

# Aerosol Cans in Europe:

## A Story of Infinite Recyclability

---

Jenny Wassenaar  
Chief Sustainability Officer & SVP Global R&D

Bazzano, Alice  
Sustainable Partnership & Ecosystem Director

© 27-July-2023

## Table of Contents

1. Introduction	3
2. Metal Recycling in Europe	4
3. Collection System and Infrastructure	5
4. Safe Recycling	6
5. Consumer Awareness	8
6. Design for Recyclability	9
7. Conclusion	9
8. References	10



## Introduction

With its high global recycling rates and capability for the material to be recycled infinitely, metal packaging has become one of the preferred choices for brands seeking to enhance their circularity initiatives. The distinctive advantage of metal lies in its ability to undergo repeated recycling processes without any degradation in quality or purity<sup>1</sup>. This attribute makes it an ideal candidate for promoting circularity, as it enables the conservation of natural resources and the reduction of waste through infinite recycling.

Aerosol cans are a growing segment in the metal packaging market, with more than five billion units produced in Europe each year<sup>2</sup>. According to Euromonitor data<sup>3</sup>, the global industry for aerosol cans is expected to grow by **3%** between **2022** and **2026**. Made of aluminium or steel (*tinplate*), aerosol cans are functionally used in a variety of segments, including beauty and personal care (*such as hair sprays, deodorants, and shaving creams*), food (*such as whipped cream and other dairy products*), household appliances, and paints and coatings.

Like every other metal packaging, aerosols can be recycled. However, their unique format and pressurisation might require special care in the recycling process. Additionally, consumers' perceptions and behaviours might negatively affect recycling rates. Therefore, education plays a pivotal role in increasing circularity and ensuring the preservation of valuable resources. With this white paper, we aim to offer brand owners a comprehensive yet concise perspective on the recycling of aerosols in Europe, dispelling any misconceptions and giving practical guidelines for overcoming potential challenges.

The following sections provide: **(i)** a brief introduction to the current state of metal recycling in Europe, **(ii)** the factors which affect the recycling rate of aerosol cans, and **(iii)** advice on each factor to support and increase recycling rates of aerosols.



## Metal Recycling in Europe

Metal packaging in Europe has consistently high recycling rates, with over **85%** of steel packaging<sup>4</sup> and **73%** of aluminium cans<sup>5</sup> being recycled. Such high recycling rates have been achieved thanks to the magnetic property of metal, which allows easy segregation during the recycling process, as well as the high demand for recycled metal to make new products.

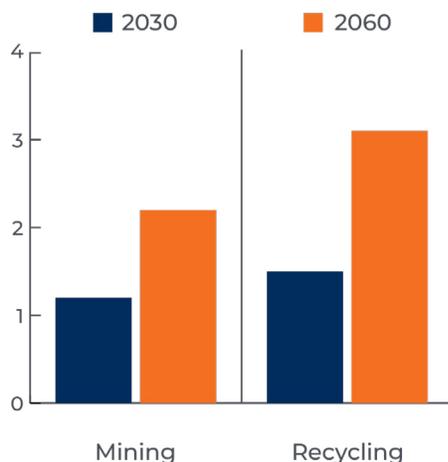
When sorted correctly, the quality of the recycled metal is comparable to virgin material. Recycling metal packaging preserves natural resources and saves significant amounts of energy compared to producing new metal from raw materials. In the case of aluminium, for example, production from recycled materials requires only about **5%** of the energy compared to producing aluminium from virgin material “raw bauxite ore”<sup>6</sup>.

However, despite the high recycling rates, the demand for recycled steel and aluminium is exceeding the supply.

### According to OECD<sup>7</sup>:

At the global level recycling of metals is projected to grow reaching the parity between recycled metal and virgin in 2030, after which the recycling sector is projected to outpace the mining sector.

Figure 1: The metal recycling sector is projected to outpace the mining sector<sup>7</sup>



Growth of metal output between 2017 and 2060, index 1 in 2017

Considering the infinite recyclability of metal and existing recycling infrastructure, it is realistic to aim at further increasing recycling rates. In Belgium for example, the recycling rate for metal has already achieved **96%** in 2020<sup>8</sup>. To reach such an ambitious level, every pack counts, including aerosols.

Even though there are no official European figures, the recycling rate for aerosols is deemed to be lower than other types of metal packaging. For example, an Alupro<sup>9</sup> waste composition analysis conducted by nine local authorities in the UK shows that aerosol cans are correctly placed in the recycling bin in about **60%** of the cases, while for more conventional packaging like beverage and food cans, the same number is higher than **80%**.

An explanation for the lower recycling rates might come from a combination of factors such as a lack of consumer awareness and confusion about how to recycle aerosol cans. In the following paragraphs, we will analyze four factors that might affect aerosol cans recycling:

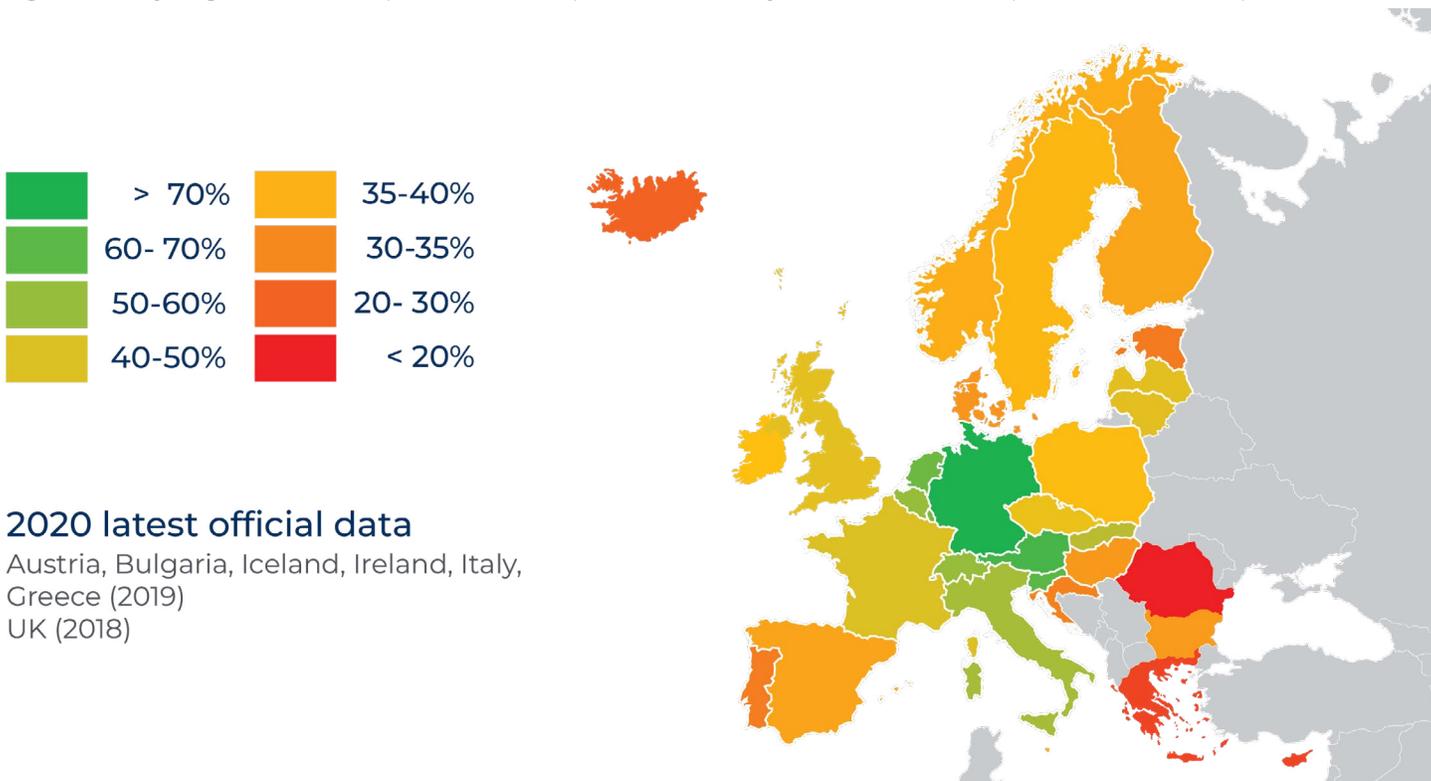
1. Collection system and infrastructure
2. Safe recycling
3. Consumers awareness
4. Design for recyclability



## Collection system and infrastructure

The European Union's Waste Framework Directive<sup>10</sup> requires member states to take measures to promote the recycling of waste, including aerosol cans. Although differences exist on a per country and even municipal level, it is fair to say that most of the countries in Europe have specific recycling programs in place to collect and recycle metal, including aerosol cans, either in a dedicated stream or commingled system<sup>11</sup>. Consumers can typically recycle empty aerosol cans by placing them in their household recycling bin or by bringing them to a designated recycling center.

Figure 2 – Recycling rates of municipal waste in Europe, EU 27 + Norway, Switzerland and UK (2021, Eurostat data<sup>12</sup>)



To give some examples, in countries such as Italy, aerosol cans are recycled with other metal packaging, while countries such as Switzerland collect aerosol cans separately for recycling. If containing hazardous chemical products, aerosols are considered hazardous waste and should be crushed before being recycled or incinerated. Even in the latter case, metal will still be recycled: steel and aluminium can be recovered directly from incineration bottom ashes, a common practice across Europe.

Despite the different systems, aerosol metal is commonly finding its way to be recycled, unless the waste is sent to a landfill. In 2020, **16%** of all municipal waste generated in the EU was landfilled<sup>13</sup>.

The European Union has set recycling targets for member states and landfill is quickly declining in favor of more recycling thanks to the landfill directive<sup>14</sup>.

As we will explore in the next chapter, the separate collection of aerosol from other metals is to be considered unadvisable according to various organizations, unless a well-functioning system specific for aerosol recycling is already in place and it is supported by correct consumer behavior.

Consumers can typically recycle empty aerosol cans by placing them in their household recycling bin or by bringing them to a designated recycling center

## Safe Recycling

The propellant in an aerosol can is the gas used to press the product out of the can to spray the content. Depending on the gas used and the content of the product in the aerosol can, a non-empty<sup>15,16</sup> aerosol can be flammable and therefore represents a theoretical risk of fire.

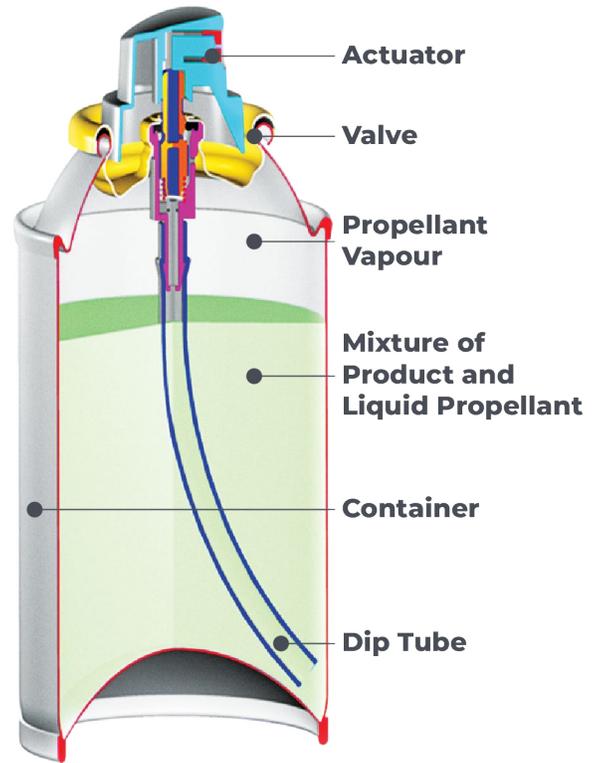
The recycling process of metal cans contains multiple steps. First are the collection and sorting of materials, which are then compacted into bales before being transported to a recycling facility. In the baling process, the metal is pressed together using high forces to make blocks of metal. If aerosol cans have not been emptied, the compressed propellant can cause the contents to be released, posing a potential fire hazard. This increases when aerosol cans are collected separately from other metal packaging, as that leads to a potential accumulation of propellants. In a mixed metal stream, the possibility of having a concentration of non-empty aerosol is lower, and by taking correct precautions, the risk could be further reduced (e.g., outdoor baling and/ or adequate ventilation)<sup>17</sup>.

According to the European Aerosol Federation (FEA)<sup>18</sup>, only two aerosol cans are found in one cubic meter of mixed packaging waste and empty aerosols represent less than **5%** by weight out of all metal containers (e.g., food cans, and beverage cans) sorted at the Material Recovery Facilities (MRFs).

Figure 4 – Aerosol can recycling process



Figure 3 – Inside a liquified gas aerosol can



Source - BAMA British Aerosol Manufacturers' Association

<sup>15</sup>- According to US Environmental Protection Agency, an aerosol is considered empty if contains less than 3% of its original content [www.epa.gov/hw/increasing-recycling-adding-aerosol-cans-universal-waste-regulations](http://www.epa.gov/hw/increasing-recycling-adding-aerosol-cans-universal-waste-regulations)  
<sup>16</sup>- The UK Environmental agency is referring to British Standard BSEN 13430:2000 definition of packaging as 'empty if - under normal and foreseeable circumstances - all product residues that can be removed by the emptier have been removed by using practices commonly employed for that type of packaging'

The study from FEA, Guide on Recycling Post-Consumer Aerosols<sup>18</sup>, mentions more than ten studies focused on how to recycle aerosol safely. Approximately two decades of practical experience through recycling programs across numerous countries demonstrates that by implementing basic safety measures at the sorting centers, used post-consumer aerosol cans can be effectively and safely included in the normal household waste stream for packaging.

The study concludes that the presence of aerosols in the metal packaging stream provides a risk level comparable to those that MRF is already facing from other sources (*for instance, MRF should be prepared to deal with ignition products like batteries*). Therefore, the systematic inclusion of empty aerosols may not significantly increase the overall risk level in MRFs.

Furthermore, according to FEA<sup>18</sup>, when recycling systems do not accept aerosols, consumers could miss guidance on how to recycle the cans. This could lead to the disposal of, for example, non-empty cans in the wrong recycling bin or general waste. According to the Buying Green report<sup>19</sup>, **59%** of consumers look for information on the recyclability or sustainability of the packaging on products they buy, and **58%** mention that they participate in reducing food and packaging waste. Therefore, if consumers are educated to empty aerosol cans and informed on how to recycle the cans in their region, MRF can adequately be prepared to handle them, hence increasing the recycling rates.

An Italian study investigating the percentage of non-empty aerosol in aluminium and in steel samples of disposed aerosol cans found **6%** and **10%** of non-empty cans respectively<sup>20</sup>. In all forms of the recycling of aerosol cans, it is important to emphasize, at the consumer level, the importance of providing empty aerosols. This could be done through, for example, educational information printed on the can, information available at the point of purchase, or through websites where information can be found on how to recycle.

Finally, to increase recycling, empty aerosols should not be segregated from other metal waste streams, as advocated by FEA. The only exception could be special situations with existing effective infrastructure already in place (*e.g., Switzerland*).

*"Practical experience of about 20 years by recycling schemes in many countries shows that by taking some basic precautions, used-up post-consumer aerosols can be included in the normal household waste packaging stream effectively and safely" - FEA<sup>18</sup>*



**YES  
YOU CAN  
RECYCLE  
EMPTY  
AEROSOL CANS**

## Consumer awareness

Several studies reveal that consumers are not always aware that aerosol cans are recyclable.<sup>21,22</sup> The recycling process for aerosol cans may vary depending on local regulations, making it difficult for consumers to know how to recycle them correctly. Some consumers may also believe that aerosol cans are made of a unique material that cannot be recycled, or that the small size of the can makes it not worth the effort to recycle.

On top of that, in the past, aerosols were associated with substances known as **chlorofluorocarbons (CFCs)**, which are harmful to the ozone. Although since 1989 aerosol cans are CFC-free products by law<sup>23</sup>, misperception is still ingrained in some consumer's minds.

Ipsos, a global market research and consulting firm, and AIA (*Italian Associations for Aerosol*)<sup>16</sup> ran a study in 2021 on Italian consumer awareness of aerosol disposal. Results showed more than two-thirds of the respondents know how to dispose of both empty and non-empty aerosols, with a slightly higher result for those that are empty. The result might sound positive, but it is lower compared with knowledge about other "difficult" packaging types (e.g., *batteries*), showing the need to keep reinforcing communication among consumers.

In the UK, many consumers dispose of aerosols in the residual waste instead of recycling them<sup>9</sup>. Even though over **90%** of UK households can recycle aerosols through kerbside recycling collections, a WRAP<sup>24</sup> study found that most consumers still dispose of aerosols in the residual waste instead of recycling them.

Campaigns improving education and access to information about proper recycling practices, as well as promoting the economic and environmental benefits of recycling, can help increase consumer understanding and engagement and could encourage them to recycle their aerosol cans. For example, in 2022, Alupro, the aluminium packaging recycling organization, launched in the UK, "The Lonely Aerosol" campaign, using humor to engage consumers<sup>25</sup>.

The Metal Recycles Forever™ logo<sup>26</sup> can be used to promote the recyclability of metal materials, encouraging consumers to recycle their metal waste.

Launched by Metal Packaging Europe<sup>27</sup>, the logo is designed to convey a consistent message that works across multiple languages and packaging formats. The logo can be used both on and off-pack and helps the industry and brands to achieve higher levels of recycling by communicating a cohesive message at every touchpoint.

*"The public survey indicated that there is confusion, lack of confidence and knowledge from the public on how to recycle used aerosols"*  
- Alupro<sup>9</sup>



## Design for recyclability

Aerosol cans are made of a combination of metal and plastic. Plastic can be taken out during recycling after shredding the packaging. However, plastic contaminations should be reduced as much as possible: a fully removable cap is advised, and printing is recommended over labelling as all non-metallic parts are lost during recycling<sup>28</sup>. The less material in the mix the better: also, valves should be chosen to match the metal of the can (e.g., aluminium valve for aluminium aerosol).

By collaborating across the value chain, it may be possible to rethink the design of aerosols, leading to an increase in the market value of recycled aerosols. To achieve this, research efforts should be directed towards examining the impact of pressurization requirements, the nature of propellants, as well as the materials used for valve, pipe, and actuator.

## Conclusion

Aerosol cans are an important part of the metal packaging market and have enormous potential for enhancing circularity initiatives. Recycling aerosols is crucial to unlock the power of circularity and fight climate change.

Aerosol cans can be recycled infinitely without any loss in quality or purity, making them an excellent choice for promoting resource conservation and waste reduction. The industry has made great strides in ensuring the safe and effective recycling of aerosol cans, with established control measures in place to mitigate potential hazards. However, to make a real difference, we need even higher recycling rates.

With increased consumer awareness, better collection systems and infrastructure, and innovative aerosol designs, the recycling rates for aerosol cans can keep improving, contributing to a more sustainable future.

By embracing the benefits of aerosol recycling, brands and consumers alike can help conserve natural resources and reduce waste, while promoting circularity and sustainability.

### Disclaimer:

*Trivium Packaging does not take responsibility for any independent reliance on the information as stated in this Whitepaper. Although all reasonable and diligent care has been used to ensure that the information provided in this Whitepaper is accurate, complete and up-to-date, nothing contained herein shall, or may, be construed to imply any representation or warranty of any kind, including but not limited to, any representation or warranty as to the accuracy, currency or completeness of this information or non-infringement of any third party (intellectual property or proprietary) rights. Trivium Packaging has no obligation to update any statements contained in this Whitepaper, unless required by applicable law.*



## References

1. Metal Packaging Europe, webpage sustainability area: [www.metalpackagingeurope.org/sustainability#recyclesforever](http://www.metalpackagingeurope.org/sustainability#recyclesforever)
2. FEA European Aerosol Federation: [www.aerosol.org/regulatory-policy-affairs/environment/recycling](http://www.aerosol.org/regulatory-policy-affairs/environment/recycling)
3. Euromonitor International: [www.euromonitor.com](http://www.euromonitor.com)
4. European Aluminium: [www.european-aluminium.eu](http://www.european-aluminium.eu)
5. APEAL Association of European Producers of Steel for Packaging: [www.apeal.org](http://www.apeal.org)
6. International Aluminium Institute, Aluminium Recycling Factsheet, available at: [www.international-aluminium.org/wp-content/uploads/2021/01/wa\\_factsheet\\_final.pdf](http://www.international-aluminium.org/wp-content/uploads/2021/01/wa_factsheet_final.pdf)
7. OECD (2018), Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences, OECD Publishing, Paris. [www.doi.org/10.1787/9789264307452-en](https://www.doi.org/10.1787/9789264307452-en)
8. Eurostat 2020 data: [www.ec.europa.eu/eurostat/databrowser](http://www.ec.europa.eu/eurostat/databrowser)
9. Resource Futures on behalf of Alupro, Increasing aerosol recycling in the UK, March 2023 available at: [www.alupro.org/industry/programmes/the-uk-aerosol-recycling-initiative/a-roadmap-to-increasing-uk-aerosol-recycling/](http://www.alupro.org/industry/programmes/the-uk-aerosol-recycling-initiative/a-roadmap-to-increasing-uk-aerosol-recycling/)
10. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives: [www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705](http://www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705)
11. Information collected by interviews and web resources. See country associations websites and local recyclers for example: [www.citeo.com](http://www.citeo.com), [www.consozioricrea.org](http://www.consozioricrea.org); [www.asm-recycling.co.uk](http://www.asm-recycling.co.uk), [www.ecoembesdudasreciclaje.es](http://www.ecoembesdudasreciclaje.es)
12. Eurostat Recycling rate of municipal waste 2021: [www.ec.europa.eu/eurostat/databrowser/view/sdg\\_11\\_60/default/table](http://www.ec.europa.eu/eurostat/databrowser/view/sdg_11_60/default/table)
13. European Environmental Agency: [www.eea.europa.eu/ims/diversion-of-waste-from-landfill](http://www.eea.europa.eu/ims/diversion-of-waste-from-landfill)
14. European Commission Landfill Directive, Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste: [www.environment.ec.europa.eu/topics/waste-and-recycling/landfill-waste\\_en](http://www.environment.ec.europa.eu/topics/waste-and-recycling/landfill-waste_en)
15. US Environmental Protection Agency: [www.epa.gov/hw/increasing-recycling-adding-aerosol-cans-universal-waste-regulations](http://www.epa.gov/hw/increasing-recycling-adding-aerosol-cans-universal-waste-regulations)
16. UK Environment Agency, Guidance for the storage and treatment of aerosol canisters and similar packaged wastes, available at: [www.assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/300897/geho111bved-e-e.pdf](http://www.assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/300897/geho111bved-e-e.pdf)

17. BAMA British Aerosol Manufacturers Association, The BAMA guidance to MRF operators, 2008, available at [www.bama.co.uk/library/77](http://www.bama.co.uk/library/77)
18. FEA European Aerosol Federation, Guide on Recycling Post-Consumer Aerosols, 2021, available at: [www.aerosol.org/publications-news/publications/guidance/](http://www.aerosol.org/publications-news/publications/guidance/)
19. Trivium Packaging Buying Green Report 2023, available at: [www.triviumpackaging.com/media/pe5hfxsp/2023buyinggreenreport.pdf](http://www.triviumpackaging.com/media/pe5hfxsp/2023buyinggreenreport.pdf)
20. A.I.A. (Italian Aerosol Association), RICREA (National Consortium for the Recycling and Recovery of Steel Packaging), CiAl (National Consortium for Aluminium Packaging), TÜV Italia, C.N.Q. - National Consortium on Quality, Study of the potential effects arising from the presence of sufficiently empty aerosol cans within the recycling supply chain of steel and aluminium packaging waste, 2020
21. Ipsos on behalf of A.I.A., Ricrea, CiAl, Aerosol e Sostenibilità, 2022
22. WRAP, 2023, Banbury, Recycling Tracking Survey - Behaviours, attitudes and awareness around recycling: Autumn 2022, Prepared by WRAP available at: [www.wrap.org.uk/sites/default/files/2023-02/Recycling%20Tracker%20Report%20November%202022.pdf](http://www.wrap.org.uk/sites/default/files/2023-02/Recycling%20Tracker%20Report%20November%202022.pdf)
23. The Montreal Protocol on Substances that Deplete the Ozone Layer: [www.ozone.unep.org/treaties/montreal-protocol](http://www.ozone.unep.org/treaties/montreal-protocol)
24. Wrap, A framework for greater consistency in household recycling in England, 2016, available at: [www.static.wrap.org.uk/consistency/Read\\_more\\_about\\_the\\_framework.pdf](http://www.static.wrap.org.uk/consistency/Read_more_about_the_framework.pdf)
25. Alupro Lonely aerosol campaign: [www.recyclealuminium.org.uk/why-recycle/#the-lonely-aerosol](http://www.recyclealuminium.org.uk/why-recycle/#the-lonely-aerosol)
26. Metal Recycles Forever: [www.metalrecyclesforever.eu](http://www.metalrecyclesforever.eu)
27. Metal Packaging Europe: [www.metalpackagingeurope.org](http://www.metalpackagingeurope.org)
28. Netherlands Institute for Sustainable Packaging, Recycling Check Metal Packaging, 2022, available at: [www.kidv.nl/recycle-check-metal-packaging](http://www.kidv.nl/recycle-check-metal-packaging)