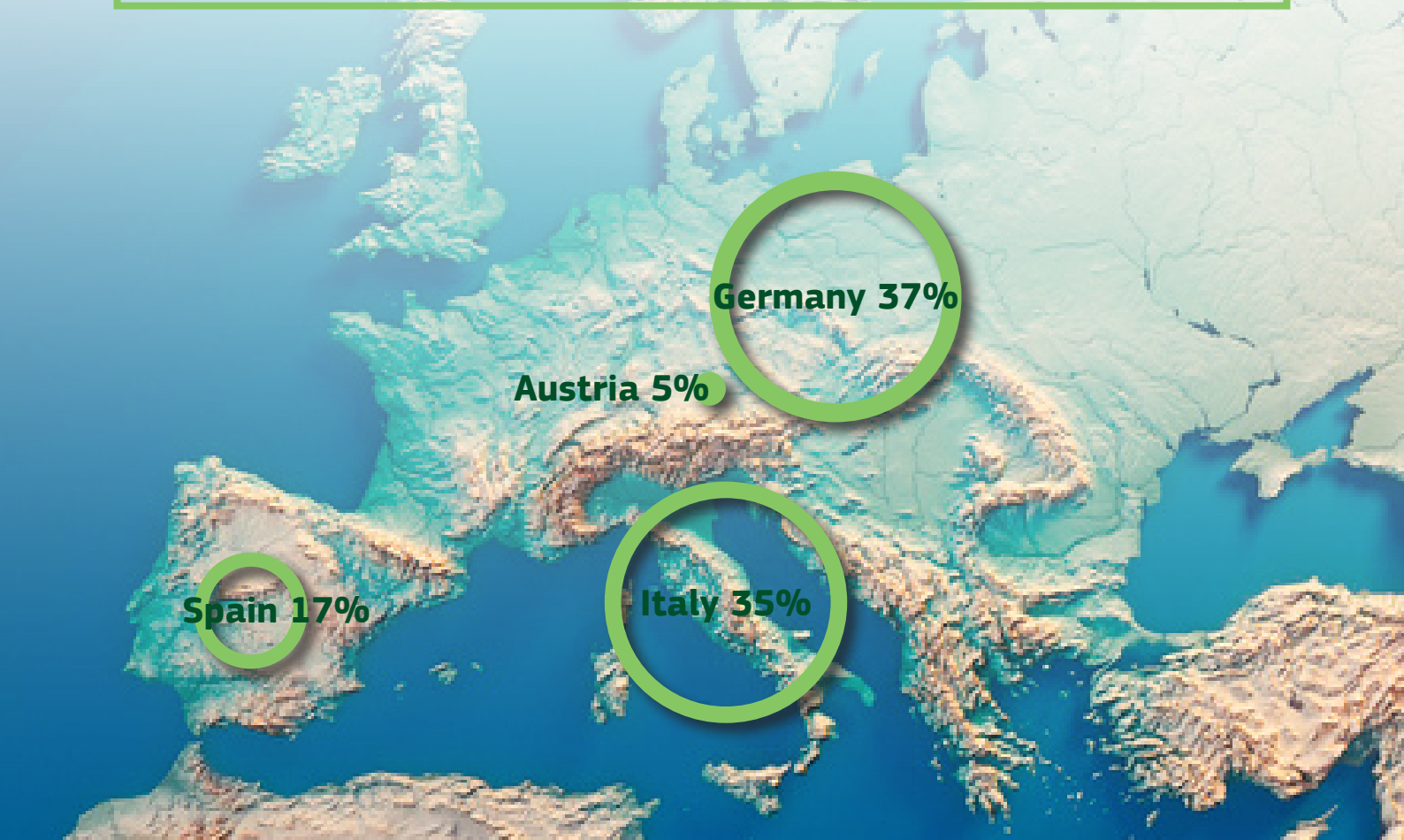
According to the list of EMAS-registered organisations[4]

207 European organisations in the food and beverage manufacturing sector, including over **280 sites**, have implemented EMAS. These sites account for more than **46,000** employees.

77% of the EMAS-registered organisations have fewer than 250 employees, which highlights the important contribution of small and medium organisations to the environmental improvement of the sector and confirms that EMAS is suitable for all types of organisations, not just those with large structures.

The leading countries in terms of **EMAS-registered organisations** in this sector are Germany (37%), Italy (35%), Spain (17%) and Austria (5%).

4 EU Register, as of August 2018: http://ec.europa.eu/environment/emas/emas_registrations/register_en.htm



EXPERIENCES OF COMPANIES IN THE FOOD AND BEVERAGE SECTOR

HiPP has more than 60 years of experience in the production of baby food. HiPP Pfaffenhofen, the parent company of the HiPP Group, has been EMAS-registered since 1995. In 2018, the sites in Gmunden (Austria), Hanságliget (Hungary), Herford (Germany) and Glina (Croatia) followed Pfaffenhofen's example and joined EMAS, representing a new chapter in the history of the HiPP Group. HiPP Croatia was also the **first site to obtain EMAS registration in that country**.

Before registering with EMAS, HiPP Croatia obtained ISO 14001 certification, and as Ms. Ladislava Klasić Stanković, Head of Quality Management & Sustainable Development Enforcement explains: *"For us, registering with EMAS was just the logical next step, much like a system upgrade. Sustainability in our organisation is not just a trend. It is a way of thinking enshrined in all levels of management and lived out by all employees; from our cleaning staff, assembly line workers, electricians, warehouse employees to engineers and management. We all strive to act responsibly. This starts with little things, like thinking about what really needs to be printed and about how much paper and which kind of paper we use, and then embraces all aspects, like using 100% green energy, being CO_2 neutral, reducing packaging, recycling, etc."* EMAS has offered the company the opportunity to open its doors to stakeholders, partners, the local community, consumers, and students, to learn from them and with them, and share experiences and ideas.

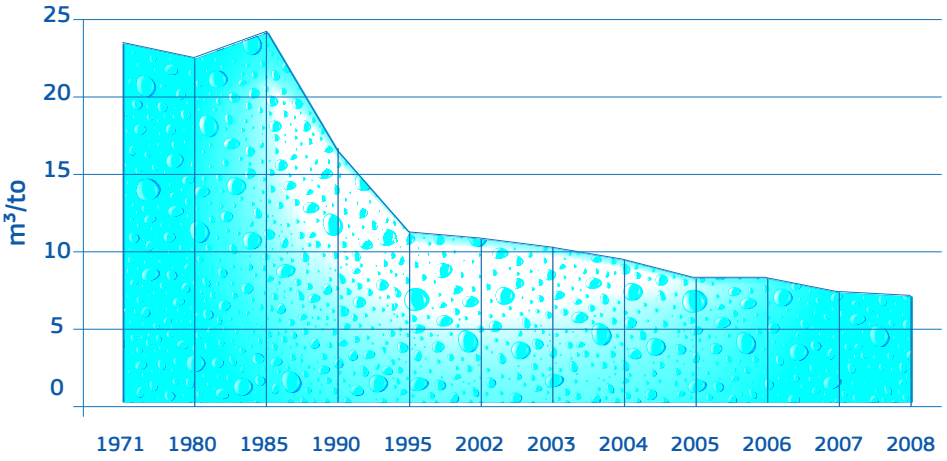
Through EMAS, the organisation has redefined its sustainability goals and procedures in order to increase the effectiveness of their actions and efficiency in the use of resources – for example, using less packaging materials through innovative, sustainable packaging and implementing the best available technology.

Over the years, the company has made various environmental improvements depending on the situation for each site (emissions, energy, water, waste, etc.).

As in any other food and beverage company, water is a major aspect. HiPP's water management follows the principle of using as much water as necessary, but as little as possible. The company declared its objective of saving water as early as 1971, when water consumption in Pfaffenhofen was 22.8 m3 per product tonne. Since then, consumption has successfully been reduced to an average of less than 8 m3 per product tonne. Another EMAS milestone achieved by HiPP Pfaffenhofen: the increased use of energy from renewable sources, from 0% in 1995 to 98% in 2018.

In the specific case of HiPP Croatia, the site intends to continue working and consolidating

Water consumption Pfaffenhofen



such reductions as well as increasing the associated economic savings. Furthermore, the company intends to help increase biodiversity by setting up a self-sustaining farm near the factory in Glina. The implementation of the project is scheduled to last 6 years, from November 2018 to November 2024, and has been divided into 4 stages. The HiPP Organic Farm will work as a traditional farm, growing fruits, vegetables and cereals and breeding livestock, but all activities will take place in accordance with the principles of environmental, economic and social sustainability, as well as HiPP's traditions and core values. The farm will serve as a learning space for organic, sustainable and socially responsible development and is primarily intended for children and their parents as well as professionals from different fields that deal with child development.

The HiPP Organic Farm is located in one of the most eco-friendly areas in the region. It aims to promote the biodiversity of plants and animals both on and around the farm. The project will make maximum use of renewable resources for energy production and recycle all organic matter. The site consists of several historic buildings, the largest of which is a listed building and a symbol of the rich cultural heritage of the area. In this way, the farm offers insight into life in the Banovina region in the past. Last but not least, the project also aims to bring sustainable growth and development to the region, one of the least developed and most economically vulnerable areas in Croatia. The farm has the potential to become an important educational attraction and initiate sustainable development in the local community. It will also improve HiPP's brand visibility as well as increase awareness of the organisation's core values.

The HiPP Group has also been a pioneer in organic production, and the company has gone further by setting its own internal standards. As Ms. Ladislava Klasić Stanković explains: *"EMAS provides the perfect framework for organic production, as it facilitates the integration of the sustainability concept into all of our working areas."*

Besides being an excellent framework to deploy the company's values, EMAS has improved the monitoring of legislation, guaranteeing full regulatory compliance and reducing the risk of fines related to environmental regulations. It has also improved the company's relationship with employees thanks to the active involvement and continuous training, and enhanced credibility due to increased accountability and transparency.

Mahou San Miguel is a company in the beer sector with more than 130 years of tradition. The organisation has implemented an environmental management system that has gradually covered all the sites – each of the seven beer production centres in Spain and the Solan de Cabras springs (in Beteta [Cuenca] and Jaén) which also belongs to the same group are EMAS-registered.

The dream of this family business with more than 4200 employees is to become an active benchmark in sustainability for the consumer sector. As Mr. José Luis García Vallejo, Head of Industrial Environmental Management, explains, *"the company had the opinion and continues to believe that reaching the EMAS registry attests that a high level of excellence in environmental performance has been achieved in a site or organisation, therefore, it constitutes a very significant differentiation factor in the market; without any doubt, EMAS generates systematic working methods and practices that have improved the environmental performance and efficiency of our products and of the organisation itself".*

The company has achieved the reduction of different environmental impacts across its environmental management program – for example, between the years 2000 and 2018, it reduced water consumption per production unit by more than 43%, saving almost four million cubic meters of water. In the same period, the company also lowered the total energy consumption per production unit by 51%, accounting for more than 352.000 MW/h, and dramatically reduced the ratio of non-recoverable waste per production unit by more than 96%. The amount of waste disposed of in landfills is now only 0.69% of the total amount of waste generated. This in turn reduced the organisation's CO^2 emissions by more than 52% between 2000 and 2018, avoiding the emission of more than fifty thousand tons of CO^2 into the atmosphere.

The company extends sustainability throughout the value chain by way of a platform specifically created to collect, manage and evaluate information from suppliers and logistics operators. This information helps better involve suppliers in Mahou San Miguel's environmental improvement actions. One concrete example is the gradual replacement of conventional vehicles with ones that pollute less – in this case, besides changes to the company's own fleet, suppliers also receive help through agreements to make the switch to electric or hybrid vehicles.

Customers also benefit from Mahou San Miguel's innovation and environmental efforts. In 2018, the company developed and installed 1000 umbrellas at customer sites; these umbrellas help reduce particulate matter in the surrounding air (PM10 and other, larger particles) through photocatalytic oxidation (PCO)[5]. In recent years, the company has replaced chillers with a more energy efficient model that also use a refrigerant gas with a lower global warming potential (GWP).

Environmental management and economic efficiency are strongly linked; in Mahou San Miguel 88% of the costs incurred in recent years for the environmental management (e.g.

5 Umbrellas are coated with titanium dioxide which is activated by UV-A light (sunlight, fluorescent light or UV-A LED).

staff designated to environmental management tasks, waste water treatment and others) have been offset by the income obtained through an accurate management and sale of recoverable waste and by-products which also entails a more circular economy. On the other hand, in the same period, not counting grants received, environmental investments made (such as for example those related to water and energy efficiency and improved waste water treatment processes) have resulted in savings of more than 6%.

In its most recent environmental statement, the company went through a comprehensive analysis of the best environmental management practices (BEMPs) for the food and beverage sector published at the EU level. As it turns out, the organisation has already implemented twelve BEMPs out of the thirteen applicable to their activity [6]. In the opinion of Mr. García Vallejo, "the main challenge for the future is, on the one hand, to continue advancing in the improvement of organizational aspects and relations with stakeholders, and on the other, to seek the implementation, if possible, of the rest of the BEMPs."

illycaffè, a coffee company active on five continents, was founded in Trieste in 1933 by Francesco Illy. It is currently run by the third generation of the family.

The organisation has always aimed to position itself as a sustainable company from social, ethical, economic and environmental points of view. This, together with the need to accurately manage the environmental aspects related to its processes and products, led the company to implement an environmental management system. Immediately after obtaining ISO 14001 certification in 2003, illycaffè decided to go further and aim for EMAS as a reference for environmental excellence. They achieved EMAS registration in the following year.

EMAS has proved to be an excellent tool for continuous improvement: since registration, the company has never stopped innovating and finding new ways to optimise resources. According to Mr. Bruno Makollè Mbella, the Environmental Manager, *"in the years 2003 - 2004 the company was able to recover about 20% of the waste generated; to date, this percentage is around 99% and was achieved thanks to continuous work and sustained effort over time. Undergoing external audits every year ensures that the level of attention is maintained and that all areas of the company continue to work on new technologies and increasingly efficient solutions."*

illycaffè's main raw material is green coffee beans; the company purchases hundreds of thousands of bags of Arabica coffee from producers in Latin America, Africa and South-East Asia. The organisation acknowledges that the production of this raw material accounts for a considerable portion of its environmental impact and monitors every phase of the procurement process, from the plantations, to shipping, to the roasting plant.

As a result, illycaffè has changed the way coffee is transported, and continuously promotes

6 There are ten BEMPs for the whole food and beverage manufacturing sector and three specifically related to the beer production.

economically and environmentally sustainable agronomic practices for coffee growers. The company performs more than 300 audits a year at growing sites. These practices have allowed the company to obtain the Responsible Supply Chain Process certification, which serves as a further guarantee for the consumer.

In the past, coffee was shipped in jute bags; after performing a life-cycle analysis (LCA), illycaffè started to progressively replace jute with polypropylene bags and big bags. This has allowed for logistic improvements, since a big bag has a capacity of 1000 kg compared to only 60 to 70 kg for jute. In addition, the big bags are being reused.

The company uses the LCA as a tool to support all its decisions related to product and process innovation; the robust environmental data provided by the management system play a key role in this process.

In 2013, illycaffè started to source electricity from guaranteed renewable sources (hydroelectric and wind) and make the roasting process sustainable. The company's roaster heat recovery system, active since 2012, provides heat for the entire production area and offices (cooling in the summer is obtained via "absorption" machines). Energy Manager Mr. Maurizio Snidersich notes: *"Although we always try to reduce the ratio of energy per ton of coffee produced, we still have challenges, such as being able to use natural gas from renewable processes, or waste treatment processes. The gas market in Italy is not yet ready, but we, as customers, must stimulate change and if we succeed, it'll positively impact on our energy balance, as the roasting process accounts for 89% of the total natural gas (methane)".*

To achieve greater energy efficiency, the company has installed a roaster with one of the lowest-possible energy consumptions in MITACA, its site in Milan. The coffee bean remains suspended during roasting, which distributes the heat over the entire surface of the bean, roasting it faster and consuming 30% less energy. After the testing phase, the company intends to implement this innovative system at the main production site in Trieste.

Although readings for emissions in the illycaffè site are well below the limits set by law, the company has decided to progressively revamp all roasters to further reduce total organic carbon emissions. This program started in 2016 and is expected to be completed by 2020.

In 2033, the company will celebrate its 100th anniversary, and the organisation is already working to meet the new and future environmental challenges.

BENEFITS OF EMAS FOR THE FOOD AND BEVERAGE SECTOR

EMAS offers numerous benefits for organisations in the food and beverage sector. Specifically, the scheme:

- Supports the optimisation of resources (energy, water, fertiliser and other materials), reducing exploitation costs.
- Facilitates compliance with the environmental requirements and provides transparency thanks to the additional checks by the EMAS verifier and the EMAS Competent Bodies.
- Is compatible with and facilitates the implementation of other voluntary standards in the sector, such as organic production.
- Increases the level of staff participation and interaction with other stakeholders, ensuring the integration of the business into its local context.
- Promotes innovation and can facilitate new business models adapted to the needs of stakeholders along with new market concerns and expectations.
- Can contribute to access to customers in the retail sector, particularly those customers that take good environmental practices into account in their purchasing decisions.

Some regions and Member States have already started to include specific regulatory reliefs for EMAS-registered organisations. For more information about other regulatory relief and incentives in the EU Member States, see the study on Reinforcing Added Value for EMAS (RAVE).

OUTLOOK

The food and beverage sector plays a key role in the economy of EU Member States. It is also significant from an environmental perspective, given that certain aspects of the food production are strongly related to environmental issues.

Regardless of the size of the organisation, the food and beverage sector must adapt to a changing environment. It also needs to increase its resilience as one of the sectors that can be affected by climate change and biodiversity loss, as well as by increasing societal demands.

This can be achieved through the **implementation of Best Environmental Management Practices (BEMPs)**[7]. BEMPs provide specific guidance for the food and beverage sector based on actions and techniques that have been implemented by pioneering organisations and proven successful. Organisations can use the document **to identify the most relevant areas for action, find detailed information on best practices to address their environmental impacts, as well as environmental performance indicators and related benchmarks of excellence to track improvements in sustainability**. EMAS-registered organisations must take the BEMPs into account when implementing their environmental management system, but any organisation is free to access them and identify potential opportunities for improvement.

The Green Best Practice Community, an interactive online tool, presents updated information on existing BEMPs. The tool is particularly useful to the food and beverage manufacturing sector – in addition to documenting relevant best practices, it allows stakeholders to interact and keep the best practices knowledge base [8] up-to-date.

Another way to innovate and improve environmental performance is to participate in specific working groups, for example existing EMAS Clubs, workshops and other meetings organised by EMAS Competent Bodies, or other environmental sectoral platforms such as food and beverage associations, circular economy platforms, and so on.

Last but not least, interaction and networking with other interested parties such as customers, NGOs or neighbourhood associations can offer organisations alternative perspectives and serve as a source for future actions and improvements.

7 BEMPs documents are prepared by the Joint Research Centre of the European Commission. The one for the food and beverage manufacturing sector is available here: http://ec.europa.eu/environment/emas/emas_publications/sectoral_reference_documents_en.htm

8 The Joint Research Center of the European Commission develops and runs the Green Best Practice Community, moderates the contributions of stakeholders, leads the process of validation of the best practices by the members of the Technical Working Groups, performs the quality checks, approves and publishes all the content of the knowledge base.

For more information on EMAS, the registration process and its benefits,

please visit the EMAS website: emas.eu.

EMAS

Publications Office
of the European Union