

# Made of EPS

A NEWSLETTER FROM



**OCEAN  
WISE**

Reducing  
EPS marine litter  
in the North East  
Atlantic

**DGRM**

DIREÇÃO-GERAL DE RECURSOS NATURAIS,  
SEGURANÇA E SERVIÇOS MARÍTIMOS



**Interreg**  
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EUROPEAN UNION



## CLOSED LOOP RECYCLING

- **LET'S TALK ABOUT**

EPS geography

- **IN THE FIELD**

Workshop "Current situation of biodegradable and compostable plastics"

- **OCEANTOON**

**IN  
THIS  
ISSUE:**

## EPS geography

**E**ven EPS and XPS have their geography. There are, in fact, king countries when it comes to the production of these materials. As there are also countries that are champions in recycling.

The most recent OCEANWISE Reports have put the world through a magnifying glass and taken its fingerprints: after all, where is this danger to the ocean concentrated and which countries are best at fulfilling their social responsibility by recycling what they produce and use?

EPS output average (which may also include XPS output) is not exact math. This average can vary from country to country, taking into account cultural factors such as the domestic use of these materials, as well as the number of manufacturers and the size of the export market. The European Association of Plastics Recyclers (EPRO) estimated the consumption of EPS in Europe to be 335,000 tonnes in 2015. Of these, 290,000 tonnes were produced in Europe and 45 000 tonnes imported from outside the EU. On this total, EPRO also estimates that only 27% was recycled, 40% recovered and 33% sent to landfill.

More specifically, studies such as the 2017 edition of *Conversio* show us, for example, that Germany have used 268 000 tonnes in the construction sector this year – one of the main sectors (construction) in the world that uses these materials the most. Of this total, 74% was used for EPS product and 26% for XPS. A trend followed by the Netherlands, which according to official national statistics for 2015, used 50 500 tons for EPS and 12 000 for XPS.

## EPS Production Demand in Six of the Focus Countries

Country	Plastics Demand - Tonnes	EPS Production Demand - Tonnes	EPS Production Demand as % of overall Plastics Demand
Germany	12,600,000	315,000[1]	2.50%
France	4,920,000	152,000[2]	3.09%
Spain	3,940,000	42,793[3]	1.19%
Netherlands	1,950,000	62,500[4]	3.21%
Denmark	770,000	30,000[5]	3.90%
UK	3,740,000	45,000[6]	1.20%

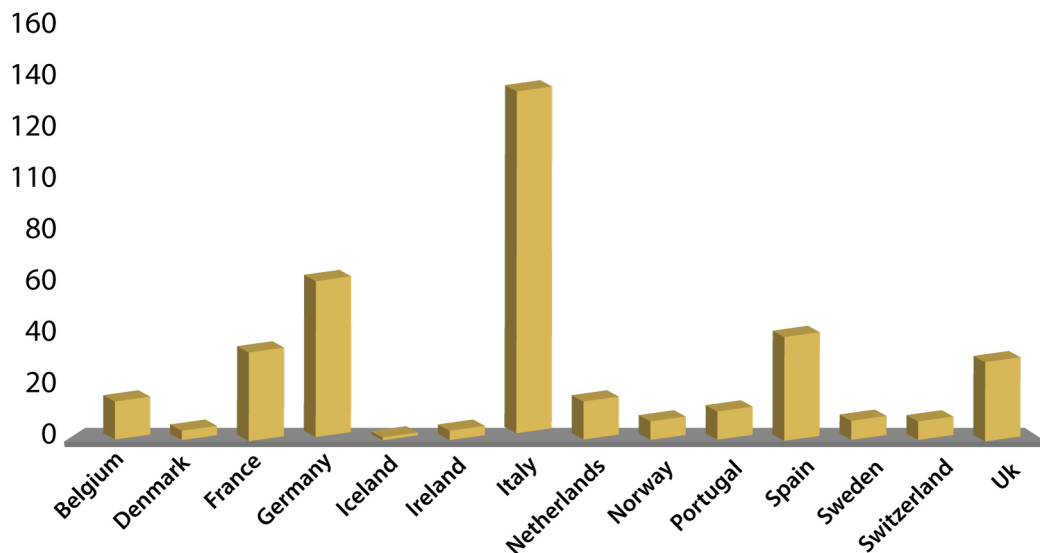
About the EPS manufacturing and processing industry, it is known that there are more than 390 different companies, many of them with several units spread across the 14 main countries where the use of EPS is in focus (see graphics).

The OCEANWISE reports also give the example of developed countries in Europe, such as the United Kingdom and Ireland, which do not have raw material manufacturing companies and, therefore, import it in the form of microspheres. But the documents remind us: it is expected that manufacturing and transformation will always be done in the vicinity of the city or country where they are used, to reduce the distance between locations, since EPS and XPS have 98% air content.

In manufacturing and transformation, Italy occupies the top position, with the largest number of EPS manufacturers. Which means 40% of the EPS packaging used in the EU is produced here. The report's conclusions, however, leave a question unanswered: why does this concentration exist in a single country? "It's not clear", even because "there is no indication that the state has encouraged investment in this specific sector at any stage", it concludes.

Let's take this to the magnifying glass, then. Germany, on the other hand, is the biggest exporter, reaching 496 million euros in 2016. This means a 15% of the world market. Next on the list are countries such as the Netherlands (10%), France (5.6%) and Belgium (4.3%). Italy does not even make the top, which the report says is due to "a lower value of EPS product type that forms the majority of its exports and/or that little of the EPS and XPS produced for construction purposes and insulation is exported".

## NO. OF EPS MANUFACTURERS

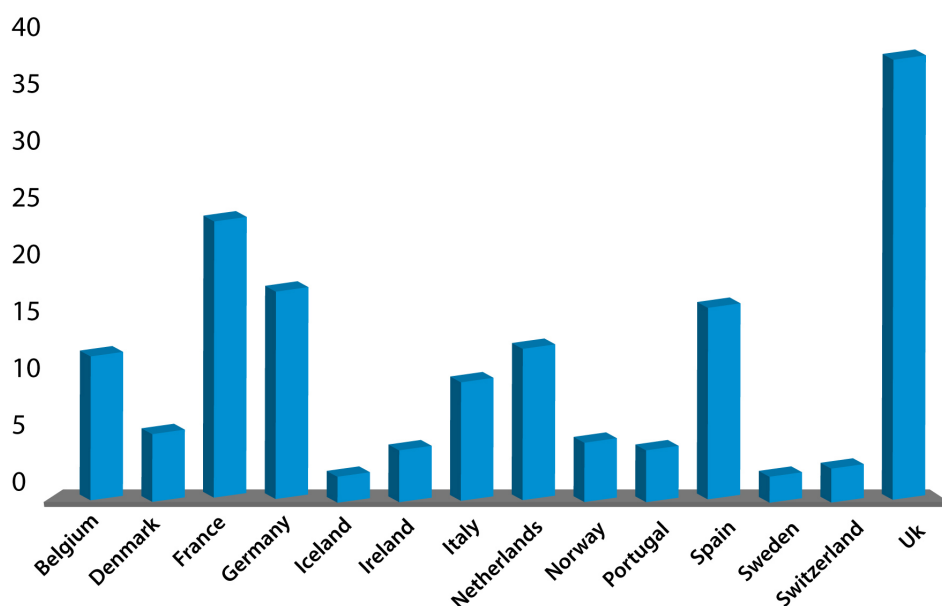


Number of EPS Manufacturers/Transformers in Focus Countries  OCEANWISE REPORT

But what about recycling rates? We have already told this on our last issue: only 3 million cube meters of EPS are landfilled each year, according to a French recycling company.

But calculating recycling data has been a challenge for several years. For many reasons, including the type of reference that this material has in each country. In Denmark, for example, EPS is referred to as “flamingos”. Taking into account the caution that the numbers require, there were 154 EPS recycling companies in the 14 countries in focus.

## NO. OF EPS RECYCLERS



Number of EPS Recycling companies  OCEANWISE REPORT

It is important to remember that although the compaction of this material occurs, as a rule, at or near where the waste is generated, it is also frequently exported for recycling. Here, the UK and Ireland change their direction and export to recycling companies located in the Netherlands, Spain and Germany. These are EUMEPS statistics for 2013 – the most recent available.

In Europe, it is estimated that 27% of EPS is recycled, 40% recovered and 33% ends up in landfill. The EPS Industry Alliance points out that 53 400 tons of EPS were recycled in the US in 2016 alone, with 54% referring to industrial EPS and the remaining 46% to post-consumer EPS.

### EPS Production Demand in Six of the Focus Countries

EPS Recovery Data (2013)	Recycling %	Energy Recovery (WtE) %	Incineration %	Landfill %
Belgium	46%	50%	0%	4%
Denmark	17%	80%	0%	3%
France	38%	34%	0%	28%
Germany	56%	41%	1%	2%
Iceland	0%	21%	0%	79%
Ireland*	0%	0%	40%	60%
Italy	38%	19%	2%	41%
Netherlands	60%	36%	0%	4%
Norway	35%	59%	0%	6%
Portugal	14%	21%	0%	65%
Spain	18%	20%	0%	72%
Sweden	14%	75%	0%	11%
UK	24%	34%	5%	37%
AVERAGES	28%	38%	4%	32%



## Current situation of biodegradable and compostable plastics

On June 30 of this year, the CETMAR foundation, in partnership with the OCEANWISE project and in collaboration with the company Sustainn (specialized in circularity issues), organized an online workshop called “Current situation of biodegradable and compostable plastics: Fields of application and characteristics of management and enhancement”. At this meeting, participants discussed the challenges that the management, separation and valorization of bioplastics - mainly biocompostables - can generate coexistence in the market and in the entire value chain with traditional petroleum-based plastics.



Where do EPS and XPS come in here? Generally, it will be easier to think of these materials as isolated from the other ranges, largely due to the format they occupy in a final phase – styrofoam. But they are actually also plastic, a rigid cellular plastic, which can have different forms and applications.

And knowing the types of plastic, so that we can transfer them to “bio”, is an important step in the process, recalled Sofía Collazo Bigliardi, from AIMPLAS. She remembered the importance of knowing the proper terminology, the types of bioplastics, the necessary laboratory studies, as well as levels of biodegradation and regulations covering compostable containers and packaging.



In fact, in this segment, Rosa Puig Moré, Marketing Manager of Novamont Iberia, S.L.U., also recalled at the conference that compostable biopolymers offer solutions to specific environmental problems. As is the case of soil and water contamination, by reconciling product quality with a more efficient use of resources.





The advantages of recycling bioplastics via composting became clear: in this way, they can literally go back to their roots, to the earth, already in the form of compost. Which helps to close the life cycle of a product without the need for industrial transformation or the creation of new ones. In addition, that industrial transformation can trigger toxic effects.

Julio Maroto, coordinator of the Fishery Products Technology area at CETMAR and head of the OCEANWISE Project Center, opened the conference remembering that the improvements witnessed in recent years in this area are many and varied, but there are always adding challenges. One of the main challenges is the waste collection and segregation systems, necessary for the survival of the materials and the efficiency of recycling. Inadequate collection and segregation puts the bioplastics market at risk.

In this regard, Judit Jansana Borrajo, head of Tomra Sorting SL, spoke about the technology for the efficient automatic identification and classification of Plastics and Bioplastics in waste sorting companies.



The specialist recalled how the segregation system is set up in the urban solid waste treatment stations (the so-called RSU), equipped with optical separators that allow automatic sorting, to decompose the waste into monomaterial fractions.

But if this system works with conventional plastics, such as PET and rigid high-density polyethylene, the same cannot be said when EPS, XPS and also PVC, for example, arrive at these stations. Judit Borrajo spoke of the difficulty encountered, due to the



lightness and geometry of these materials, which cannot be subjected to an automatic system and then differentiated and separated like others.

Therefore, it was concluded, the method has to be a step backwards, already in the urban containers, with a differentiated arrangement for conventional plastics and biodegradable bioplastics. The only way to safeguard the recovery of these materials, she said.

But Óscar Hernández, Director General of the National Association of Plastic Recyclers, ANARPLA, presented another alternative: to limit. Just constraining the use of bioplastics to certain applications with environmental benefits.

He recalls that, in the waste hierarchy, the priority is on reduction, reuse and recycling, before reaching biodegradable plastics.

This intersects with the idea of María Pérez Sáinz, a specialist in Circular Economy in the R&D department of the Nueva Pescanova Group, who presented alternatives in the sphere of the circular economy.



The speaker told us that this company is committed to using more sustainable and recyclable packaging, while ensuring the same quality and freshness in the transport of fish. And we have talked a lot, in previous issues, about the importance of fish boxes in marine pollution.

“We try to use recyclable materials and for which recycling technology actually exists in the country where each product is sold. We also seek to eliminate plastic and use recycled plastic wherever possible without compromising food safety. We also study and validate the use of new materials, such as bioplastics and compostable plastics, which respect the environment more”, she said.

The conference closed with Marisa Fernandez Cañamero, Coordinator of the Marine Environment Management and Control area at CETMAR. Marisa is also coordinator of the Technological Platform for the Protection of the Coast and the Marine Environment (PROTECMA) and explained that this platform financed by the Ministry of Science and Innovation aims to promote the public-private relationship in order to mitigate marine pollution, while that promotes technological development and supports the implementation of legislation.

In the meantime, the Circular Economy Interplatforms Group (GIEC) was announced, of which PROTECMA is a part, where 25 Technological Platforms are integrated. This aims to promote the circular economy in different sectors, nationally and internationally. Through the tool that they created “Connecting for a Circular Economy”, anyone can disclose or consult information on recoverable waste and even find out about the suppliers of a certain technology that have a view in recovering and reusing waste.

# OCEANTOON

A cartoon for reflection, from the brazilian illustrator Arionauro da Silva Santos. What would it be like if living beings living in the oceans brought all the garbage they find.





## The OceanWise project is co-financed by the European Regional Development Fund through the Interreg Atlantic Area Programme



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