
RECYCLING OF POST-CONSUMER EPS PACKAGING THE FACTS

Understanding the data:

There are many different sources for EPS recycling rate, and many common misunderstandings and misconceptions, which lead to misreading of the facts. Here are some:

- People mix up Expanded Polystyrene (EPS) with other foamed plastics, for instance Extruded Polystyrene (XPS).
- People think post-consumer recycling rate refers to household waste.
- People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

Here we will address each of these misunderstandings, and subsequently show proof of EPS post-consumer recycling for packaging meeting the Ellen MacArthur Foundation of ***recycled at scale and in practice*** in three different regions of the world. Altogether 33 countries with a population of more than 2 billion people meet the requirements of the Global Commitment.

People mix up Expanded Polystyrene (EPS) with other foamed plastics, for instance Extruded Polystyrene (XPS).

One example of this is distinguishing between EPS and XPS (Extruded Polystyrene). Both materials are polystyrene foam, but they are used for different packaging solutions as they have different technical properties. For instance XPS is used for clamshell packaging, whereas EPS is not.

| | | | | |
|--|-----------|------------------|----|----------------|
| | PS rigid | Pots, trays, ... | No | |
| | EPS rigid | Clamshells, ... | No | Country: Japan |



One such example of this misunderstanding is in the examples used in the Ellen MacArthur Foundation survey. They list clamshells as an example of EPS packaging, which it isn't, rather than showing dominant EPS packaging applications, such as fish boxes and protective packaging.

People think post-consumer recycling rate refers to household waste.

Another issue is that some interpret post-consumer waste only as household waste. This misunderstanding may in part be due to the term consumer, and in the United States the terms for end-user waste are described as post-consumer for households, whereas end-user waste from the commercial sector is categorised as post-industrial.

However according to ISO 14021:2016: *Environmental labels and declarations*
— *Self-declared environmental claims*, the definition of post-consumer material is:

“Material **generated by households or by commercial, industrial, and institutional facilities in their role as end-users** of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.”

And hence not limited to households.

People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

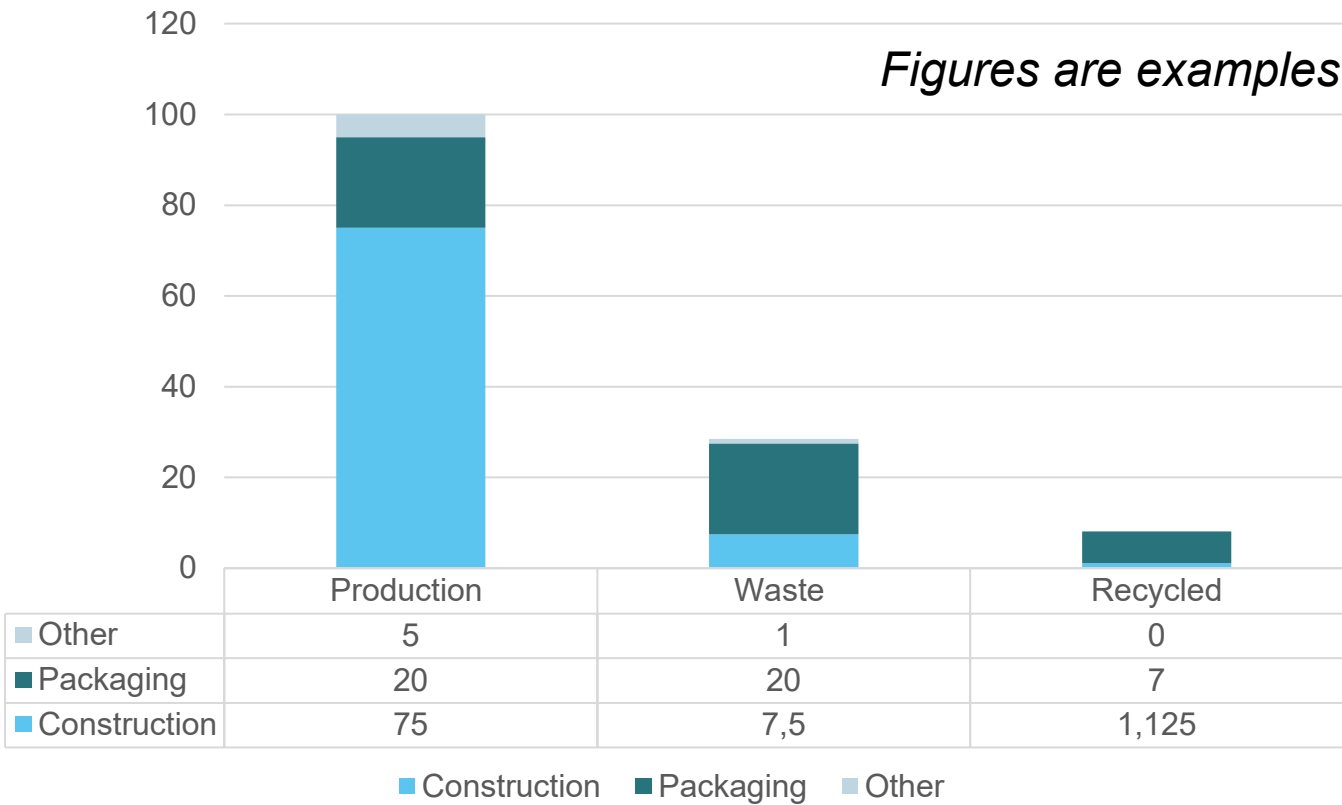
A final cause for misunderstanding is when people read recycling rates for EPS.

Here it is important to remember that EPS is used for both packaging and as insulation material in construction. When EPS is installed in houses, it has a life span of decades. Hence a number of errors can occur when one interprets EPS recycling rates.

- Examining EPS recycling volumes compared to total production.
- Examining EPS recycling volumes compared to total EPS waste, incl. construction waste.

People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

Examining EPS recycling volumes compared to total production.

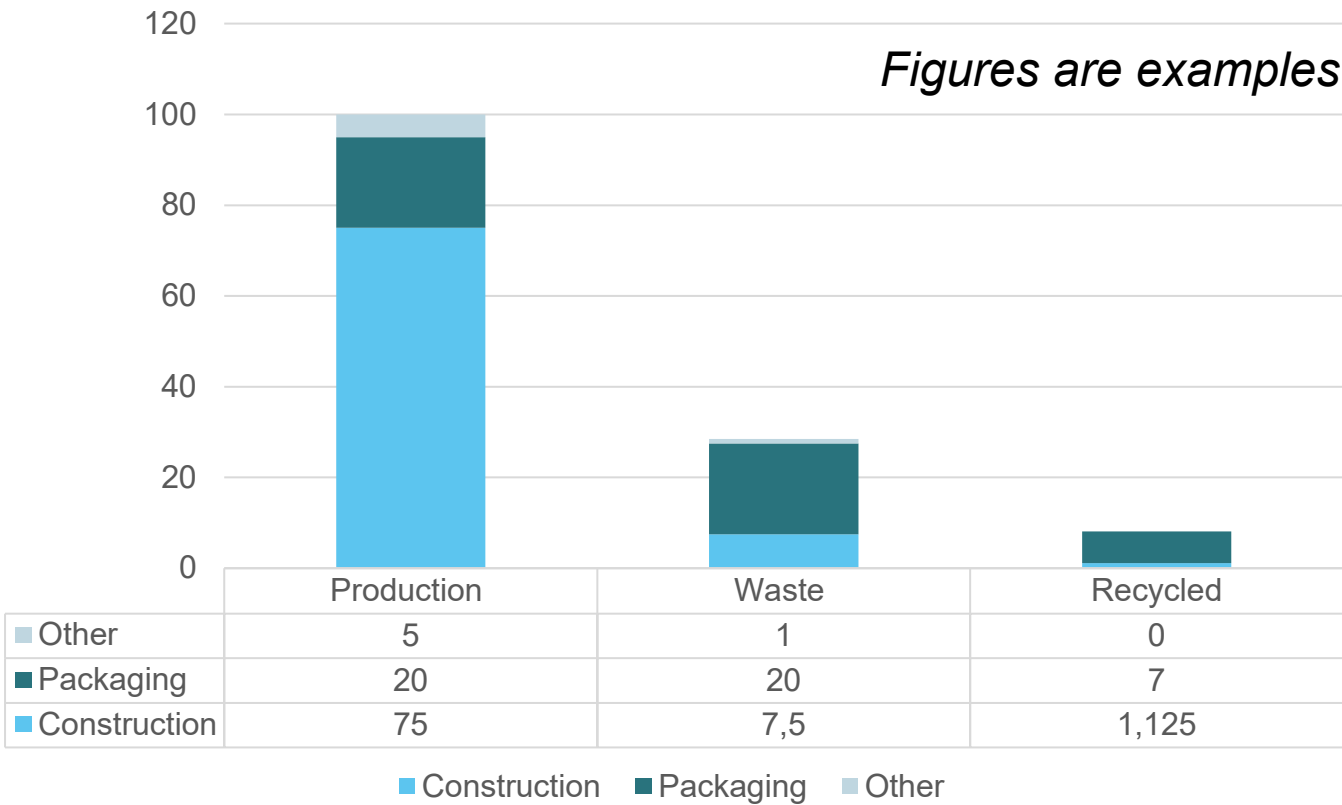


In the figure 75 tons of EPS is used for construction, resulting 7,5 tons of waste from cut-offs and demolition. Resulting in 15% being recycled.

At the same time, 20 tons of EPS are used for packaging and 5 tons for other (e.g. bicycle helmets), with 7 respectively 0 tons recycled. The recycling rate for packaging is 35%.

People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

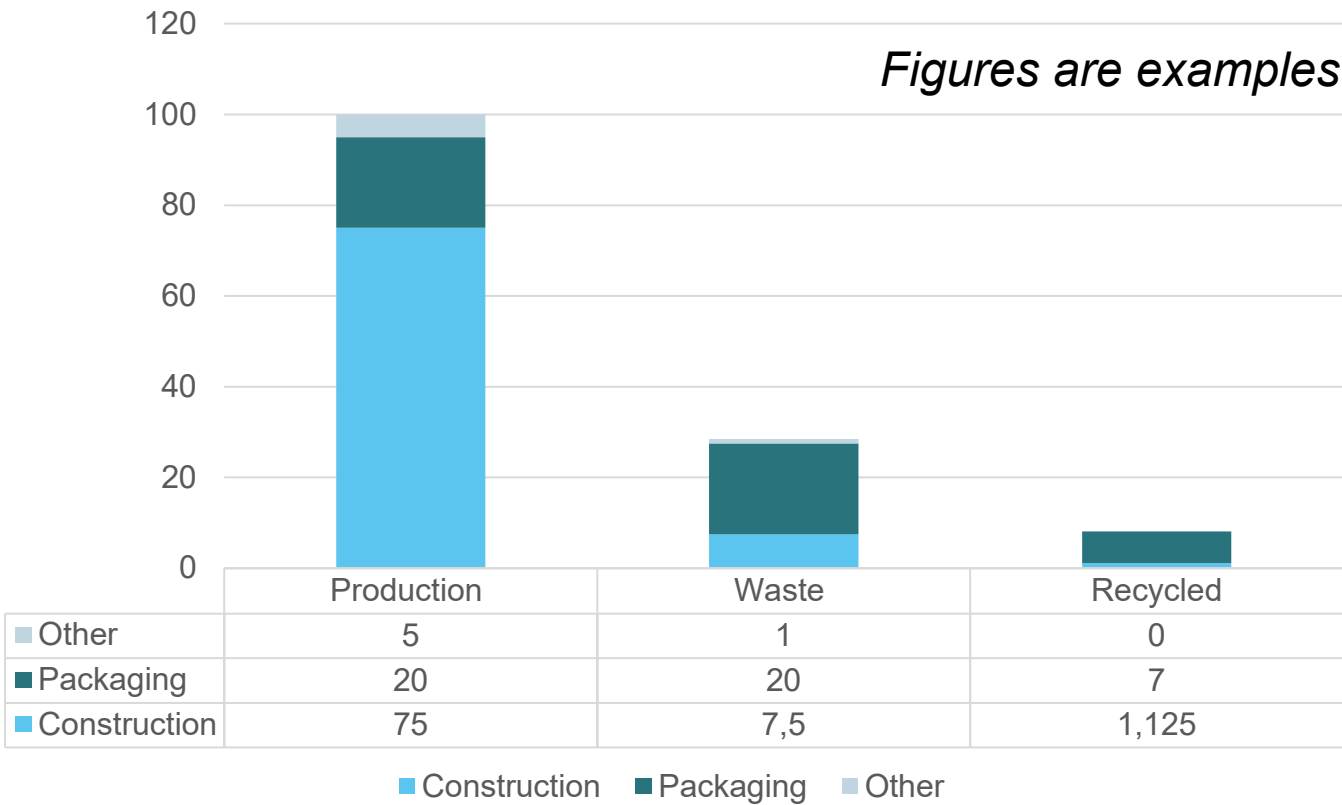
EPS recycling volumes compared to total production.



However if you calculate the recycling rate based on total production volume it becomes 8,125%.

People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

EPS recycling volumes compared to total EPS waste, incl. construction waste.



Even calculating the based on total waste leads to 28,5% recycling rate.

People use the recycling rate of EPS for construction and packaging to assess the recycling rate for post-consumer packaging.

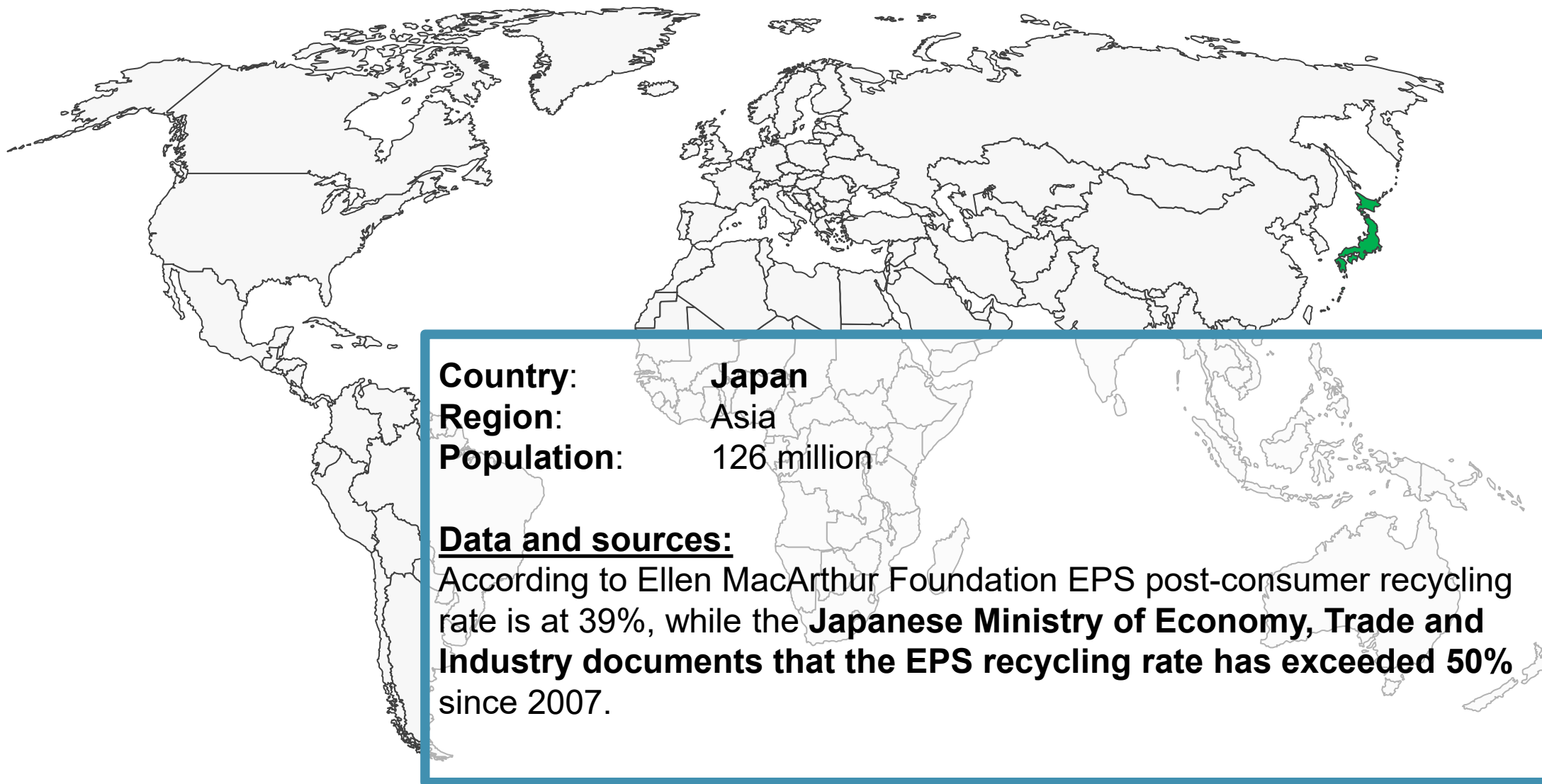
As the example shows, it is important to look at the recycled EPS for the respective applications. Otherwise, the data cited does not reflect the recycling rate for EPS post-consumer packaging.

In the example EPS packaging has a recycling rate of 35%, and EPS construction waste is recycled at 15%*. This gives an overall recycling rate of 28% for EPS. This may lead to an interpretation of EPS packaging being recycled below 30%, since people don't take the different application types into consideration.

**) Construction waste generally has lower recycling rates than packaging.*

SO HERE ARE THE FACTS OF RECYCLING OF POST-CONSUMER EPS PACKAGING



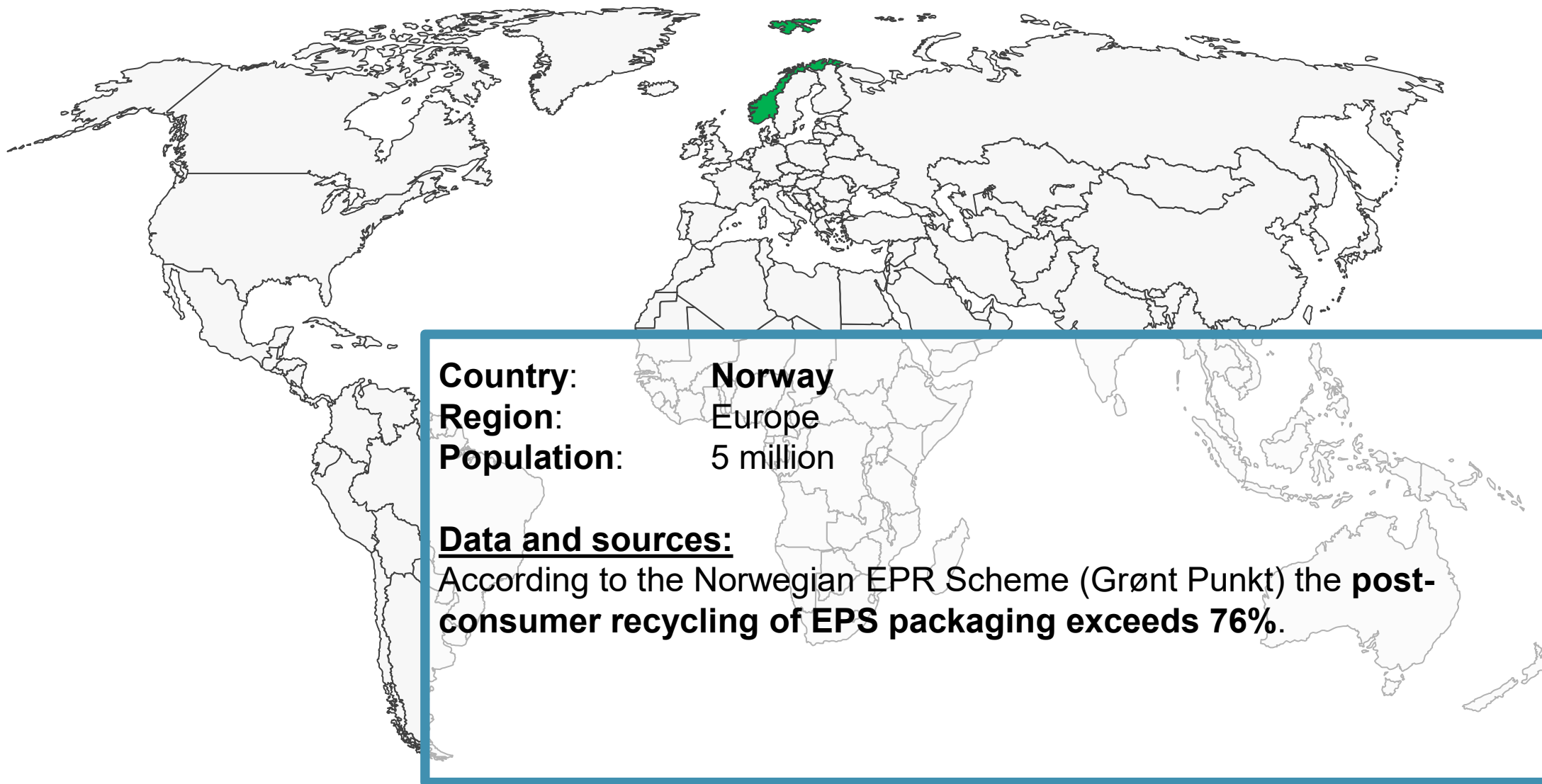


Country: Japan
Region: Asia
Population: 126 million

Data and sources:

According to Ellen MacArthur Foundation EPS post-consumer recycling rate is at 39%, while the **Japanese Ministry of Economy, Trade and Industry documents that the EPS recycling rate has exceeded 50% since 2007.**



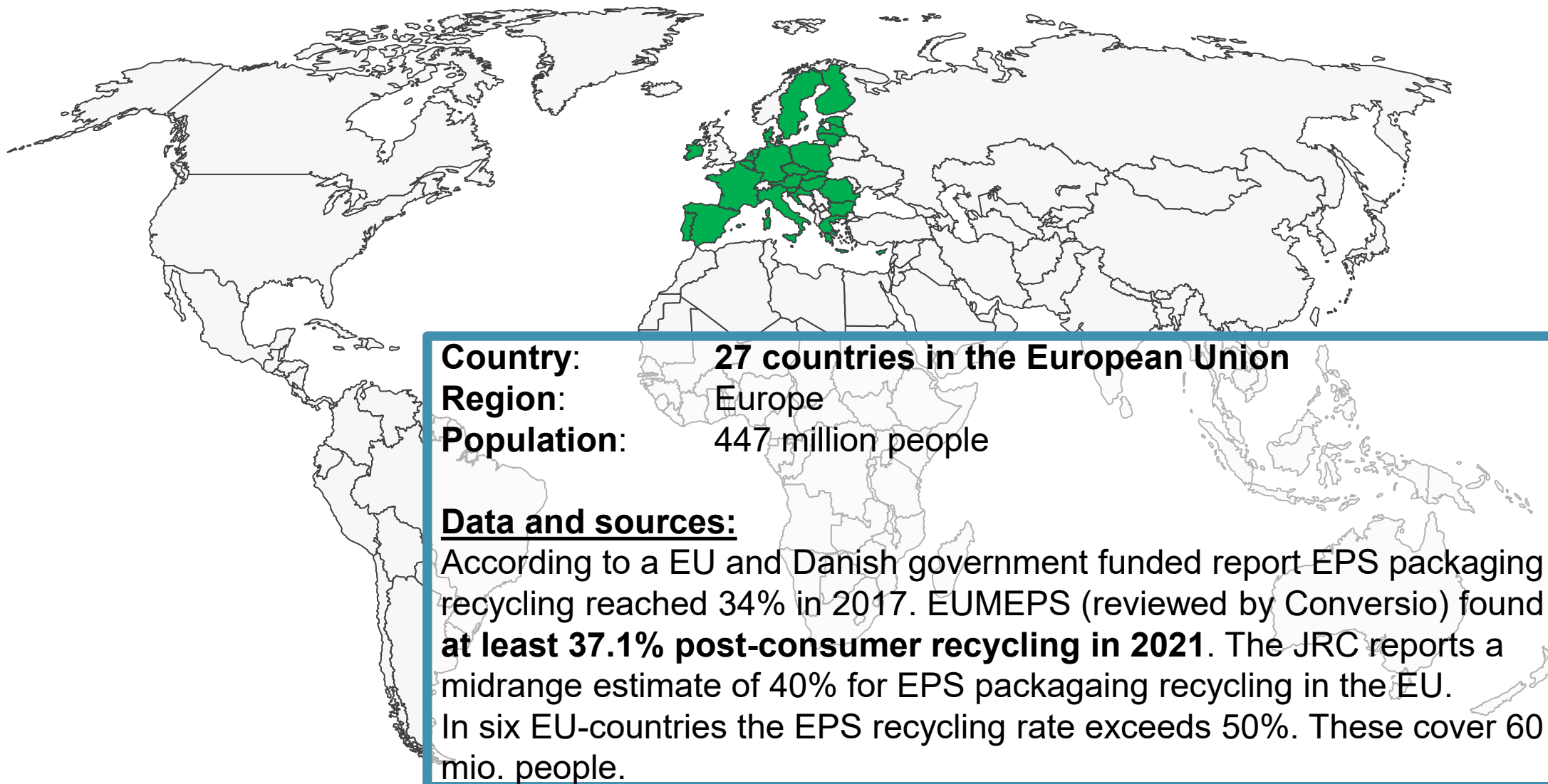


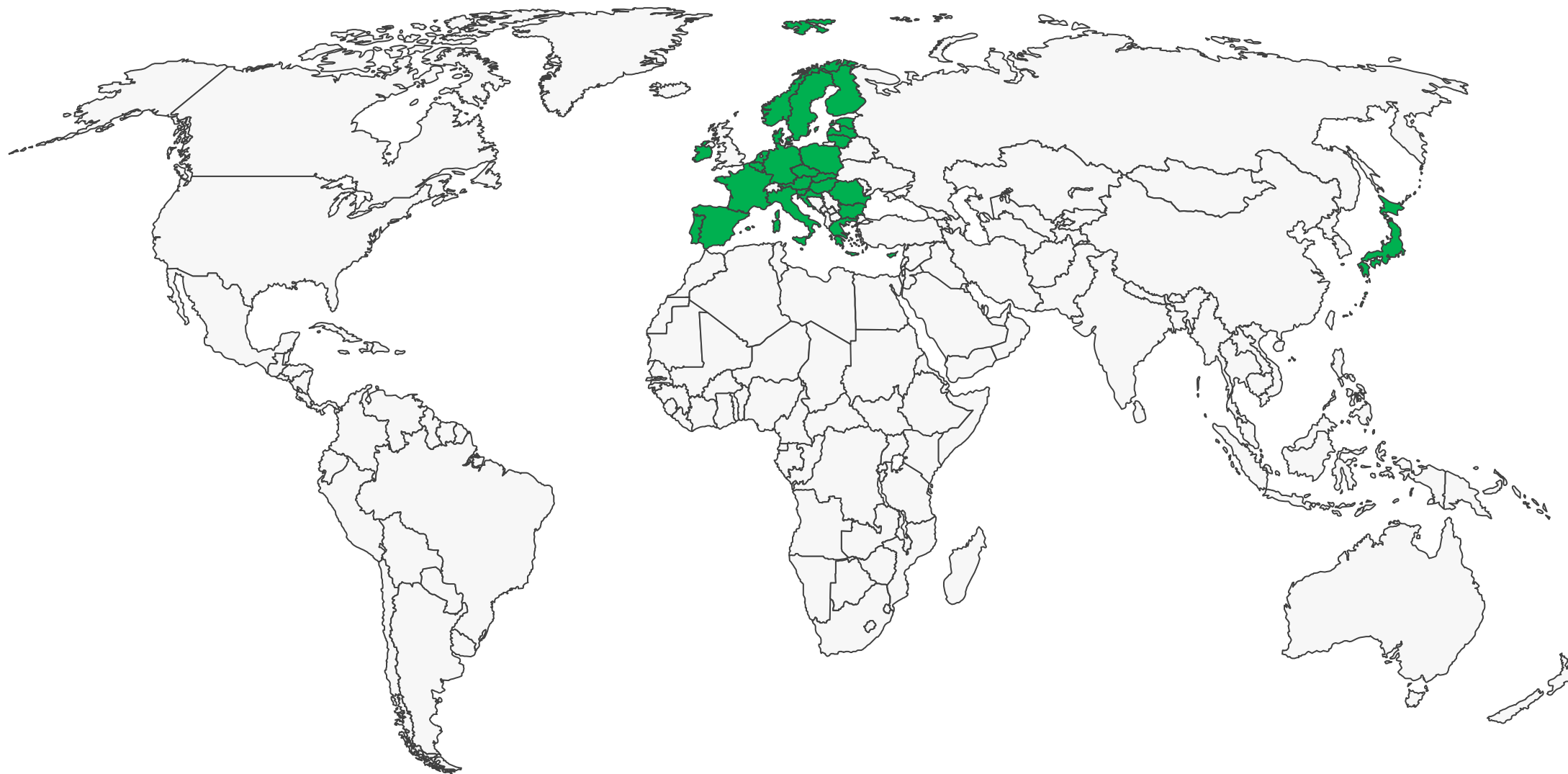
Country: Norway
Region: Europe
Population: 5 million

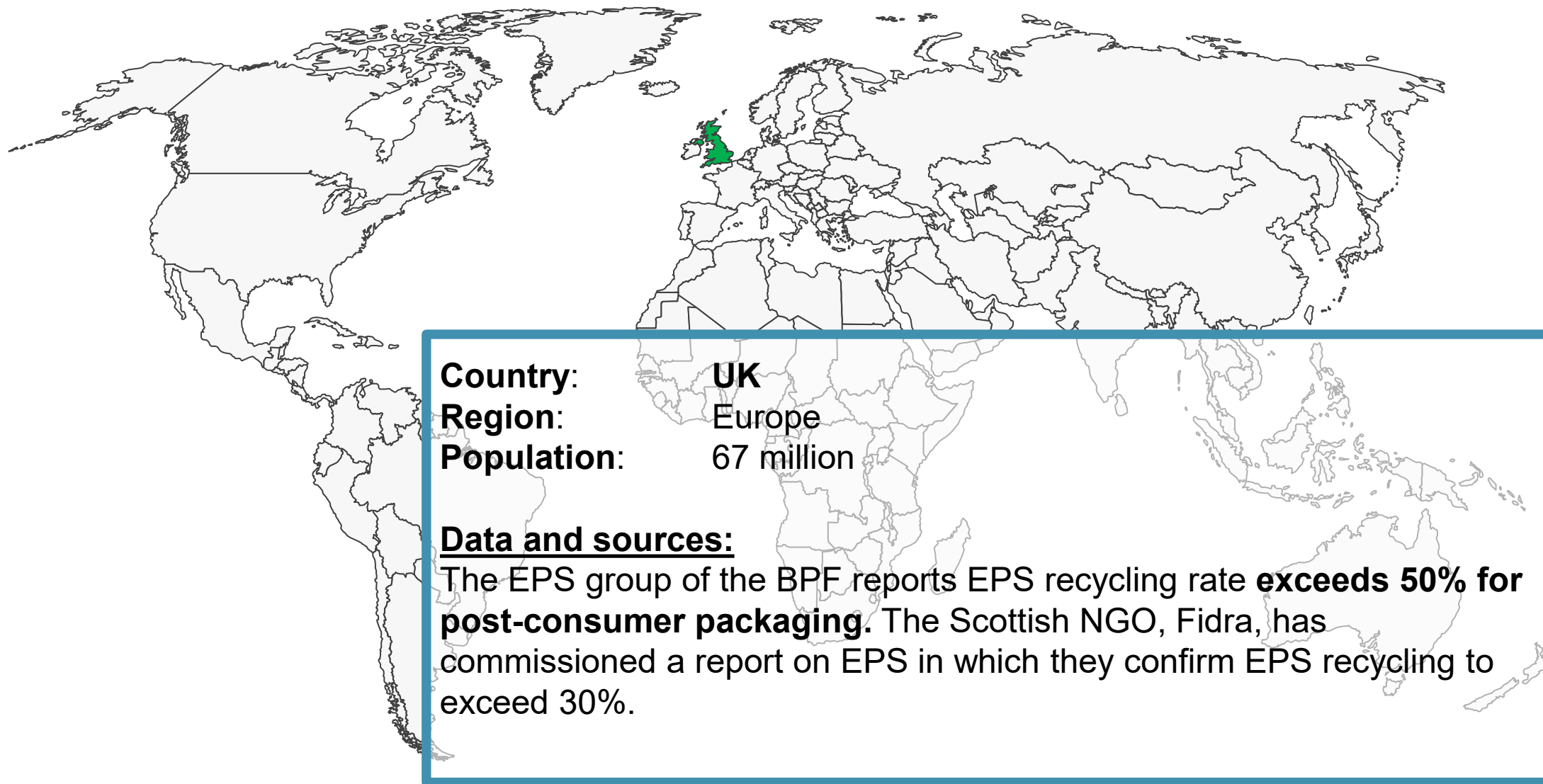
Data and sources:

According to the Norwegian EPR Scheme (Grønt Punkt) the **post-consumer recycling of EPS packaging exceeds 76%.**





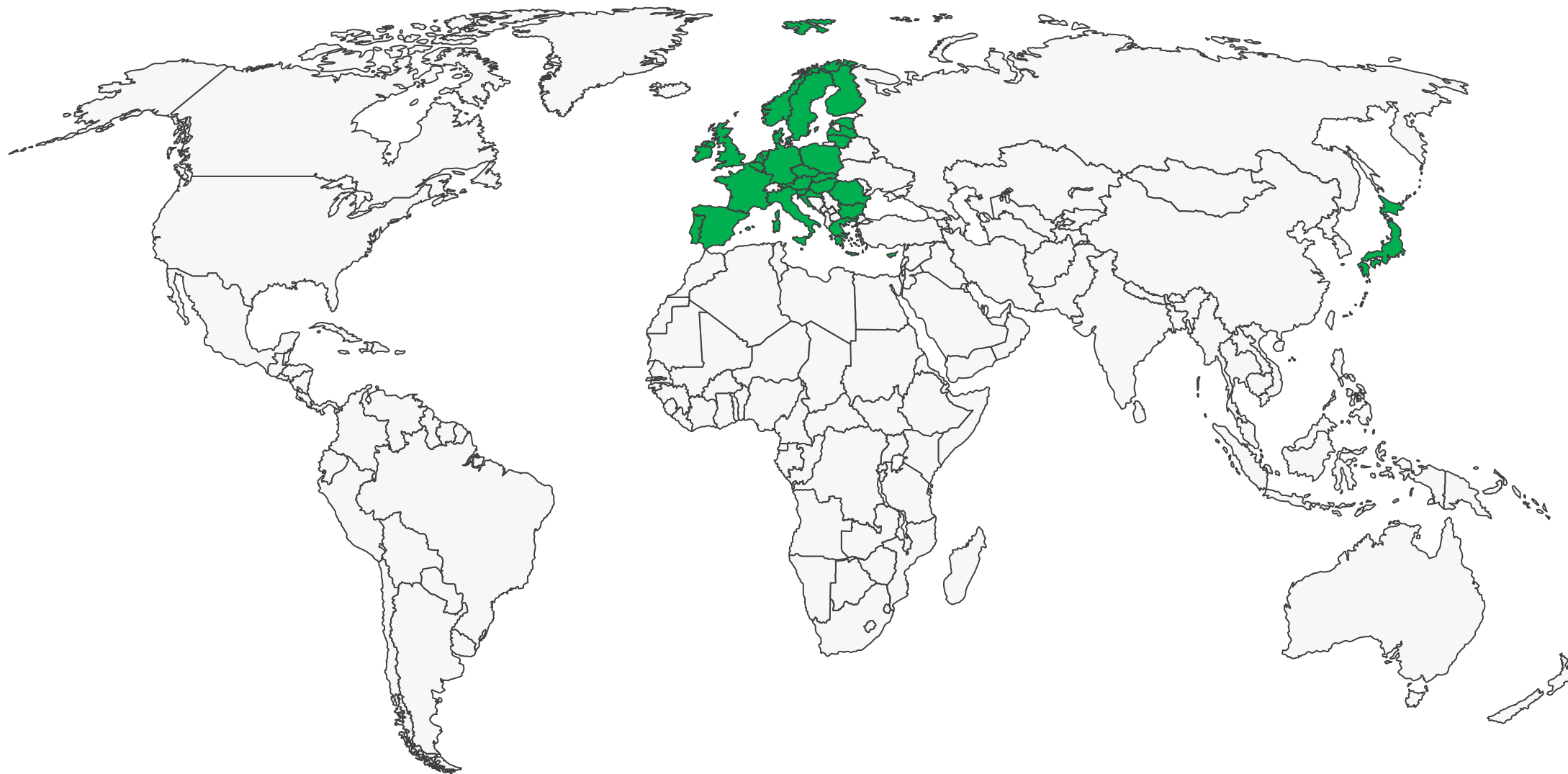


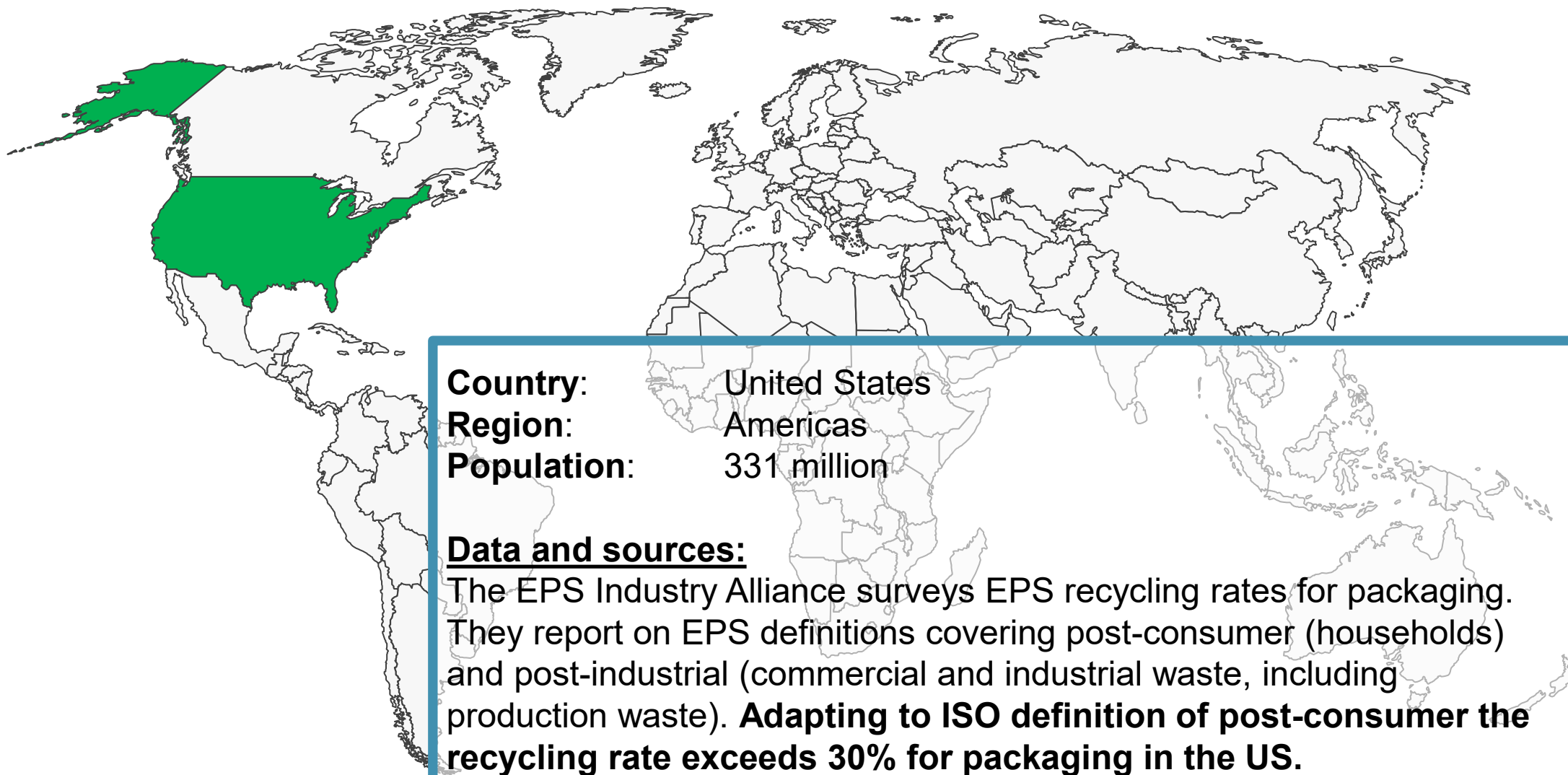


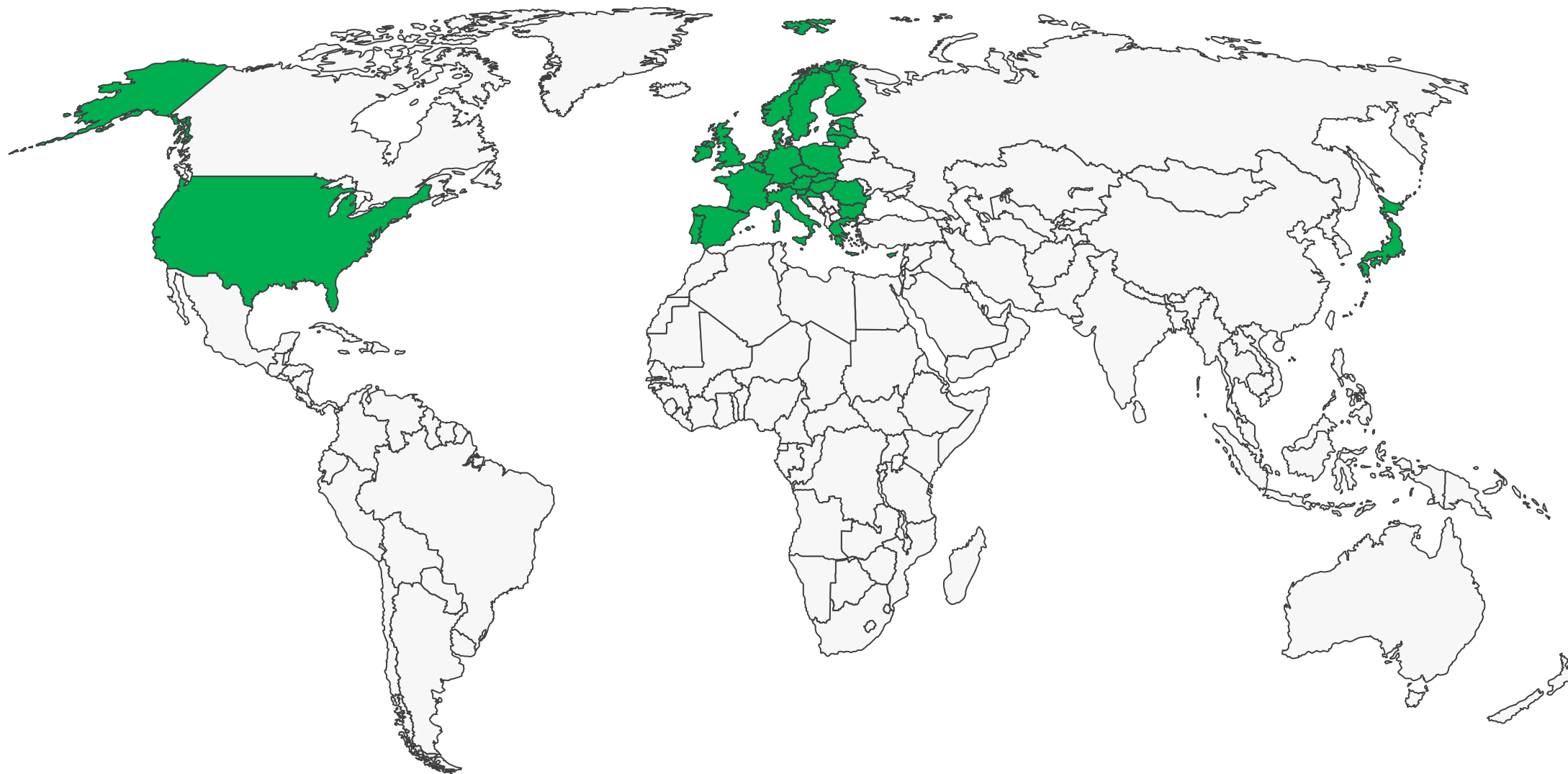
Country: UK
Region: Europe
Population: 67 million

Data and sources:

The EPS group of the BPF reports EPS recycling rate **exceeds 50% for post-consumer packaging**. The Scottish NGO, Fidra, has commissioned a report on EPS in which they confirm EPS recycling to exceed 30%.





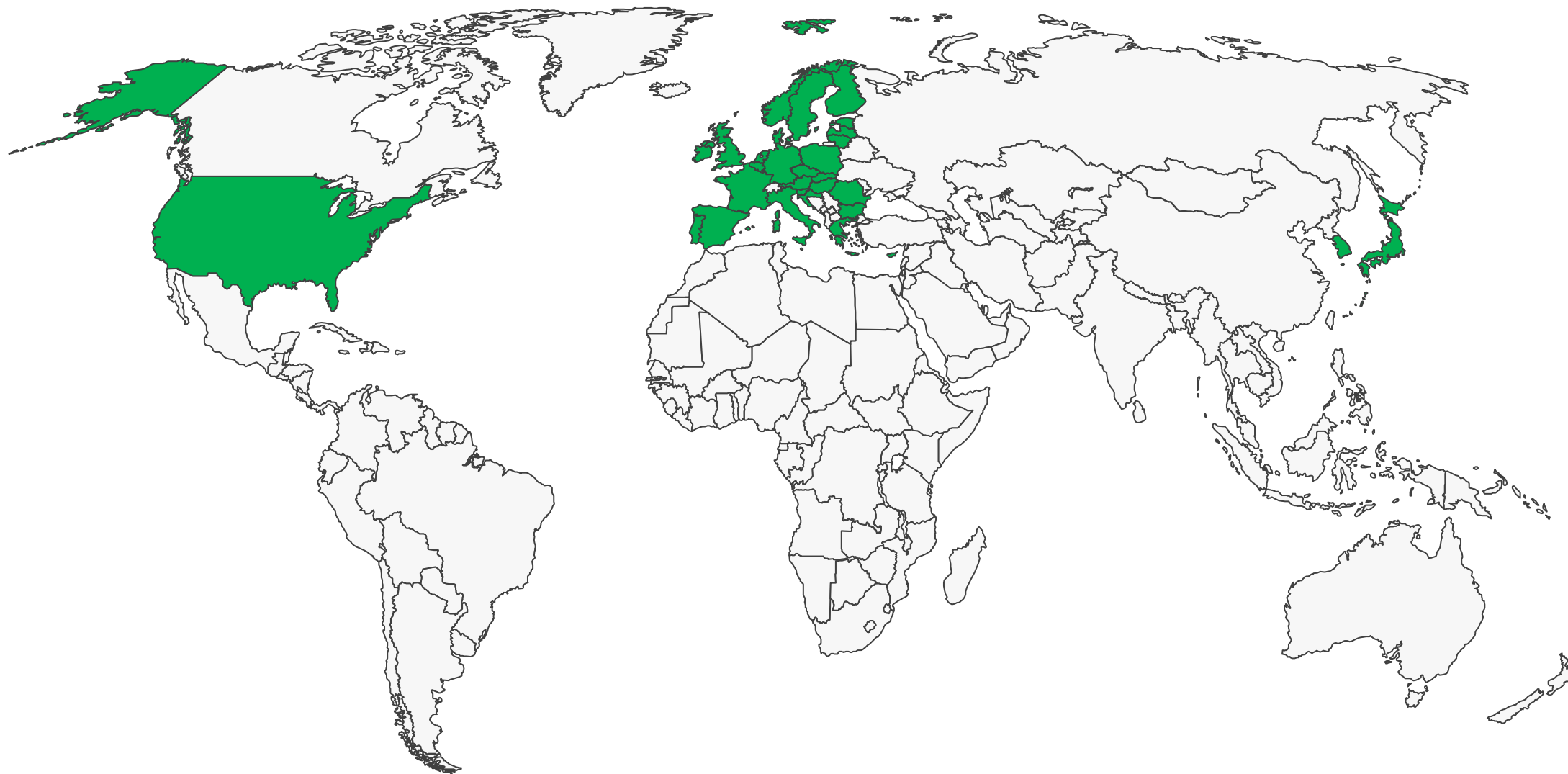


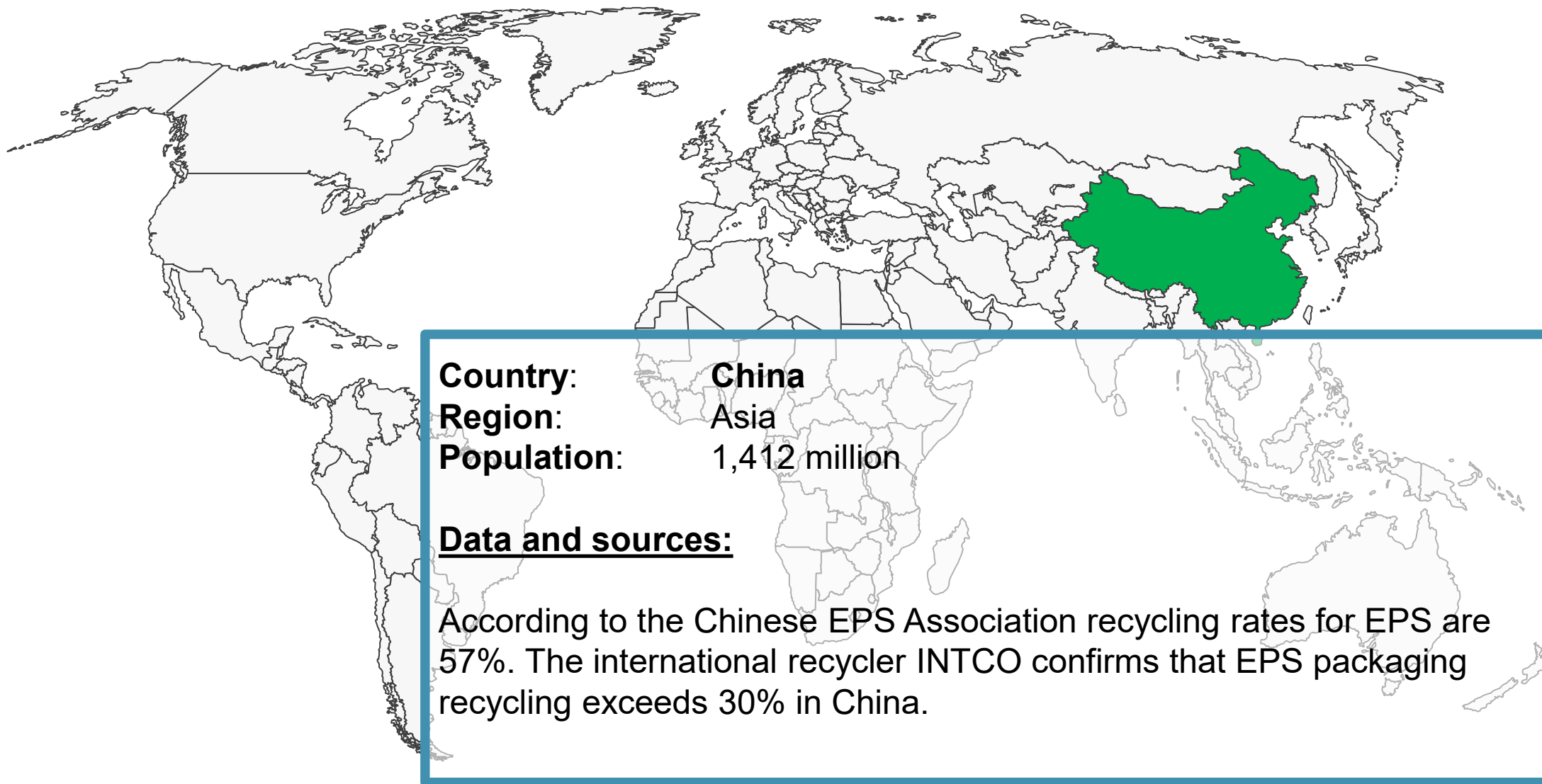


Country: South Korea
Region: Asia
Population: 51 million

Data and sources:

According to report commissioned by the **Australian government EPS recycling exceeds 60%**. The EPS Association reports EPS recycling above 50% since 2013.





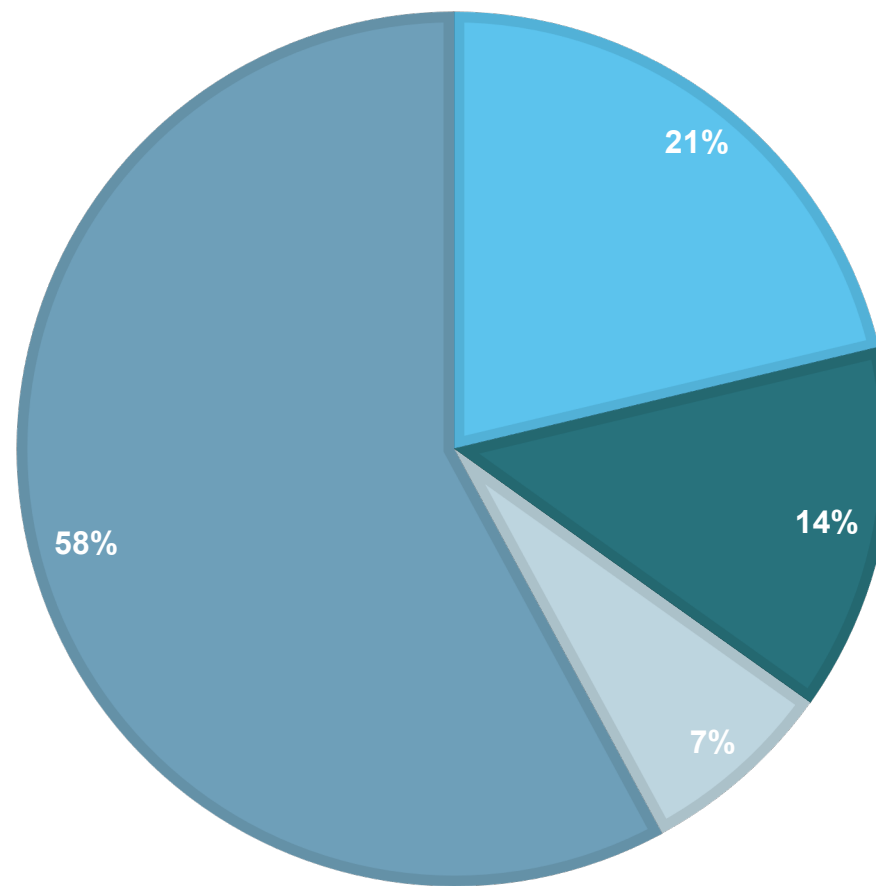
Countries and regions with EPS post-consumer packaging recycling above 30%



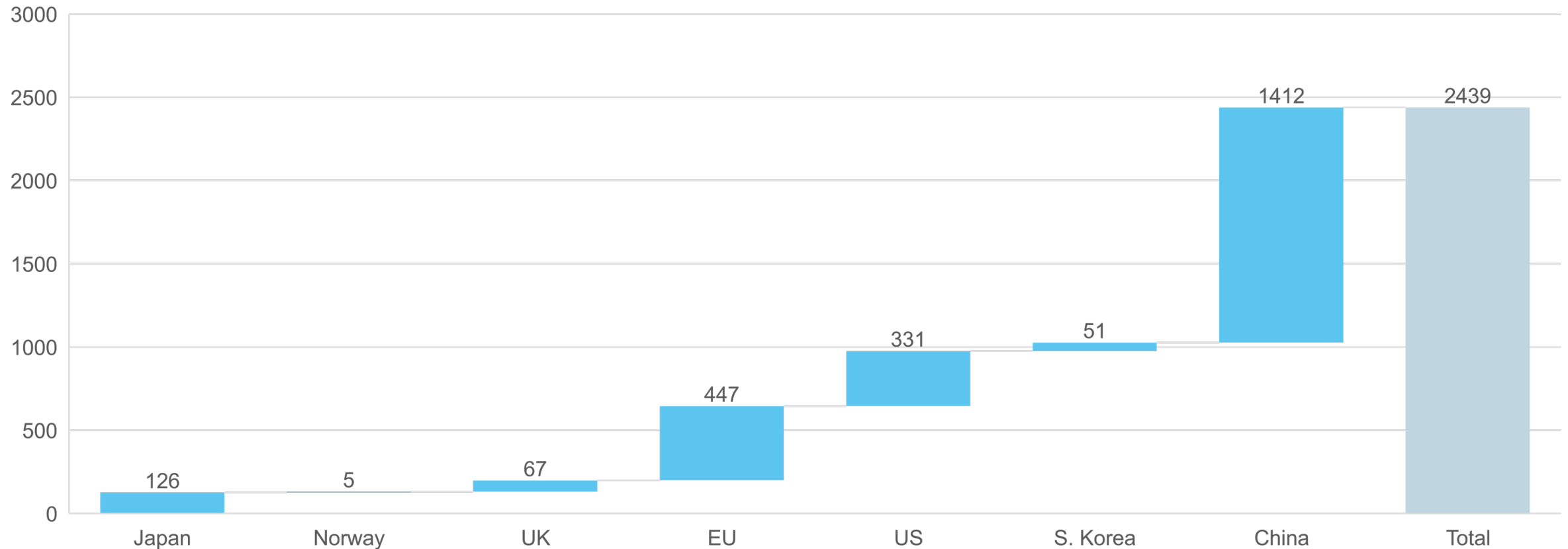
Covering more than 2,439 million people in 33 different countries and in three regions across the global.

EPS POST-CONSUMER PACKAGING RECYCLING BY REGION

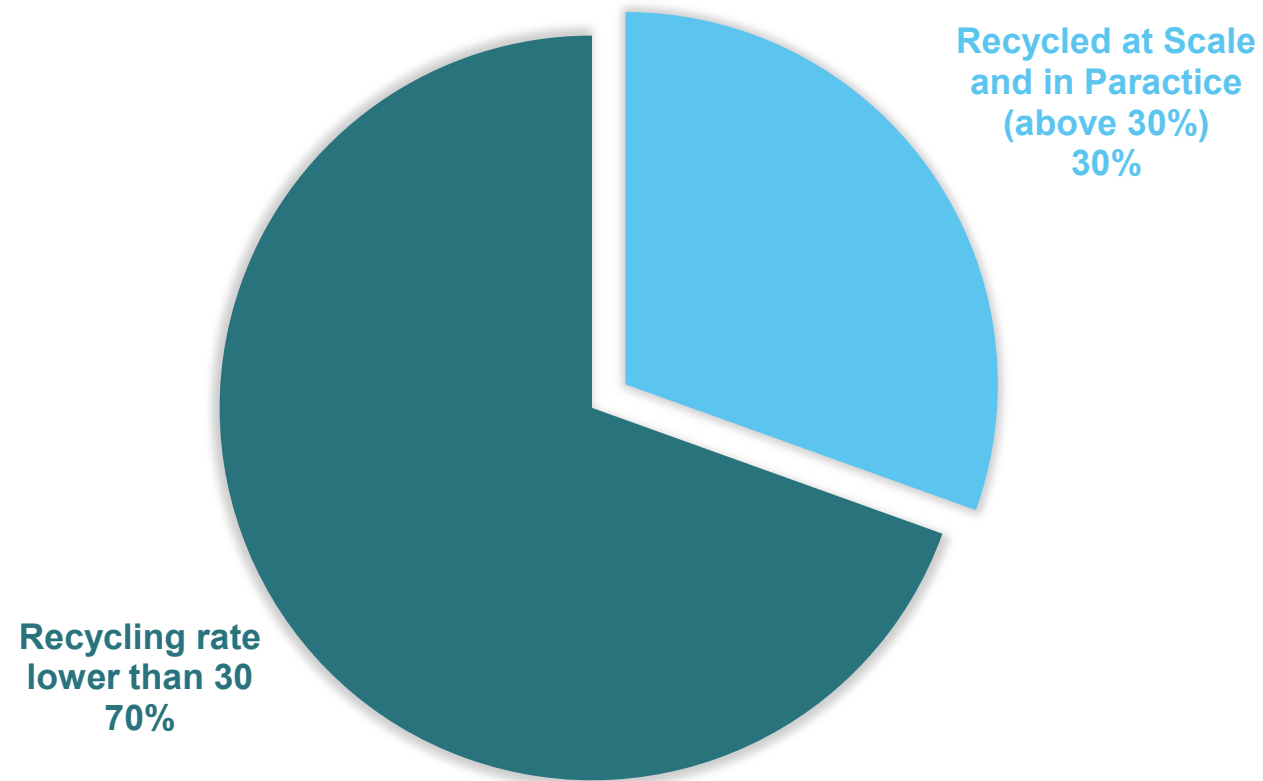
■ Europe ■ Americas ■ Asia (excl. China) ■ China



Global population with acces to EPS post-consumer packaging **at scale and in practice,** as defined by the Ellen MacArthur Foundation.



GLOBAL POPULATION WITH ACCESS TO RECYCLING AT SCALE FOR POST-CONSUMER EPS PACKAGAGING (COUNTRY/REGION LEVEL)



| Region | Country | Area Type | Population > mio people | Recycling Rate >% | Source Type | Link |
|----------|---|-----------|----------------------------|----------------------|--------------------------|---|
| Asia | Japan | Country | 126 mio. | 50% | Government | https://www.meti.go.jp/policy/recycle/main/data/pamphlet/pdf/handbook2021.pdf |
| Asia | South Korea | Country | 51 mio. | 60% | Report for Government | https://www.helenmillicer.com/wp-content/uploads/2018/12/2017-18_EPS_PublicReport_OnePlanetConsulting.pdf |
| Asia | China | Country | 1,412 mio. | 50% | EPS Industry Association | Report |
| | | | | | | |
| Europe | UK | Country | 67 mio. | 50% | EPS Industry Association | https://www.eps.co.uk/recycling/eps_recycling_the_facts.html |
| Europe | Norway | Country | 5 mio. | 70% | EPR Scheme | https://www.grontpunkt.no/gjenvinning/eps/ |
| Europe | EU 27* | Region | 447 mio. | 30% | Government | https://fvm.dk/fileadmin/migrated/content/uploads/Survey_of_EPS_in_the_Baltic_Sea_final.pdf |
| Europe | Denmark, Portugal, Austria, Netherlands, Ireland, Belgium. *) | Country | 60 mio. *) | 50% | EPS Industri Association | *) These six countries, covering 60 mio. people have recycling rates of above 50%. The population isn't included in EU total. |
| | | | | | | |
| Americas | United States | Country | 331 mio. | 30% | EPS Industry Association | Report |

Summary of facts:

Assessing whether EPS meets the Ellen MacArthur Foundation of ***recycled at scale and in practice*** in three different regions of the world.

- EPS post-consumer packaging is recycled at a recycling rate of at least 30% in 33 countries in three different global regions.
- More than 2,419 mio. people live in these countries, which means app. 30% of the global population.
- For 11 of these countries, the EPS post-consumer recycling rate exceeds 50%. These 11 countries are from two different regions, and have total population of more than 1,716 mio. people.
- The requirement to meet the recycled in practice and at scale is met by 600% in terms of population.
- The countries with access to 50% recycling rates represent 400% of the target requirement for recycled at scale and in practice.
- **EPS post-consumer packaging is subsequently the packaging type, which has the second highest number of people living in countries, where the definition is met.**

Additional Sources

Data used to create this presentation can be accessed here:

- <https://www.iso.org/standard/66652.html>
- <https://emf.thirdlight.com/link/glw5k7awhdym-qfl3fa/@/>
- <https://eumeps.org/wp-content/uploads/2022/11/the-eps-industry-s-journey-towards-circularity-progress-report-final.pdf>
- <https://www.meti.go.jp/policy/recycle/main/data/pamphlet/pdf/handbook2021.pdf>
- https://www.jepssa.jp/associate/pdf/JEPSA_INFO_2022_23.pdf
- <https://op.europa.eu/en/publication-detail/-/publication/b02130d2-a022-11ec-83e1-01aa75ed71a1/language-en>
- [https://fvm.dk/fileadmin/_migrated/content_uploads/Survey of EPS in the Baltic Sea final.pdf](https://fvm.dk/fileadmin/_migrated/content_uploads/Survey_of_EPS_in_the_Baltic_Sea_final.pdf)
- <https://www.grontpunkt.no/gjenvinning/eps/>
- <https://www.bestfishes.org.uk/wp-content/uploads/TAUW-2021-Assessment-of-alternatives-for-EPS-fish-boxes.pdf>
- https://www.eps.co.uk/recycling/eps_recycling_the_facts.html
- [http://epsa.org.au/download/2014/AMEPS%202014/Country%20Report%20-%20Korea\(KFRA\).pdf](http://epsa.org.au/download/2014/AMEPS%202014/Country%20Report%20-%20Korea(KFRA).pdf)
- <https://www.greenmax-machine.com/Countries-and-EPS-Recycling.html>
- [https://repak.ie/images/uploads/reports/Expanding the Knowledge Base of Expanded and Extruded Polystyrene.pdf](https://repak.ie/images/uploads/reports/Expanding_the_Knowledge_Base_of_Expanded_and_Extruded_Polystyrene.pdf)
- <https://www.intcorecycling.com/How-to-Recycle-Packaging-Material.html>