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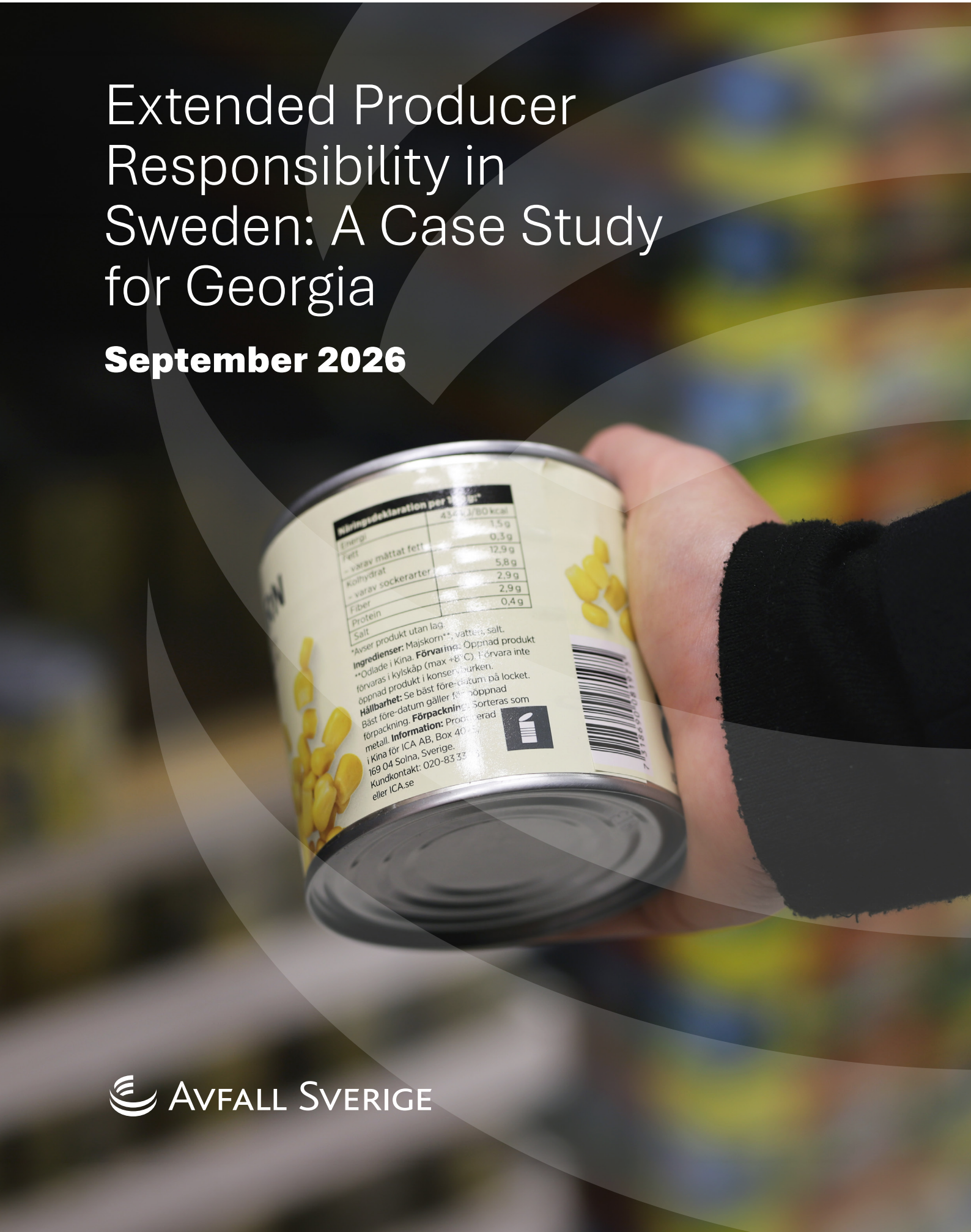
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# Extended Producer Responsibility in Sweden: A Case Study for Georgia

**September 2026**




AVFALL SVERIGE

# Foreword

This case study was developed as part of the project Circular Economy: Waste Reduction and Recycling for Citizens' Health. The project is funded by the European Union (EU) and implemented in Georgia by the United Nations Development Programme (UNDP), in cooperation with the United Nations Industrial Development Organization (UNIDO), Avfall Sverige, and the Environment Agency Austria (UBA). The report was written by Gunnar Fredriksson of Gunnar Fredriksson Miljöutredningar. Avfall Sverige is the client for this case study.

*This publication has been produced with the assistance of the European Union (EU) and the United Nations Development Programme (UNDP). Its contents are the sole responsibility of Avfall Sverige and do not necessarily reflect the views of the EU and UNDP.*

Cover photo: Näringslivets Producentansvar/Jenny Brolin.

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# Introduction to extended producer responsibility in Sweden

### The development of Producer Responsibility in Sweden

Sweden currently has extended producer responsibility for nine product groups. This report addresses producer responsibility for batteries, cars, tyres, electrical equipment and packaging. The deposit return system for metal cans and plastic bottles for beverages is presented as a part of the producer responsibility for packaging. Other product groups with producer responsibility are balloons, fishing gear containing plastic, certain tobacco products and filters, and wet wipes. The report also contains an overview of the management of waste oil in the EU and Sweden, including examples of member states that have extended producer responsibility for waste oil.

In Sweden, the idea of extended producer responsibility was developed in the early 1990s. The inspiration was clearly drawn from instruments introduced in other countries, including Germany. The basic idea was that by giving producers the responsibility for the collection and recycling of their products when they became waste, it would lead to the production of products that were more resource-efficient, easy to reuse and recycle, and free of environmentally hazardous substances. The government at the time appointed “The Eco Cycle Delegation” (Kretsloppsdelegationen). The delegation developed proposals for how producer responsibility would be implemented. As a result, producer responsibility for packaging and tyres was introduced in 1994. Producer responsibility for cars was introduced in Sweden in 1998, for electrical equipment in 2001 and for batteries in 2009. The deposit return system for metal cans for beverages was introduced in 1982 as a forerunner to producer responsibility. The deposit return system was expanded to plastic bottles in 1994.

In 1995, Sweden became a member of the EU. The EU's Waste Directive allows member states to introduce producer responsibility without it being specifically regulated at the EU level. As shown above, Sweden introduced producer responsibility partly before, partly after it entered the EU. In most cases, Sweden developed producer responsibility before the EU introduced requirements for it. Today, the EU has requirements for producer responsibility for packaging, electronics and batteries, but not for cars and tyres. For cars, the End-of-life vehicle (ELV) directive is close to a formal producer responsibility through regulating

collection. The Waste Directive sets out general minimum requirements that must apply to producer responsibility, and which must be met in cases when member states introduce producer responsibility without the EU having required it.

Producer responsibility for electronics is regulated in a directive (the WEEE Directive). Producer responsibility for batteries, and now also producer responsibility for packaging, are regulated in EU-regulations. The Swedish producer responsibilities have been gradually revised so that they meet the EU's specific requirements for producer responsibility for each product group, and also so that all producer responsibilities meet the EU's general minimum requirements for producer responsibility.

The WEEE Directive has been implemented in Swedish legislation in the Environmental Code and a special regulation. The producer responsibilities regulated in EU regulations apply directly as Swedish legislation and have only required that certain supplementary provisions be introduced in Swedish legislation. Most recently, the EU has regulated producer responsibility for packaging in a packaging regulation. This regulation introduces mandatory requirements for a deposit return system. A stated aim is to more precisely direct the obligations of the Member States. Adapting the Swedish producer responsibility for packaging to the EU regulation is currently an ongoing process. Although the EU does not have requirements for producer responsibility for cars, the handling and disposal of end-of-life vehicles is regulated in the so-called ELV directive. The ELV Directive is implemented in Swedish legislation partly through the rules governing Swedish producer responsibility, partly through a special regulation regarding car dismantling.

## The producers' responsibilities are regulated and function in largely similar ways

Although there are some differences, the Swedish producer responsibilities have several similarities in how they have been implemented. This is partly because the minimum requirements that the EU sets for producer responsibility in the Waste Directive create a common starting point.

Producer responsibility requires producers to register with the Swedish Environmental Protection Agency. It also means taking responsibility for collecting and recycling waste without incurring any cost to the end-user of the product. Furthermore, there are requirements to report, provide information and collect a fee that covers the costs. There is an opportunity to fulfil the responsibility as an individual producer. However, it is very unusual for this option to be used. More or less all producers have chosen to join a producer responsibility organisation. The producer responsibility organisation must be approved by the Swedish Environmental Protection Agency and meet certain requirements. In practice, it is the producers' responsibility organisation that fulfils the responsibility.

## How producer responsibility organisations are structured

Since producer responsibility is largely fulfilled through participation in a producer responsibility organisation, it can to a large extent be said to be a collective responsibility. The producer responsibility organisations then largely aim to organise producers and allow them to take on their producer responsibility. In Sweden, producer responsibility organisations have been established as non-profit limited companies, on the initiative of industry organisations. The industry organisations are then the owners and form the organisation's board. For packaging, batteries and electronics, there are privately owned and competing organisations. Based on requirements in the legislation, these are also operated without profit distribution.

The producer responsibility organisation fulfils an administrative and economic function, bringing together producers and collecting fees. The fees paid finance the measures that producer responsibility requires. Above all, this concerns collection and treatment, but it also includes, for example, reporting and information. The producer responsibility organisation procures or finds other solutions to arrange collection. As for packaging, the responsibility lies with the municipalities to collect packaging from households, but there is a regulated compensation from the producers. For electronics and batteries, there is a voluntarily established cooperation agreement between producers and municipalities, including compensation. For cars, the producers have built up a network based on existing authorised car dismantlers.

In general, the producer responsibility organisations procure transportation from contractors. There is a variation where producer responsibility organisations both own and procure facilities for treatment and recycling. To fulfil its tasks, the producer responsibility organisation has an office with functions for, for example, logistics, member contact, reporting, communication and internal auditing. The producer responsibility organisations also become important parties for the authorities to have a dialogue with when new legislation is to be developed, or other changes are to be implemented.

## Producers' responsibility is part of a whole

Producer responsibility partly relies on already existing logistics and infrastructure in the form of collection and transport systems, as well as pre-treatment and recycling capacity, and partly on producer responsibility organisations developing and building on the existing logistics and infrastructure.

Producers have developed separate collection, often in collaboration with municipalities and other existing collection solutions. Producers have also developed and procured treatment capacity that did not previously exist. Sometimes, as direct initiatives from producers, at least initially, including ownership. In several cases, they are also based on cooperation between producers, municipalities and other actors.

Extended producer responsibility is a policy instrument for more resource-efficient waste management and needs to be understood as part of a whole. Swedish waste management is governed by the EU's waste hierarchy as a basis. The waste hierarchy is incorporated into the Swedish Environmental Code. The hierarchy, together with what are called the Environmental Code's general consideration rules, states that everyone who runs an activity or takes an action must have efficient use of raw materials and energy and make use of the opportunities to, among other things, prevent and recycle waste. The legislation also regulates the responsibilities of individual actors more specifically. An example of this is the municipalities' responsibilities for municipal waste, including local planning and regulation, see below. This is complemented by the extended responsibility of producers as stated in the various producer responsibility regulations and a general responsibility for those who generate waste . Included in these responsibilities are specifically stated obligations for source separation of waste. For example, all actors are obliged to source separate packaging waste and hazardous waste.

In addition to the responsibility of the actors, each step in the management of waste is also regulated. This is to ensure that it is handled correctly from an environmental and health point of view and thus also to avoid dumping or other illegal handling. The actor who generates waste has a responsibility to keep records of the waste and be able to report how it has been handled. The transporter of waste must have a permit and continue the chain of registering information so that the continued handling of the waste can be followed. Virtually all forms of waste treatment require some form of permit and thus become permanent objects of supervision for the authorities. When supervising the activities, it is ensured that they meet the requirements of the legislation. In several cases, such as for incineration and landfilling, there are special regulations at the EU level. In cases where the handling concerns hazardous waste, the rules and controls are tightened further.

In addition to the above-mentioned regulations, aimed at ensuring proper management, some instruments aim to ensure that the resource in the waste is taken care of to the greatest extent possible. These instruments can be seen as support for the waste hierarchy. The extended producer responsibilities with targets for recycling rates are examples of such instruments.

In addition to this, Sweden mainly has two crucial instruments: a ban on landfilling of combustible and organic waste and a tax on landfilling of waste. These two instruments have worked together and had the most significant effect during the first decade of this century. Sweden introduced both instruments around the turn of the millennium when a large part of municipal waste was still landfilled. The landfill bans came into force gradually in 2002 (combustible waste) and 2005 (all organic waste). There was, in reality, no major difference between combustible and organic waste. There were and are some minor exemptions to the landfill bans for waste where landfilling is considered the best method. Since there was a lack of capacity

for other treatment methods (mainly incineration with energy recovery), a system of exemptions was applied until around 2010. The tax on landfilling of waste, which was introduced around the same time, applies to all waste (including industrial waste) with specified exemptions for waste where a better treatment method is not available. The landfill tax accelerated the implementation of the landfill bans by making it more expensive to landfill. Today, less than one percent of municipal waste is landfilled. The landfill tax remains, but it mainly covers waste other than municipal waste.

There are no direct economic instruments to steer between incineration and material recycling, such as a tax on incineration. Grants and financial support are available in various forms, mainly to produce biogas from food waste. Investment support has also been given for measures with a climate effect. Examples of such support have been for recycling plants for plastic waste, mechanical sorting of residual waste before incineration to sort out plastic, and for the construction of plants to produce biogas from food waste, etc. In addition, there have also been opportunities to seek funding for the development of innovative solutions in the area.

### The role of municipalities in producer responsibility

Swedish municipalities have had a long-standing responsibility for the local management of municipal waste. In 1970, municipal responsibility and the exclusive right to manage what was then called household waste were introduced.

Municipal responsibility is currently regulated in Swedish environmental legislation (the Environmental Code and the Waste Ordinance). It stipulates that each municipality is responsible for the collection, transport and recycling or disposal of municipal waste. Municipal waste is defined as waste from households and waste from other sources that, in its nature and composition, is similar to waste from households. In addition, the municipality is also responsible for certain sewage fractions, latrines, and construction and demolition waste from non-professional activities.

Municipal responsibility includes developing a local waste plan and local regulations for waste management. These documents must be decided by the municipal council.

The municipality has great freedom to design its waste system, in order to achieve good waste management from an environmental and health protection point of view, in a way that suits the various municipalities. In its planning and decisions, the municipality must adapt the waste management to the needs of different types of buildings. In order for the municipality to be able to finance waste operations through fees, the municipal council must also adopt a waste tariff. The tariff is paid

by the respective property owner. For residents in single-family homes, the tariff is paid directly by the residents. In multi-family homes, the fee is paid by the owner of the property. The fee is then included in the rent that the residents pay.

As a rule, residual waste, food waste and now also packaging should be separately collected at the property. Bulky waste and hazardous waste are mainly collected at municipal recycling centres. Sweden currently has less than 1% landfilling of municipal waste. Residual waste is sent to incineration with energy recovery, and food waste is sent to biogas production plants or treated by composting. Other sorted fractions, which are not covered by producer responsibility, are sent to various forms of recycling.

Sweden's 290 municipalities decide freely how to organise their waste management, and close to half carry it out through an organisation shared with neighbouring municipalities. The most common form is the jointly owned limited company. It executes the task, but each municipality remains the responsible authority and decides on fees and local regulations. The second is the municipal federation (kommunalförbund), a separate public-law entity to which members can transfer the responsibility itself. Municipalities also cooperate through contracts and joint procurement.

Cooperation is voluntary and has grown from below. The first regional companies were formed to finance investment in treatment plants that no single municipality could carry. Later cooperation has been driven mainly by the need for specialised staff, procurement capacity and the ability to meet rising legal requirements. Joint organisation does not mean public operation: about two thirds of municipalities contract collection to private companies, and the joint body often acts mainly as a competent purchaser.

When producer responsibility was introduced in the 1990s, it was seen as an exemption to municipal responsibility, and this is largely still the case. The exception to this is producer responsibility for cars, where municipalities have never had any direct responsibility for the handling. In all other cases (batteries, tyres, electronics and packaging), producer responsibility has interfered with municipal responsibility in various ways. As mentioned in the section on tyres, the collection of this waste traditionally takes place at workshops and points of sale. This is a solution that has continued after the introduction of producer responsibility. Municipalities have also collected end-of-life tyres at their recycling centres. This management continues today through agreements with the producer responsibility organisation.

When producer responsibility for batteries and electronics was introduced, the municipalities had begun to build up separate collection of these fractions. The producer responsibility organisation El-Kretsen then chose to fulfil its responsibility for the collection of electronic waste from households by using the municipalities' collection systems. This meant that the collection of electronics and batteries was expanded to include all municipalities, and that the collection was financed by financial compensation from the producers. This solution has continued and an agreement (which the producers need to establish with each municipality) regulates how the collection should take place, how the waste should be handed over to the producers and what compensation should be given. This agreement also includes the municipalities being responsible for local information about where and how residents should leave their electronic waste.

When producer responsibility for packaging was introduced, producers chose to build their own collection system independent of the municipalities. This was done through a large number of recycling stations placed in street environments. This was built on the collection of glass and newspapers that had existed previously, usually under municipal management. The collection of packaging was questioned as causing littering and providing insufficient service. The conditions and organisation of the collection have therefore been investigated by the government several times since the producer responsibility was introduced. This has resulted in a solution where the legislation regulates that the municipalities are responsible for the collection of packaging from households and businesses co-located with households, in return for compensation from the producers. The level of compensation is determined by the Swedish Environmental Protection Agency. Legal requirements were also introduced, including certain exemptions, which mean that the municipalities' collection of packaging must take place at the property.

Overall, it can be observed that producer responsibility that covers waste that arises in households will interfere to varying degrees with the responsibility of the municipalities or the public sector. As mentioned above, cars are an exception. Tyres are also waste that arises in such a way that municipal responsibility is affected to a lesser extent. For electronics, the connection is more obvious. For packaging, it becomes clear that collection affects people's daily lives and the urban environment. It then becomes more important to be able to have the opportunity for local views and to make decisions locally. Overall, it is also difficult to manage the collection of packaging waste without the municipality in the role of enabler of dialogue with residents.

It is also important to point out that the municipalities may be responsible for the waste that is covered by producer responsibility, but is not sorted at source, and instead left in the municipalities' collection. This was done without compensation being given. This includes, for example, packaging, batteries or small electronics that are incorrectly disposed of in the residual waste. It also includes tyres that are disposed of in combustible bulky waste and electronics or parts of electronics that are disposed of as bulky waste in metal or plastic fractions.

| Producer responsibility | The role of municipalities | |
|---|---|---|
| | Collection | Information |
| Tyres | The PRO has, as a part of their collection system agreements with several, but not all, municipalities concerning collection of tyres at the recycling centres. | The municipalities have according to the legislation a responsibility to inform households about where end-of-life tyres are received. |
| Batteries | Municipalities collect batteries from private households based on agreements with producers and are compensated for this. The agreement may also include that municipalities also have reception sites for batteries from businesses. | The agreement with the producers also includes that the municipalities are responsible for providing information to households based on material from the producers. |
| Cars | Municipalities are not involved in the collection of scrap cars. According to the regulation, producers must, if necessary or if a municipality requests it, consult with the municipalities concerned on issues relating to the reception system. | According to the legislation, the municipality must provide information to households about<br>1. the prohibition on leaving the car to anyone other than a producer or an authorized car scrapper,<br>2. the reception points that households have access to within the municipality, and<br>3. what waste prevention measures that households can take. |
| Electronics | The municipalities collect electrical waste from households based on the same agreement as for batteries. The agreement may also refer to collection points for electronics from businesses. | The agreement with the producers includes that the municipalities are responsible for providing information to households based on material from the producers. |

| | | |
|---|---|---|
| Packaging | According to the ordinance, the municipalities are responsible for collecting packaging from households and co-located businesses. From 2027, collection will take place close to the property. The municipality is also responsible for collecting packaging in squares, parks and popular places. Collected waste must be given to the producers. The Swedish Environmental Protection Agency decides on the level of compensation that the producers will give the municipalities based on the ordinance. | Municipalities must provide information based on their responsibility for collection. |
| Deposit return system for metal cans and plastic bottles | A PRO for a deposit return system a obliged to consult with the municipalities concerning the collection. A PRO for a deposit return system shall without cost provide the municaplities with collection containers for places where larger amount of used cans and bottles may arise. The municipalities are obliged to facilitate the deployment of the containers or deploy them themselves. | A PRO for a deposit return system shall provide households with information. There is no responsibility for the municipalities to inform. In practice municipalities inform the households concerning the collection of cans and bottles as part of their general information concerning collection and recycling. |

## Supervision of producers is being intensified

For an extended producer responsibility to work, all steps (collection, transport, pre-treatment and recycling) need to be regulated and controlled. This is to ensure that functions such as transport and recycling operate in an environmentally safe and competitively neutral manner. There are rules on permits for the transport and treatment of waste. There is also a system for supervision where the Swedish Environmental Protection Agency is the supervisory authority for obligations of producers and producer responsibility organisations within all producer responsibilities. The municipalities, in the form of the environmental office or equivalent, have supervision over how the actual management of the waste meets the requirements in the respective ordinance and the environmental legislation.

The Swedish Environmental Protection Agency is also a guiding authority. This includes having guidance on the respective producer responsibility on its website. This guidance is aimed at producers and producer responsibility organisations, but also other actors such as municipalities and waste contractors.

In the budget, the government has clearly prioritised funds for the Swedish Environmental Protection Agency's supervision of producer responsibilities. In 2025, the Swedish Environmental Protection Agency has sent out information to 1,334 potential producers of packaging and 157 potential producers of electrical equipment. The supervision has been conducted with a focus on, among other things, potential free riders within producer responsibilities for tyres, fishing gear and packaging. As a result of this, the number of registered producers has increased sharply for some product groups. For example, the number of registered producers for batteries has increased by 92 percent and for tyres by 25 percent.

The Swedish producer responsibility does not reach all the set goals. There is an ongoing discussion about what is required, where the cost, but also people's commitment, are decisive factors.

## Producer responsibility, how did the idea turn out?

The Swedish producer responsibilities have been investigated by the Swedish government several times, especially the responsibility for packaging. However, there is no comprehensive evaluation or follow-up of the development of producer responsibility. But the original purpose and ambition, to take responsibility for handling products as waste and thereby influence the design of products, has gradually been adapted to be more limited to responsibility for collection and recycling. To influence product design, the EU has chosen to directly regulate requirements for product design. The EU's new packaging regulation regulates, among other things, requirements for the recyclability of packaging, the battery regulation regulates durability, performance and recyclability. The EU's eco-design regulation will, among other things, regulate the reparability of electronics.

## Key recommendations for Georgia

These are the consultants' concluding recommendations. The general view is that recommendations for Georgia should be based not only on Swedish experiences but also on the situation in Georgia.

The Swedish experiences show that producer responsibility can be a way of organising producers that leads them to take responsibility for building and financing infrastructure, collection and treatment. This also includes responsibility for information in the form of knowledge dissemination and motivation. In some cases, it has proven necessary or at least crucial for efficiency that collection and communication is done in cooperation with, or by, the municipalities. Especially for packaging, but also for electronics and batteries, municipal collection has been the basis for success. This is because the collection of these types of waste has an impact on people's everyday lives and the local environment and therefor requires contact with a counterpart that provides the opportunity for dialogue and influence. This can only be done through the municipalities.

Swedish producer responsibility has both built on already existing solutions and developed them. This applies, for example, to cars and tires, but also to glass and at least partly to batteries. In these cases, producer responsibility has contributed to financing, quality assurance, expanded and secured service, improved information work and developed recycling techniques. Not least, producer responsibility has contributed to producers organising themselves. But producer responsibility has also built new solutions for other packaging than glass and for electronics. This is a much more difficult and larger task. For electronics, it has succeeded in a rather problem-free way. Producers have let the municipalities be responsible for and expand the collection and the work with information. It has been more difficult for packaging where the producers' collection was debated and recently, the responsibility has been transferred to the municipalities. But for both, producer responsibility has meant that collection has been built up more or less from scratch and recycling technology has been developed.

This Swedish experience leads to the following general recommendations for Georgia.

1. The solutions that are chosen must be adapted to the conditions and the level of development of waste management in Georgia. Ambition regarding collection needs to be adapted both to the level of financing, the available technology for collection and recycling and the existing market for the collected material. The system needs to consider that all links in the chain must meet the ambition that is regulated. It is better to gradually strengthen all links than to build a link to a high ambition when the others are still weak.
2. There is value in regulating by law that there should be producer responsibility organisations. What producers should be responsible for can then be adapted to what is possible in the current situation. Registering producers and having them form a producer responsibility organisation (PRO) is a first step that starts building both expertise and an organisation. A legally established and authorised PRO needs to be in place before separate collection schemes are launched. This will enable future increases in ambition, but it will also be more efficient for the authorities. Instead of having to target all producers, the state can have an organisation as a partner and counterpart.
3. It is more important that producer responsibility initially refers to what needs to be done in practice, and not an irrelevant or unrealistic ambition. The most important thing is not to reach the full level of what producer responsibility must entail. The responsibility may concern financing basic collection technology, contributing to the financing of waste facilities and recycling facilities, contributing to the financing of work with information and awareness.
4. For packaging but also for batteries and electronics, it is necessary to use the municipality as a local actor and representative of society. The municipalities are necessary for a local dialogue and to adapt, for example, the collection to local conditions. If responsibility is not delegated, either the government or producers at the national level will have to handle the dialogue (i.e. comments and complaints) and this is not possible.

5. For cars and tires, producer responsibility can fulfil the purpose of quality assurance and strengthen a management that already partly exists. Producers can ensure that those who are to receive cars and tires meet certain requirements. Producers can build up the network so that they cover the entire country and ensure that the public is informed about where to leave a car or tire. Producers can also ensure that environmental considerations are strengthened for dismantlers and that recycling facilities are built up.
6. It is probably justified to prioritize the collection and recycling of electronics. This is because this product group can contain both hazardous and valuable substances. It is also reasonably easy to build up a collection system because it can be based on fixed collection points (recycling centres) and collection in stores.
7. The collection of packaging is probably more complex to build up, as it concerns many smaller objects that arise daily in every household and in other situations. Since it concerns the public, the requirements for service, information and dialogue are also crucial. A collection system needs to provide good service so that collection is reasonably simple and meet existing needs.
8. When introducing collection solutions, it may be appropriate to have them preceded by experience-generating pilot projects with a limited geographical scope, for example, a few municipalities or a city district. These trials should be followed as development or research projects and evaluated.
9. Swedish experiences point to the importance of industry organisations. These are of great importance as parties in dialogues and for building up competence. It is therefore important to support the formation and development of such organisations if necessary. This can concern municipal organisations for waste management, but also commercial organisations for recycling and for producers.
10. The stricter the requirements placed on producers, the more important control and supervision become. Measures are needed to ensure that all producers take their responsibility. Supervision and control are also needed to ensure that the management of the waste is done in accordance with the legislation and does not lead to illegal handling.
11. The Swedish experience is that it is effective to limit regulation to what is necessary to achieve fair and competitively neutral producer responsibility. If it is producer-responsibility, responsibility for practical implementation should be left to the producers as far as possible. Room for manoeuvre makes producer responsibility attractive to producers.
12. Initial investments will probably require government money or grants. It is difficult to start a system that initially requires large investments in facilities and equipment. To overcome this threshold, government investment may be necessary.

## Pros and cons of extended producer responsibility

Pros:

- Extended producer responsibility has led to the development of collection and recycling for categories of waste that previously didn't exist.
- The collection and recycling rate are in many, but not all, cases relatively high and in line, or close to being in line, with the targets.
- The cost for collection and recycling is largely financed by the producers. The cost is linked to the consumption, and it also allows the producers to influence the costs.
- The producer responsibility has meant that the producers have taken the cost and done the job to organise and administer the producers.

Cons:

- The responsibility has led to limited influence on the design of the products. Most likely, the cost and the value of being circular do not match other interests.
- For waste categories like packaging and batteries and to some extent, electronic coordination with the municipal level is necessary. For waste that occurs frequently, it is not possible for an organisation at the national level, like a PRO, to handle the everyday dialogue with the public. The municipalities need to give the opportunity for democratic decisions on the local level.
- Organising and reporting may cause an administrative load and costs that may be difficult to motivate and are seen as a socio-economic cost.
- If not organised and supervised properly, there is a risk for free-riders and not competitively neutral conditions.
- The quality of the material collected for recycling does not always meet market requirements. As a result, actual recycling has been lower than intended.
- In practice, it is difficult to ensure that producers bear the full cost.

# Producer responsibility for batteries

## Legislative background

Producer responsibility for batteries is regulated in the EU Battery Regulation. The regulation came into force in 2025. As an EU regulation, it applies as Swedish law. Supplementary legislation has been introduced in a Swedish ordinance. Sweden has had producer responsibility for batteries since 2009. A process is currently underway to adapt Swedish producer responsibility to the requirements of the new EU regulation. This includes that producer responsibility organisations must have an authorisation from the Swedish Environmental Protection Agency.

The EU regulation includes, among other things, the following obligations.

- Producers must register in the authority's producer register.
- The producer must cover costs for, among other things, separate collection, transport and treatment as well as costs of carrying out a compositional survey of collected mixed municipal waste. The producers shall also cover the cost of information and reporting
- Producers may appoint a producer responsibility organisation to the competent authority. Alternatively, they must be individually authorised.
- Producers, or their producer responsibility organisations, shall ensure that all portable batteries that are waste are collected separately and free of charge in a system covering the whole territory of the Member State
- The targets are that the collection of portable batteries shall reach 45% by 2023, 63% by 2027 and 73% by 2030. Member States shall take the necessary measures to ensure that producers or producer responsibility organisations meet the targets.
- For starter batteries, industrial batteries and electric vehicle batteries, the producer shall be obliged to take them back.
- Distributors shall take back waste batteries from the end-user free of charge and without the end-user being obliged to buy or have bought a new battery.
- Distributors must hand over the batteries they have taken back to the producers or producer responsibility organisations responsible for ensuring the collection of used batteries.
- End-users shall discard waste batteries separately from other waste streams in designated separate collection points.
- Batteries from private use may be discarded in the municipal (or other public waste management authorities) collection system for batteries. These must then be handed over to the producers.

The Swedish supplementary legislation states what applies to the authorisation of producer responsibility organisations and to the authorisation of producers who choose individual responsibility. In addition to this, the regulation also regulates what information must be available on the producer responsibility organisation's website.

## Organisation and functioning of the PROs

The obligation in the EU Battery Regulation that a producer must appoint an authorised producer responsibility organisation, or be authorised individually, will apply from 2026. The Swedish Environmental Protection Agency has recently authorised three organisations: Batterikretsen, Batteriretur and Fo Retur, see below. Recipo is a PRO for electronics that has also applied for authorisation.

The largest organisation, Batterikretsen, is a wholly owned subsidiary company of El-Kretsen. El-Kretsen is a producer responsibility organisation for electronics that is owned by several industry organisations. One of these organisations is the Battery Association, which is an industry association for manufacturers and importers. Recipo is a privately owned producer responsibility organisation that has also applied to be approved for batteries. Recipo is already an approved producer responsibility organisation for electronics. For more information about El-Kretsen and Recipo, see the section on producer responsibility for electronics. Batteriretur is specialised in the collection and recycling of starter batteries and industrial batteries. Batteriretur is owned by the industrial organisation for small and medium-sized economic actors in the sector. Fo Retur is specialised in electric vehicle batteries and is owned by Swedish Mobility (the trade organisation for producers of cars, trucks and buses, including importers).

## Results

In 2024, approximately 4,000 tons of batteries were submitted to El-Kretsen's collection system. This corresponds to 0.4 kg per inhabitant. According to Statistics Sweden's data, 8,386 tons of portable batteries were placed on the Swedish market in 2024. In the same year, 3,913 tons of portable batteries were collected. The amount collected corresponds to 46 percent of what was placed on the market. The figures are partly from El-Kretsen's website and partly from Statistics Sweden.

For start batteries, there was, before the EPR-system, a well-functioning take-back system based on the commercial value of the metal content (lead). Portable batteries were given attention already during the 1980-ies due to their content of hazardous metals like mercury and cadmium. Pioneer municipalities started the separate collection of portable batteries. In the middle of the 1980-ies the Swedish Environmental Protection Agency started “The battery campaign”. Separate collection was introduced, financed by a fee on batteries. After the introduction of the EPR-system the producers took over responsibility for the collection.

## Collection

The municipalities and the producer responsibility organisation El-Kretsen have drawn up an agreement on the collection of electrical waste and batteries. The agreement has thereafter been signed individually by El-Kretsen and each municipality.

The agreement regulates which tasks both parties take on. Mainly, it means that producers can refer households to the municipality's collection, as stated in the agreement. The agreements regulate fractions and requirements for the collection, as well as the more detailed distribution of responsibilities regarding equipment, transport, collection of data and more. The agreement may also include a responsibility for municipalities to receive electrical waste and batteries from businesses. An appendix states how the municipalities will organise the collection. In the agreement, El-Kretsen undertakes to produce information material, while the municipalities undertake the responsibility of fulfilling the legislation's requirement to inform households. The agreement also contains a model for how the compensation is to be calculated. It considers both the type of municipality and the amount collected. El-Kretsen has an agreement with other PROs to settle the financing of the collection.

Collection is carried out partly through the municipality's recycling centres (around 600), partly through many smaller deployed battery bins. Some municipalities supplement collection at recycling centres with on-site collection in so-called environmental boxes and in deployed collection machines. Collection is also available at stores and distributors who are obliged to take back waste batteries. Start batteries can also be discarded at, for example, car repair shops. The collection of electric vehicle batteries doesn’t seem to be fully established, but will most likely be done through car repair shops and car dismantlers.

At recycling centres, batteries other than portable batteries are also collected, such as batteries for light vehicles, starter batteries and industrial batteries weighing up to 25 kilograms.

Batteries are also indirectly collected as being built into electrical products (see electronics). The built-in batteries are removed manually during the waste treatment of electrical products.

## Management and recycling

Collected batteries are transported to a recycling facility on behalf of the producer responsibility organisation. At the facility, the batteries are sorted by size and content.

Thereafter, manual sorting into different fractions takes place based on the content of the batteries. Button cell batteries, which may contain mercury, are sorted out using a shaking table. As a precautionary measure, all small button cell batteries are handled in the same process, even though only some of them contain mercury. Cadmium-containing batteries and other batteries that contain hazardous substances are sorted out to be phased out of the cycle. Other batteries, such as lithium batteries, are sorted out to be recycled. The fractions are crushed and handled in separate closed systems. Plastic and metal are sorted out for recycling. Organic material such as paper is sent for incineration with energy recovery. El-Kretsen states that the metal casing and the zinc content in alkaline batteries are recycled. Research is underway to increase recycling further. 90 percent of lithium-ion batteries are recycled.

Since October 2015, it has been prohibited in Sweden to sell batteries and products that have built-in batteries that contain more than 0.0005 percent mercury by weight. For waste whose content exceeds a certain amount of mercury, there are laws on how such waste should be disposed of. All mercury-containing batteries that El-Kretsen collects are temporarily stored pending further handling and stabilization of the mercury. Disused salt mines in Germany are used for final disposal.

## Reduction activity - re-use, repair, refurbishment

According to article 74 in the EU ordinance on batteries, producers or producer responsibility organisations shall give information on how to prevent waste. The PRO Batteriretur has information on their website that gives advice on choosing rechargeable batteries, high-quality batteries and how to take care of the batteries.

## Fees

Batterikretsen charges an entry fee and a fixed annual fee for producers. The annual accession fee for batteries is SEK 15,000. The entry fee, which is a one-time fee, is SEK 1,000. Batterikretsen also charges a fee per kilogram that varies for different types of batteries. The fees are listed on the website. Examples of fees are presented below.

- Alkaline batteries < 5 kg are 14 SEK/kg
- Button cells: 42.80 SEK/kg
- Rechargeable Li-ion batteries < 5kg: 10 SEK/kg
- Rechargeable Li-ion starter batteries: 10 SEK/kg
- Recipo charges the same fees as El-Kretsen for alkaline batteries and for li-ion batteries.

## Communication

The EU Battery Ordinance includes a relatively extensive obligation to provide information. The obligation includes, among other things, informing about the role of end users in the collection of used batteries and where collection points are located. Largely, producers fulfil this obligation through their producer responsibility organisations and through an agreement with the municipalities. The producer responsibility organisations' websites contain information aimed at the public. The municipalities have information about the collection of waste batteries. The website sopor.nu (“garbage.nu”) contains information about why and how to sort waste. The site is run jointly by El-Kretsen, Recipo, Näringslivets Producentansvar (PRO for packaging) and the municipalities' organisation Avfall Sverige.

## Reporting and documentation

The Battery Regulation requires producers to report the number of batteries made available on the market and how much has been collected and treated. The reporting should be made to the Swedish Environmental Protection Agency. In practice, reporting is arranged so that producers report to their producer responsibility organisations, which compile the results and report further. The PROs have digital portals where producers can report their information.

The reporting should be done according to Article 75 in the EU Battery Ordinance. For portable batteries and batteries for light means of transport (LMT) the following information should be reported annually.

- The number of portable batteries and LMT batteries made available on the market.
- The number of portable batteries of general use made available on the market.
- The amount of waste portable batteries and waste LMT batteries collected, respectively.
- The collection rate reached by the producer or producer responsibility organisation.
- The amount of collected waste portable batteries and waste LMT batteries delivered to permitted facilities for treatment.
- The number of portable batteries of general use made available on the market for the first time in the territory of a Member State, excluding portable batteries of general use that have left the territory of that Member State in that year, before being sold to end-users.
- The amount of waste portable batteries and waste LMT batteries collected in accordance with Articles 59 and 60, respectively.
- The collection rate reached by the producer or producer responsibility organisation for waste portable batteries and waste LMT batteries.

- The amount of collected waste portable batteries and waste LMT batteries delivered to permitted facilities for treatment.
- The amount of collected waste portable batteries and waste LMT batteries exported to third countries for treatment, preparation for re-use, or preparation for repurposing.
- The amount of collected waste portable batteries and waste LMT batteries delivered to permitted facilities for preparation for re-use or preparation for repurposing

## Compliance and enforcement

The Swedish Environmental Protection Agency is the supervisory authority regarding obligations for producers and producer responsibility organisations within all producer responsibilities. Municipalities, in the form of the environmental office or equivalent, usually have supervision over how the management of the waste locally meets the requirements of the respective regulation. The Swedish Environmental Protection Agency also has guidance primarily aimed at producers and producer responsibility organisations on its website.

The Swedish Environmental Protection Agency charges fees for the authorisation of producer responsibility organisations (and of producers who want to take individual responsibility). The application fee is SEK 225,000 for producer responsibility organisations and SEK 110,000 for producers seeking individual approval. The Swedish Environmental Protection Agency also charges an annual supervision fee of SEK 225,000 for approved producer responsibility organisations and SEK 110,000 for producers approved for individual producer responsibility.

Anyone who reports the prescribed information late may be subject to an environmental sanction fee of SEK 10,000.

The EU Battery Regulation stipulates that it is the responsibility of producers or producer responsibility organisations to achieve and maintain the collection targets (Article 59). Article 69 states that Member States shall take the necessary measures to ensure that producers or producer responsibility organisations achieve the collection targets. Member States shall regularly monitor collection levels. This is to check that they have taken appropriate measures. If the measures are not sufficient, the Member State shall request producers or producer responsibility organisations to take appropriate corrective measures.

## Pros and cons

Pros:

- The extended producer responsibility for batteries can be seen as well-functioning, arranged in cooperation with the municipalities.
- The public awareness concerning the importance of handling batteries separately is high.

Cons:

- There are still millions of portable batteries in the residual municipal waste.
- Lithium batteries may cause fires if they are not handled properly.

# Producer responsibility for tyres (end-of-life tyres)

## Legislative background

In 1994, Sweden decided on a regulation for producer responsibility for tyres. The EU does not require member states to have producer responsibility for tyres. However, the Swedish regulation has recently been updated and meets the EU's general requirements for how producer responsibility should be arranged.

The only tyres that are currently not covered by producer responsibility are the original tyres on vehicles under 3.5 tons (in principle, passenger cars and small vans and flatbed trucks). The producer responsibility fees for these tyres are included in the producer responsibility for cars. In practice, this means that the actual original tyres are most often changed and handled within the producer responsibility for tyres, and this equals the tyres on an end-of-life vehicle that is scrapped and is handled within the producer responsibility for cars.

The obligations in the regulation mean, among other things, that producers must be registered with the Swedish Environmental Protection Agency. An annual report on how many tyres have been placed on the market must also be made to the Swedish Environmental Protection Agency. Tyre producers must appoint or individually provide an authorised producer responsibility organisation that receives and collects end-of-life tyres.

The one who supplies tyres to an end user at his place of business shall, in connection with the sale of the tyres, accept the same quantity of end-of-life tyres from the buyer without requesting compensation.

A producer responsibility organisation shall, from 1 January 2027, ensure that at least 95 per cent of all end-of-life tyres are collected compared to the quantity of tyres made available on the market in the same year. The producer responsibility organisation shall also provide an appropriate and nationwide collection system for end-of-life tyres. A collection system is nationwide if there are collection points in each municipality, with a geographical distribution within the municipality that is reasonable, considering the population density and other circumstances.

A producer responsibility organisation shall collect end-of-life tyres that have been received by the person who supplies tyres, free of charge.

A producer responsibility organisation shall take appropriate measures to inform holders of end-of-life tyres about:

- Where end-of-life tyres can be discarded into a collection system and it is free of charge,
- The recycling result to which the producer responsibility organisation contributes,
- the importance of discarding end-of-life tyres in a manner acceptable from a health and environmental perspective, and
- The importance of reducing littering.

The municipality shall provide information to households about

- Where there are public collection points in the municipality where it is possible to discard end-of-life tyres, and
- The importance of discarding of end-of-life tyres in an environmentally acceptable manner.

## Organisation and functioning of the PROs

Svensk Däckåtervinning AB (SDAB) (Swedish Tyre Recycling) is an authorised producer responsibility organisation for tyres. SDAB is a non-profit limited liability company owned by the tyre industry associations.

Swedish Tyre Recycling has an office with a CEO and functions for administration, customer service, technology, communication, sales, controller, etc. The organisation is responsible for collection, handling, marketing and reporting in accordance with the regulation. However, as described below, the tasks are often carried out by contractors. SDAB also conducts development and research. The costs of the organisation are covered by recycling fees that all tyre producers are required to pay. SDAB has 250 affiliated producers.

## Results

The number of tyres collected varies but is approximately 90,000 tons annually. Before the introduction of the EPR-system, landfilling of tyres was still rather common. With the introduction of extended producer responsibility collection rate has rather quickly reached today's level.

## Collection

The collection of tyres is mainly done in two ways. Firstly, the end user can leave the tyres free of charge at tyre and car repair shops and other actors who handle tyres for consumers and users. Provided that the recipient is registered with SDAB, the tyres are collected free of charge for the recipient. It is also possible to drop off tyres at many municipal recycling centres. The municipality agrees on collection with SDAB in the same way as car repair shops. According to SDAB, there are a total of approximately 6,000 collection points.

## Management and recycling

SDAB has a special company that coordinates transport, sorting and processing. Recycling takes place at five contracted facilities.

At the recycling facilities, incoming tyres are weighed and then sorted by type (passenger car tyres, construction tyres and truck tyres). Tyres that can be reused are sorted out to the extent that is practically possible. The tyres intended for recycling are then cut and processed in various machines depending on the desired material. The end use involves material recycling, material replacement and, for example, the use of tyres as blasting mats. A significant proportion is used in cement production and for incineration with energy recovery. SDAB develops recycling technologies to obtain materials with higher quality and purity, which can be used in applications with higher environmental benefits.

SDAB participates in the European work to establish standards for quality assurance of recycled tyre material. This is done through the work in SES 422 and CEN 366. The work is focused on measurement methods for purity, sizes, steel content, etc. The use of standards creates additional security when trading and using materials. SDAB is also a project partner in the EU project CIRPASS, which prepares product passports for tyres throughout their entire life cycle.

## Reduction activity - re-use, repair, refurbishment

Tyres that can be reused are taken care of for reuse as much as possible. According to SDAB's statistics, approximately one percent of the collected tires is sold and reused.

## Fees

For each tyre that the producer puts on the market, a fee is paid to SDAB. The fee is based on the type and, in some cases size of the tyre. The fees finance SDAB's collection and recycling operations. The fees vary from 20 SEK for passenger car tyres, 120 SEK for bus tyres to 5,000 SEK for larger construction and industrial tyres.

Exact financial accounting is not available, but from the annual report, it is possible to understand that the income from the selling of recycled material or from tyres being reused is about one-tenth of the income from fees. Fulfilling the producer responsibility heavily relies on the fees. It is SDAB’s goal to raise the level that is financed from selling recycled materials.

## Reporting and documentation

A producer shall annually report the number of tyres made available on the market or brought into Sweden for use in professional activities to the Swedish Environmental Protection Agency. An approved producer responsibility organisation shall report annually on the number of end-of-life tyres that have been collected. In practice, many producers report to SDAB, which in turn reports to the Swedish Environmental Protection Agency.

## Compliance and enforcement

The Swedish Environmental Protection Agency is the supervisory authority regarding obligations for producers and producer responsibility organisations within all producer responsibilities. The municipalities, in the form of the environmental office or equivalent, usually supervise how the management of the waste locally meets the requirements in the respective ordinance. The Swedish Environmental Protection Agency also has guidance primarily aimed at producers and producer responsibility organisations on its website.

The Swedish Environmental Protection Agency charges an annual supervision fee of SEK 1,000 per producer and year.

There is a system of environmental sanction fees that the Swedish Environmental Protection Agency can charge. If a producer has not appointed, or individually provided a producer responsibility organisation itself, an environmental sanction fee of SEK 50,000 may be charged. For a delay in submitting a notification to the Swedish Environmental Protection Agency, the environmental sanction fee is SEK 10,000. For the delay in submitting the annual report, the environmental sanction fee is SEK 20,000.

It is the responsibility of the producer responsibility organisation to ensure that the 95 percent collection target is reached. The Swedish Environmental Protection Agency may tighten the conditions of the producer responsibility organisation's permit if necessary to meet the requirements of the regulation. If the deficiencies are significant, the permit may be revoked.

## Pros and cons

Pros:

- The collection rate of tyres is high
- The extended producer responsibility for tyres in general works well and can be considered uncomplicated compared to other producer responsibilities.

Cons:

- Incineration is still needed for some tyres even though the recycling rate is high.

# Producer responsibility for end-of-life vehicles

## Legislative background

Sweden has had a legally regulated producer responsibility for cars[1] since 1998. At that time, and until recently, EU law did not require a producer responsibility scheme for vehicles.

This is now changing. Regulation (EU) 2026/1738, in force since August 2026, replaces the End-of-life (ELV) Directive. Most provisions apply from 1 September 2028. From 1 September 2029 the Regulation introduces an extended producer responsibility. Producers must be registered in each member state, ensure collection and treatment of the vehicles they have placed on the market and cover the costs, individually or through an authorised producer responsibility organisation. The Swedish ordinances will have to be repealed or adapted where they overlap. The description below refers to the Swedish system as it has operated under the ELV Directive, which is the basis for the experience reported here.

The Swedish producer responsibility for cars is regulated in a special ordinance (Ordinance (2023:132) on producer responsibility for cars). This ordinance together with an ordinance on car dismantling, implemented the ELV Directive in the Swedish legislation. These ordinances build on older legislation that regulated car dismantling and the collection of end-of-life vehicles.

The Ordinance on producer responsibility for cars regulates the recycling target of the ELV Directive. It is stated that “A producer who receives an end-of-life car shall ensure that at least 95 percent of the weight of the car is reused or recovered (including energy recovery), of which at least 85 percent of the weight of the car shall consist of reuse or material recycling”. The ordinance also contains the following obligations, among others:

- All producers must submit a notification to the Swedish Environmental Protection Agency.
- Each producer is obliged to accept an end-of-life vehicle free of charge. This applies if the producer has placed the car on the Swedish market or if there is no responsible producer for the car.
- The producer must themselves or together with other economic operators ensure that there is one or more adequate systems for collection.

[1] The Swedish ordinance uses the word ”bilar” (cars in english). This is defined as a passenger car, bus or truck with a total weight not above 3 500 kilogram and is not equipped with sledding or continuous track.

- A system for collection is deemed adequate if there is, among other things, a possibility to drop off end-of-life vehicles in each municipality and within 50 kilometres. End-of-life vehicles that are handed over to the system for collection must be taken care of by an authorised car dismantler.
- A producer must report annually on how it has fulfilled its obligations under the ordinance and provide information on, among other things, recycling.
- In connection with the marketing of new cars, a producer must provide information on, among other things, how the cars should be taken care of when they reach the end of their useful life.

Note that the ordinance does not require producers to be part of a producer responsibility organisation.

As mentioned above, producer responsibility for cars is linked to the ordinance on car dismantling. The Car Dismantling Ordinance (2007:186) requires that a car dismantler must be authorised, see below. The ordinance also regulates, among other things, environmental protection during dismantling and which components should be taken care of or dismantled, see below.

“The cars must be emptied, dismantled, or otherwise neutralised of
1. oils and oil filters,
2. fuels,
3. liquids other than fuels and oils,
4. capacitors and filters containing PCBs or PCTs,
5. refrigerants in air conditioning systems,
6. starter batteries,
7. batteries in electric cars,
8. all components containing mercury,
9. lead weights,
10. gas tanks for liquefied gas,
11. potentially explosive components,
12. catalytic converters,
13. glass windows,
14. metal components containing copper, aluminium, or magnesium, unless the components can be separated in the shredding process, and
15. tyres and larger plastic components, unless these are separated during shredding in a way that allows the material to be recycled effectively.”

A provision has also been introduced in the Waste Ordinance (2020:614), which means that the holder of an end-of-life car may not hand it over to anyone other than a producer, the producers' system for collection, or an authorised car dismantler.

## Organisation and functioning of the PROs

The Swedish producer responsibility for cars does not require participation in a producer responsibility organisation. Mobility Sweden, which is a trade organisation for manufacturers and importers of vehicles, has built the “Bilretur” (Car return) network, which is a network of authorised car dismantlers. This arrangement means that their participants (the producers) meet the obligation to arrange a system for collection. Altogether, their participants are responsible for around 97 percent of new car sales in Sweden.

Mobility Sweden reports the recycling data they receive from the car dismantlers that are part of the Bilretur network to the Swedish Environmental Protection Agency.

## Collection

The Bilretur system for collection is based on a national network of authorised and already existing car dismantlers. Car dismantlers in the network are environmentally and quality certified. This means that annual checks are carried out to ensure that the laws and regulations governing car dismantling operations are followed. Complete vehicles can be handed over to the affiliated companies free of charge for recycling. Since an end-of-life vehicle often has a certain value, it is common for the car dismantler to provide the end user compensation for the vehicle or collect it free of charge. This is done on commercial grounds and is not financed through producer responsibility fees.

A total of 134,177 dismantling certificates were issued in Sweden in 2023. Mobility Sweden states that 70,309 dismantling certificates were issued within the Bilretur network in 2023. This means that 52 percent of the dismantling was done in the network. The producer’s responsibility is to provide the system for collection with nationwide coverage. The end users are allowed to leave their vehicle with any authorised car dismantler.

## Management and recycling

Of the scrapped vehicles, 98 percent is recycled, including energy recovery. 87 percent of the components or materials are reused or recycled as material.

Car dismantling takes place in accordance with the regulations in the Car Dismantling Ordinance. The car dismantler takes care of parts from the vehicle that can be reused and sold as spare parts. The vehicle is then decontaminated of hazardous substances and components that are considered hazardous waste. This applies to oils, glycol, airbags, refrigerants, etc. Batteries, windows, tyres, etc. are dismantled for separate recycling. The car body is transported to a fragmentation where it is divided into a metal fraction for material recovery and a non-metallic fraction for energy recovery.

## Reduction activity - re-use, repair, refurbishment

For vehicles, it can be considered that there is a functioning market with a value for both used cars and spare parts. In the ordinance on producer responsibility, some measures are made to support and facilitate this. According to the ordinance on producer responsibility for cars, the producers are obliged to provide information concerning material and components to facilitate reuse, among other purposes. The ordinance on car dismantling prescribes that components and spare parts shall be dismantled and stored in such a way that it secures the possibility for reuse and recycling.

## Fees

Until 2007, there was a state-regulated car scrappage premium. The premium was financed by a scrapping fee on every new car sold. Since end-of-life vehicles often have a value, based on their content of potential spare parts and the value of the metal, producers do not finance the system for collection by charging a special fee, for example, on each new car sold. It is usually possible for the last owner to get something between SEK 1,000 and 10,000 for an end-of-life vehicle. This of course, depends on the status of the vehicle, but also if transportation is needed.

The most profitable part of car scrapping is selling spare parts for reuse. There is also an income from the recycling of metals. Taking care of chemicals and other hazardous waste is a cost.

The administrative work with the system for collection is financed by the trade organisation Mobility Sweden.

## Reporting and documentation

The Car Dismantling Ordinance regulates, that an authorised car dismantler must annually provide producers with the information, that they in their turn need to fulfil their reporting obligations under the producer responsibility. The car dismantler must also send a copy of the information to the municipality where the car dismantling operation is conducted. For the car dismantlers that are part of the producers' Bilretur system, reporting is done in a web-based reporting system. There are shortcomings in the reporting, as only about half of the country's car dismantlers that are outside the car manufacturers' own network report this information.

A producer shall annually report to the Swedish Environmental Protection Agency. In practice, the car dismantlers report to Mobility Sweden, which reports to the EPA.

In this reporting, it should, in addition to figures concerning recycling, also include how the producer has fulfilled its obligations under the regulation. On the Swedish Environmental Protection Agency's website, it is clarified what information should be reported. This includes, among other things, reporting on the following obligations.

- Obligation to accept end-of-life cars (Section 15). State, for example, which end-of-life car reception system the company is affiliated with.
- Having an appropriate reception system for end-of-life vehicles (Section 16)
- Responsibility for information when marketing new vehicles (Section 22)
- Giving information on materials, components and hazardous substances to facilitate reuse and recycling (Section 23)
- Giving information to holders of end-of-life vehicles and vehicle parts (Section 24)
- To publish the recycling targets (Section 25). An operator who is only a producer of vehicles intended for special purposes is not subject to this requirement.
- To have internal control procedures on the quality of data provided under Section 21 (Section 26, 1p)
- To have external control procedures on the requirements of Regulation (EC) No 1013/2006 (Section 26, 2p)
- The producer shall also certify that the activity meets the reporting requirements regarding:
- Operation of a reception system (Section 18)
- Consultation during the operation of a reception system (Section 19)
- Sufficient resources (financial and organizational) required to fulfil obligations under Regulation (2023:132) (Section 20).

## Compliance and enforcement

The Swedish Environmental Protection Agency supervises the producer responsibility for cars. They also have the central responsibility for guidance and follow-up. The Swedish Environmental Protection Agency charges a supervisory fee of SEK 10,000 per producer per year. The supervisory fee is used to maintain a digital register of all producers and to ensure that the regulations are complied with. The municipalities, in the form of the environmental office or equivalent, usually supervise how the handling of the waste in question locally meets the requirements of the respective ordinance. This means that the municipal environmental offices supervise the operations of car dismantlers.

If an operator has not complied with the legislation, it may result in it having to pay an environmental sanction fee. A producer who submits a late notification may receive a fee of SEK 10,000. Being late in submitting information may result in a fee of SEK 20,000.

According to the Regulation on producer responsibility for cars, a producer who accepts an end-of-life car must ensure that at least 95 percent of the weight of the car is reused or recycled, including energy recovery, of which at least 85 percent of the weight of the car must be reused or recycled as material.

Since the car take-back system does not require approval, it cannot be withdrawn.

If the above-mentioned objectives are not achieved, this would require the authority to act against individual producers and not against a producer responsibility organisation. Producer responsibility for cars does not follow entirely the same principles as other producer responsibilities, partly because it is not mandatory in the form of EU requirements. The example of cars and the obvious difficulty of acting against individual producers shows the importance of producer responsibility organisations in being able to demand responsibility.

Car dismantling/scrapping has traditionally been a regulated activity. Car dismantling is classified as an environmentally hazardous activity and may not be carried out without first reporting it to the supervisory authority. The municipality's environmental office is the supervisory authority for activities that require reporting. Existing car dismantlers are what are classified as fixed supervisory objects. This means that they are always included in mandatory planned inspections.

Car dismantling activities also require authorisation according to the Car Scrapping Ordinance. The authorization is reviewed by the County Administrative Board. Authorisation involves, among other things, checking that the activity has the necessary permits according to the Planning and Building Act and the Environmental Code, for example, for warehouses, buildings or other facilities, and that the cars received will be taken care of in a manner that is acceptable from a health and environmental point of view. The police authority and the municipality must be allowed to comment on the application. It is not permitted to carry out car dismantling or scrapping activities without having an authorisation. The authorisation has the advantage of the possibility to being withdrawn if the activity is not done according to the legislation.

Only authorised car dismantlers are entitled to issue the scrapping certificate needed for the car to be deregistered from the road traffic register. It is in the car owner's interest that the car is deregistered. If the car is not deregistered, the owner must continue to pay taxes and fees for the car.

There are also clear regulations for car dismantling that specify which violations result in fines. Fines are imposed on anyone who carries out car dismantling without authorisation, issues a receipt without being authorised, or does not carry out the dismantling in accordance with the rules.

There are also special rules regarding abandoned cars. Abandoned cars are classified as littering and are therefore subject to the prohibition on littering. It is the person who abandons a car who is criminally liable.

## Pros and cons

Pros:

- The extended producer responsibility has contributed to the quality assurance of car dismantlers.
- The recycling rate is rather high and there is a functioning system for second-hand spare parts.

Cons:

- Car dismantlers that are not part of the Bilretur System have a low degree of reporting.
- Despite the producer responsibility and the value of most end-of-life vehicles, there is a problem with abandoned cars. This causes costs for the municipalities and risks for the environment.

# Producer responsibility for electrical equipment

## Legislative background

Producer responsibility for electrical equipment has existed in Sweden since 2001. The responsibility is regulated in the ordinance (2022:1276) on producer responsibility for electrical equipment. The Swedish producer responsibility was introduced before the EU introduced its requirement for producer responsibility for electrical equipment. The regulation has since been revised several times, both as an adaptation to the EU's WEEE Directive and to the general requirements for producer responsibility in the Waste Directive. Still, the basic function has been the same since the producer responsibility was introduced. The latest changes were made in 2023 and contain provisions that, among other things, aim to increase reuse.

The Swedish ordinance is largely an implementation of the WEEE directive. This applies to scope and definitions, but also to the producers' basic responsibilities, such as recycling targets, labelling, etc. The Swedish regulation states that "Before a producer makes consumer electrical equipment available on the Swedish market, the producer shall engage or provide a producer responsibility organisation that undertakes to take care of the producer's electrical equipment when it has become waste." The organisation must be approved of by the Swedish Environmental Protection Agency.

The producer responsibility organisations' fee shall be based on the amount of electrical equipment that each producer places on the market. The Swedish Environmental Protection Agency has regulated that equipment containing hazardous substances must have a higher fee.

One of the central requirements is that the producer responsibility organisation "shall provide an adequate and nationwide collection system for consumer electrical waste." The regulation specifies what is to be considered an adequate collection system. This includes, among other things, that there shall be easily accessible collection points, and that electrical waste collected by the municipality shall be received free of charge. It also states that the collected electrical and electronic waste shall be treated in a manner that is acceptable from a health and environmental perspective and that the system shall effectively contribute to achieving the recycling targets in this regulation.

The Swedish Environmental Protection Agency is the responsible authority to which producers must register.

## Organisation and functioning of the PROs

There are two approved producer responsibility organisations, El-Kretsen and Recipo. El-Kretsen is owned by nineteen trade organisations that partly represent electronic products more generally, and partly specialised organisations for batteries, lighting, toys, smoke alarms, tools and ICT products, etc. One of the owners is the organisation Svensk Handel (Swedish Trade). The owners are represented on El-Kretsens board of directors. 2,150 producers are affiliated with El-Kretsen. Recipo is a privately owned producer responsibility organisation. El-Kretsen and Recipo are also producer responsibility organisations for batteries. Both organisations are non-profit organisations in accordance with the requirements in the regulation.

El-Kretsen's largest expenses are costs for collection, transport, sorting, pre-treatment, recycling and disposal of electrical waste and battery waste.

El-Kretsen has an office in Stockholm with just over 15 employees. In addition to a CEO and administration, there are functions for collection, communication, marketing, finance, follow-up, purchasing and sustainability.

Recipo, which also operates in Denmark and Norway, has a total office of 11 people including the CEO, staff responsible for Norway and Denmark, and functions such as controller, accountant, customer service, communication and sustainability.

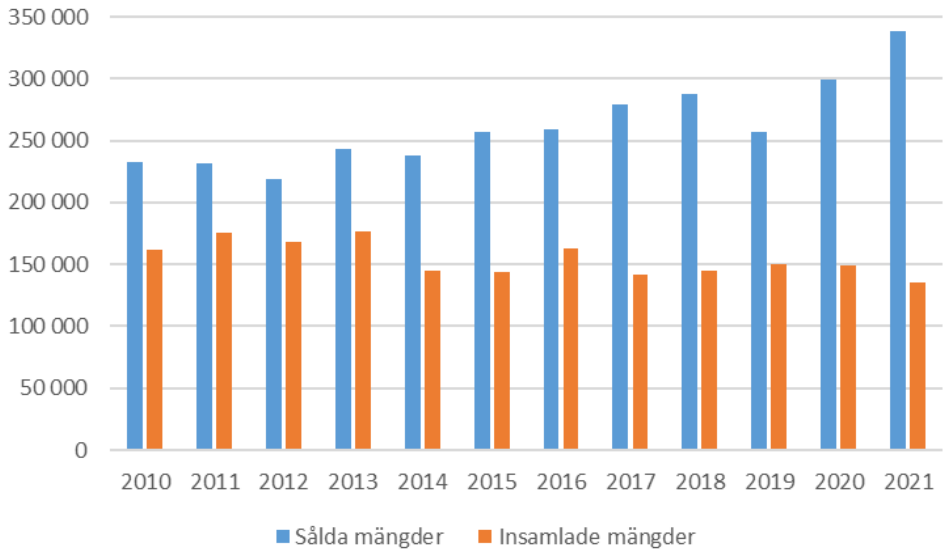
## Results

A total of 140,999 tons of electrical waste were submitted via El-Kretsen's collection system - equivalent to 13.5 kilograms per person (possibly including batteries).

- Various electronics: 76,000 tons, 7.29 kg per inhabitant
- Refrigerators and freezers: 25,000 tons, 2.41 kg per inhabitant
- Light sources: 700 tons, 0.07 kg per inhabitant
- Fluorescent tubes: 1,200 tons, 0.11 kg per inhabitant
- White goods: 32,000 tons, 3.1 kg per inhabitant
- Professional electronics: 1,100 tons, 0.11 kg per inhabitant

According to a study commissioned by Avfall Sverige (Swedish Waste Management), 7,500 tons of hazardous waste end up in residual household waste every year. Of this, 70% are batteries and electrical products. Hazardous waste that is discarded in the residual waste has not been collected properly. This leads to reduced recycling and a risk of hazardous substances being spread to the environment. A large proportion of this is items that are not obviously electrical products, even though they contain electronics. These can include payment cards, certain toys, crank radios, greeting cards that play music and much more.

**Figure 1. Sold and collected amounts of electrical equipment in Sweden, 2010–2021, tonnes[2].** *Source: Swedish Environmental Protection Agency*




The separate collection of e-waste was negligible before the introduction of the EPR-system, at least of equipment for private use. The introduction of the EPR system quickly raised the collection to around 15 kg/inhabitant. The Swedish Environmental Protection Agency notes in its follow-up that collection over the past ten years has shown a clear downward trend. Sweden is now well below the target set at the EU level. The EU's target is a collection rate of 65 percent of what was placed on the market during the previous three years. According to the Swedish Environmental Protection Agency, the amount of electrical equipment collected in 2024 was approximately 49 percent of the average annual amount placed on the market in 2021–2023. The Swedish Environmental Protection Agency has conducted a special analysis of the results. The reporting is lacking primarily for non-consumer electrical waste. The survey shows that "a large part of the e-waste that is not reported as collected instead ends up in other waste streams such as metal waste (3–14%), mixed waste fractions (10%) and plastic waste (0.3%), while about 1–5% is exported for reuse. Illegal export is estimated at 3–15%".

## Collection

Since producer responsibility for electrical equipment was introduced in Sweden, municipalities and producers have collaborated to collect e-waste in what is called the Elretur system. By an agreement, the municipalities are responsible for the main public system for the collection of e-waste from households. The agreement has been drawn up by the municipal waste organisation Avfall Sverige and El-Kretsen. The agreement has then been signed individually between El-Kretsen and each municipality. The agreement regulates the tasks that both parties

[2] https://www.naturvardsverket.se/4acefb/globalassets/om-oss/slutredovisade-regeringsuppdrag/redovisning-av-ru-okad-atervinning-och-ateranvandning-av-elutrustning.pdf

undertake. The agreement mainly means that producers can refer households to the municipality's collection. The agreement regulates fractions and requirements for collection as well as the more detailed division of responsibility regarding equipment, removal, collection of data, etc. It may also include receiving electrical waste and batteries from businesses. An appendix states how the municipalities will arrange the collection. The agreement also contains a model for how the compensation is to be calculated. It takes into account both the type of municipality and the amount collected.

The producers are responsible for the treatment.

The basis of municipal collection is the approximately 600 staffed municipal recycling centres. However, most municipalities also have several complementary collection systems for e-waste, both curb side and, for example, in supermarkets. El-Kretsen takes care of the electrical waste that the municipalities have collected through contracts with approximately 15 transporters.

Electrical waste is also collected in stores that sell electronic equipment. Larger stores are required to accept all types of consumer electronics smaller than 25 cm, regardless of whether the consumer buys something or not. For other stores, you can leave a corresponding waste product in the store when you buy a new product. After receiving the waste, the store is responsible for ensuring that the collected material is handed over to an approved producer responsibility organisation for recycling.

Electrical waste from businesses with larger volumes can sign agreements with producer responsibility organisations to have the waste collected.

Electrical waste is divided into different categories:

- Monitor products
- Various electronics
- Refrigerators, freezers and other refrigerated furniture
- Straight fluorescent tubes – including LED fluorescent tubes
- Large appliances – dishwashers, stoves, dryers, washing machines and the like
- Other light sources – including LED lamps.

## Management and recycling

El-Kretsen has contracts with around thirty recyclers, some of whom specialise in certain product groups such as light sources or refrigerators and freezers. The environmental impact of the recyclers' activities is regulated, among other things, in a special ordinance regarding the professional storage and treatment of electrical waste.

There are standards for the treatment of electrical waste at EU level. They have been developed partly by the European standardisation committee CENELEC, and partly by WEEELABEX, an international trade organisation. However, there is no requirement in Swedish legislation that any of these standards shall be applied.

El-Kretsen states that the collected material is sorted and dismantled manually. The aim is to remove environmentally hazardous components and substances from the products, such as batteries, before the material is sent on for recycling. TVs and monitors are dismantled. Circuit boards and other components that contain rare metals are sent to special recycling. Hazardous waste and batteries are sorted out. The remaining waste is sorted according to the materials it contains. The materials are then shredded so that different metals and plastics can be separated and then sent for material recycling.

Refrigerators and freezers are an example of a product group that is taken to a special facility for recycling. Hazardous waste, such as oil and cooling circuits are removed. The refrigerant, which may still contain ozone-depleting substances, is removed using a special vacuum suction. The material is then crushed in a closed system where ozone-depleting substances in the insulation can be taken care of.

Light sources (lamps and fluorescent tubes) are also taken to a special facility for recycling. At the facility, the waste is crushed in a closed system, and the material passes through a bath where the phosphor powder from low-energy lamps and fluorescent tubes sinks to the bottom and can be sorted out. The phosphor powder contains mercury. The mercury is handled separately and removed from the cycle. The other material is sorted as glass or metal and recycled.

### Reduction activity - re-use, repair, refurbishment

The Swedish ordinance on producer responsibility for electrical equipment sets requirements regarding waste prevention and reuse. Producers have a responsibility to design products in a way that promotes reuse. A producer responsibility organisation must provide information about the benefits of reuse and other measures to prevent waste. The organisation must also ensure that collection is carried out in such a way that preparation for reuse is possible, and that material recycling is not hindered.

El-Kretsen has tips on its website on how to reduce your electrical waste. The tips refer to taking good care of equipment, sharing it with others and buying good quality products.

## Fees

The producer responsibility organisations' income comes partly from fixed fees for each producer, partly from fees for the products that have been placed on the market and partly from the sale of collected and recycled material. The fee for the products is per piece or per kilogram and differs between different product categories.

The annual fixed fee can be seen as a membership fee and provides access to the collection, reporting portal, customer support and documentation. For each electrical product and battery that the producer places on the Swedish market, the producer pays a fee that includes the costs of collection, transport and recycling. The fee corresponds to the actual cost of environmentally friendly handling of the waste. Several products, such as mobile phones and laptops, have a zero kronor fee. This is because the metal content provides an income from recycling that covers the costs of collection. Consumer products such as household appliances and tools have a fee of about one krona each. Refrigerators and freezers have a fee of around SEK 100 per unit. The fees vary between the two producer responsibility organisations.

To steer towards more environmentally friendly products, the Swedish Environmental Protection Agency has regulated that the organisations are obliged to charge a higher fee for products that contain hazardous substances above a certain concentration.

## Reporting and documentation

The Swedish Regulation on Producer Responsibility for Electrical Equipment regulates the reporting that producer responsibility organisations and producers must make to the Swedish Environmental Protection Agency. Producers are obliged to report the number of products they have placed on the market. Producer responsibility organisations must report how much has been collected and how it has been treated. The organisations must also provide information about which producers and producer representatives have joined the producer responsibility organisation.

According to the regulation, an approved producer responsibility organisation shall annually report the following information to the Swedish Environmental Protection Agency:

- The weight of consumer e-waste collected during the immediately preceding calendar year,
- The weight of the collected consumer e-waste that has been submitted for treatment in Sweden,
- The weight of the collected consumer e-waste that has been transported to another country within the EEA, and

- In the case of e-waste that has been transported to a country outside the EEA, the weight of the waste that has been treated in the other country under conditions equivalent to the requirements of Regulations (EC) No 1013/2006 and (EC) No 1418/2007.

Information on the weight of the waste according to the first paragraph 1-4 shall be specified in the categories of equipment that the waste consists of, according to the regulation. For each category, it should be specified how much has

- Been prepared for reuse,
- Material recycled,
- Recycled in another way, or
- Disposed of.

Information according to the first paragraph 1 shall be specified in the weight of the waste that has been collected in the respective municipality.

An approved producer responsibility organisation shall also, each year, submit information to the Swedish Environmental Protection Agency on which producers and producer representatives have engaged the producer responsibility organisation.

The producers shall annually report the amount of electrical equipment that the producer has made available on the Swedish market during the immediately preceding calendar year.

## Information

The Swedish Regulation on Producer Responsibility for Electrical Equipment requires the producer responsibility organisation to provide information. In addition to the fact that the producer responsibility organisation must have information on its website about the organisation itself and its owners, etc., they must also inform holders of consumer e-waste about, among other things, the benefits of reusing electrical equipment, taking other waste prevention measures, the obligation to sort out electrical waste and keep it separate from other waste and where sorted consumer e-waste can be discarded.

As an example of the latter, El-Kretsen has school materials, videos, articles and surveys that are aimed at a broader target group, for example, the public, schools, politicians, etc. Both organisations are also a part of the collaboration that is responsible for the website sopor.nu (“garbage.nu”), which provides information about waste and waste sorting.

The regulation also gives municipalities a responsibility to provide information to the public, including why and how sorting should be done. The agreement between El-Kretsen and the municipalities regulates the divided responsibility. It commits El-Kretsen to producing information material, while the municipalities undertake the responsibility to fulfil the legislative requirements to inform households.

## Compliance and enforcement

A producer must pay an annual fee for the Swedish Environmental Protection Agency's supervision. The fee is the same for all producers and will be SEK 1,000 per year in 2026. The approved systems for the collection of consumer electrical equipment are also an object for supervision from the Swedish EPA and must therefore each pay a supervision fee of SEK 275,000 per year. As the PROs are in fact the approved systems for collection, this is a fee for supervising them.

The Swedish Environmental Protection Agency is the operational supervisory authority responsible for ensuring that producers take their responsibility and that producer responsibility organisations meet all requirements. Municipalities' environmental offices are responsible for supervising local waste management, for example, the collection and treatment of electrical waste within the municipality, including the collection of electrical waste from stores and the activities carried out by municipal waste management.

If an activity has not complied with the legislation, it may result in it having to pay an environmental sanction fee. A violation that may lead to an environmental sanction fee is when a producer submits the annual report late. The environmental sanction fee is SEK 10,000 per violation. Other violations include that the electrical equipment is not correctly labelled, that membership in a producer responsibility organisation for consumer electrical equipment has not been completed, or that information is missing about which components and materials are included in the equipment and where in the equipment hazardous substances may be present.

The Swedish Environmental Protection Agency can also decide on an injunction against those who do not fulfil obligations under producer responsibility.

The Swedish Regulation on Producer Responsibility for Electrical Equipment sets targets for recycling. The Swedish Regulation does not specify anyone as responsible for achieving the targets. The Regulation states that a producer responsibility organisation shall provide an appropriate and nationwide reception system for consumer electrical waste. The reception system shall be considered appropriate if, among other things, it effectively contributes to achieving the targets for recycling. The producer responsibility organisation can therefore be seen as

responsible for doing its part to ensure that the targets are achieved, but not solely responsible. According to the Regulation, the Swedish Environmental Protection Agency may revoke the approval of the producer responsibility organisation if it does not meet the requirements, and if the shortcomings are significant.

In addition to the legal requirements, El-Kretsen requires that all partners follow the policies of the international organisation CECED. These policies contain standardised ethical guidelines such as the prohibition of child labour, the promotion of fair wage levels and the prevention of discrimination. In addition, all contracted recyclers must be certified according to at least one of the two European standards CENELEC and WEEELABEX.

### Pros and cons

Pros:

- The collection system for households is well developed in cooperation with the municipalities.
- The EPR system established a rather high degree of collection.

Cons:

- There is still a non-negligible amount of e-waste in the municipal residual waste.
- Not all metals and rare earth metals in the waste are recycled.
- The consumption of electric and electronic goods is high and growing.

# Producer responsibility for packaging

## Legislative background

Producer responsibility for packaging was introduced in Sweden in 1994. The following year, Sweden became a member of the EU. In the same year, the EU decided on a packaging directive. The packaging directive regulates, among other things, recycling targets for different types of packaging. However, there was no requirement for extended producer responsibility. The Swedish producer responsibility for packaging can therefore be seen as a national initiative to achieve the targets set in the directive, among other things.

The EU has thereafter decided on a new regulation on packaging and packaging waste (PPWR). An EU regulation is directly applicable and does not need to be implemented. The regulation will apply from 12 August 2026. Most of the provisions apply directly and replace current Swedish provisions. In some cases, member states have room for manoeuvre and in other cases, they are required to introduce national provisions to comply with the requirements.

PPWR means, among other things, that countries must work to reduce packaging waste.  Requirements will be placed on packaging to be recyclable according to certain criteria and to contain recycled material. The ordinance also introduces a mandatory requirement for producer responsibility. The Swedish Environmental Protection Agency is working on behalf of the government to adapt the Swedish Ordinance on Producer Responsibility for packaging.

The current Swedish ordinance contains recycling targets for different types of packaging and targets for reduced littering and the content of recycled plastic in new products. Packaging placed on the Swedish market must be recyclable or reusable. A producer must be registered with the Swedish Environmental Protection Agency.

The ordinance also requires producers to “appoint or provide a producer responsibility organisation that undertakes to take care of the producer’s packaging when it becomes waste”. The producer responsibility organisation that is appointed or provided must be approved by the Swedish Environmental Protection Agency.

The producer responsibility organisation that has the largest weighted market share is called the responsible producer responsibility organisation. This organisation has a more far-reaching responsibility (see below concerning collection).

The regulation also contains provisions on reporting, see the section below.

## Organisation and functioning of the PROs

In Sweden, there are two producer responsibility organisations for packaging, the Swedish Producer Responsibility Organisation (NPA) and TMR. NPA is owned by five trade organisations: the Swedish Food Suppliers (DLF), the Swedish Retailers Association, the Swedish Trade Association, the Swedish Breweries and the Swedish Spirits & Wine Suppliers Association (SVL). The owners are represented on the NPA's board. TMR is a privately owned company. NPA is designated as the responsible producer responsibility organisation according to the legislation.

NPA has just under 50 employees. In addition to a CEO and administrative office, there are functions for customer service, communication, marketing, material specialists, logistics, and recycling. TMR has approximately 15 employees with corresponding functions.

NPA's estimated costs for 2026: 3,200 million for collection and 650 million for recycling. Revenues are 3,700 million in packaging fees and 150 million from the value of the collected materials.

## Result

The Swedish Environmental Protection Agency has compiled the following results for packaging recycling for 2024. The target only concerns material recycling, not collection. The figure given for material recycling, therefore, refers to material actually recycled. Incineration is not included.

| Type of packaging | Material recycling (%) | Target (%) |
|---|---|---|
| Glass | 98 | 90 |
| Plastic (incl. PET-bottles with refund) | 31 | 50 |
| Paper, cardboard | 99 | 85 |
| Steel | 65 | 70 |
| Aluminium (incl. cans with refund) | 77 | 50 |
| Wood | 23 | 15 |
| Total | 76 | 65 |

The statistics show that five of the nine national recycling targets for packaging were met: the total recycling target and the recycling targets for glass, paper, aluminium (including cans with refund) and wood. The reliability of the statistics is debatable. According to the Swedish Environmental Protection Agency, the fact that the recycling rate is close to 100 percent for glass and paper is an indication that the amount put on the market is underestimated, since these types of packaging are found in residual waste that is incinerated. One reason for this may be free riders in the form of producers who do not take responsibility and do not report the amount of packaging they place on the market.

## Collection

The system for the collection of packaging is under change. Previously, producers were responsible for the collection of all packaging waste. This was done at a large number of recycling stations located in street environments. The collection and the function of the recycling stations were questioned, especially by the municipalities. Since 2024, municipalities have been responsible for the collection of packaging from households and businesses co-located with households. From 2027, collection will take place close to the property (with certain exceptions). The municipalities are responsible for transporting the source-sorted waste to the producers' reception points. The producers will reimburse the municipalities for collection based on a decision by the Swedish Environmental Protection Agency.

The organisation designated “the responsible producer responsibility organisation” (see above) shall arrange and operate collection sites throughout the country for sorted packaging waste produced in connection with enterprises or public services. Producer responsibility organisations that have not been designated as responsible shall pay reasonable compensation to the responsible producer responsibility organisation for its costs for the reception sites.

## Coordination with municipalities

As mentioned above, municipalities are responsible for collecting packaging from households, businesses that are co-located with households and packaging waste that arises in squares, parks and other popular places. It is regulated that packaging waste must be handed over to the producers and that the municipality must provide transfer stations.

The Regulation on Producer Responsibility for Packaging regulates the producers' compensation to the municipalities. The compensation is based on information that the municipalities must report to the Swedish Environmental Protection Agency. This information concerns the number of households, type of building (one- and two-family houses/apartment buildings), number of households with curb side collection, the number of collection points in squares, parks and popular places, the number of recycling centres and more.

The Swedish Environmental Protection Agency decides on the compensation to the municipalities. The amount of compensation shall be determined on the basis that it shall only cover the activities that the municipality is obliged to carry out. The compensation is based on the above mentioned information and calculated partly on the amount of packaging waste collected, partly on the type of municipality.

The variable compensation based on the amount collected is calculated based on the following levels for 2026.

| Category | SEK/tons |
|---|---|
| Metal packaging | 371 |
| Glass packaging | 669 |
| Plastic packaging | 1 554 |
| Paper packaging | 1 793 |

The fixed compensation also varies correspondingly between the different packaging categories. Below is the compensation level for one- and two-family houses with curb side collection, with variations for the type of municipality. The compensation levels are for 2026.

| Category | One- and two-family houses | Apartment building |
|---|---|---|
| Metal packaging | 72–108 SEK | 24–48 SEK |
| Glass packaging | 95–167 SEK | 36–84 SEK |
| Plastic packaging | 263–418 SEK | 108–203 SEK |
| Paper packaging | 287–478 SEK | 95–215 SEK |

The municipalities are also given compensation for costs due to work with information equivalent to 5 SEK per inhabitant but a minimum of 50,000 SEK per municipality.

There are no summaries of the total costs. However, a typical municipality with approximately 100,000 inhabitants receives compensation in the order of 30–35 million SEK per year.

## Management and recycling

NPA hires contractors for further transport and recycling. The packaging is taken to various types of recycling. Most of the paper packaging is recycled at a specialised paper mill. Plastic packaging is taken to the Swedish Plastic Recycling facility, where it is divided into hard plastic and soft plastic. Each plastic packaging is then scanned with infrared light to identify the type of plastic it is made of. Depending on the type of plastic, the packaging is sorted into different fractions that go on to be washed and granulated by recyclers. Metal packaging is divided into steel and aluminium and then taken to smelters. All glass packaging is taken to a facility where the fractions are checked and then crushed to be used as raw material for glass manufacturing or glass wool.

## Anti littering

About a quarter of the waste collected during the national littering survey is consumer-related on-the-go waste, such as food packaging, corks, lids and packaging for snacks and sweets. This is according to the non-profit organisation Keep Sweden Tidy's annual Litter Report. Returpack is the organisation responsible for the deposit return system for bottles and cans (see below). Keep Sweden Tidy works to influence attitudes and behaviour to reduce littering. The board includes NPA and the municipalities' organisation, Swedish Waste Management (Avfall Sverige).

NPA has produced a guide for how packaging can be adapted to reduce the risk of littering.

## Reduction activity - re-use, repair, refurbishment

NPA has developed design guidelines for recycling and circularity. This includes how material selection, colours and labels can affect the recyclability of packaging and what choices can be made to contribute to increased circularity. Manuals are available for plastic, paper, metal and glass packaging.

## Fees

The Swedish Environmental Protection Agency has regulated that producers' fees for paper and plastic packaging should consider the recyclability of the packaging. Otherwise, the producer responsibility organisations themselves determine their packaging fees. The fees vary depending on the type of material. The fees also differ between packaging for private use and other uses. Those that are not for private use and those that are considered more compatible with material recycling have lower fees.

NPA's packaging fees vary as follows.

- Paper packaging: 0.01–9.65 SEK/kg
- Plastic packaging: 0.1–19.56 SEK/kg
- Steel 0.01–21.49 SEK/kg
- Glass 2.80–6.70 SEK/kg

TMR has two fees for paper packaging (depending on how recyclable they are). The fees are 6.38 and 9.41 SEK/kg, respectively. For plastic, there are three fee levels 12.95, 17.42 and 18.93 SEK/kg. Glass has a fee of 2.76 SEK/kg and steel 20.66 SEK/kg.

The cost compensation paid by the producers to the municipalities is around 1 billion SEK/year. This equals about 70 % of the fee on packaging for private use. This cost is expected to rise as kerb side collection is expanded. Remaining 30 % consist of costs for transport of packaging waste from the municipalities and the treatment of the waste.

## Reporting and documentation

Every year, companies with producer responsibility must ensure that the Swedish Environmental Protection Agency receives a report with information. The reporting is mainly done through their producer responsibility organisation.

The following must be reported to the Swedish Environmental Protection Agency:

- Companies that manufacture or import/import service packaging into Sweden
- Companies that fill or use all other types of packaging for their operations
- Companies that import/export packaged goods into Sweden
- Companies that manufacture or import/import disposable cups that are not intended to be filled at the time of sale, for example, disposable cups for consumers or offices.

Companies must report the amount of packaging that the company (producer) has provided (imported, manufactured, used) on the market in Sweden during the previous calendar year.

The amount must be reported in weight per packaging material, such as plastic, wood and aluminium.

The reported data must also show the amount of:

- Consumer packaging
- Reusable packaging
- Reusable consumer packaging
- Beverage bottles that are single-use plastic products
- Plastic bottles and metal cans are part of a return system. These must also be reported in numbers.

The producer responsibility organisations must do both a quarterly and an annual report.

The quarterly reporting shall include the information that is decisive for the Swedish Environmental Protection Agency's decision on market shares. This concerns information on the amount of packaging that the producer responsibility organisations' affiliated producers have placed on the market and what proportion of that amount constitutes packaging intended for private and non-private use, respectively.

In the annual reporting, the producer responsibility organisations must submit certain information to the Swedish Environmental Protection Agency, such as which producers have contracted the organisation, information about the packaging waste handled by the organisation and the amount of waste collected and treated, whether waste has been exported and other information such as the packaging waste handled, specified in packaging material, which during the immediately preceding calendar year has been:

- Collected and treated in Sweden,
- Collected outside Sweden and treated in Sweden,
- Collected in each municipality,
- collected in Sweden and transported to another country within the European Economic Area (EEA) for treatment, and
- Collected in Sweden and exported to a country outside the EEA for treatment.

Information on packaging waste collected in Sweden and treated in or outside Sweden must be specified in terms of how much has been recycled, recovered through energy recovery, recycled in other ways, or disposed of.

## Information

It is the responsibility of the municipalities to produce easily accesible information material for the households and for businesses and other non-household actors who have choosen municipal collection. The information shall cover the obligation to sort packaging waste, how the sorting should be done, how the packaging waste can be prevented and how to contribute to material recycling. Information shall also be given on the result of the recycling. The cost for the information is included in the compensation given by the PRO's. The PRO's shall be given the opportunity to have their opinion on the information before it is made public.

The responsible PRO shall make easily accesible information available for businesses and other non-household actors. The information shall cover the obligation to sort packaging waste, how the sorting should be done, where it is possible to deliver waste to the reception points, how to prevent packaging waste and how to contribute to material recycling. Information shall also be given on the result of the recycling. The information shall be provided for each municipality. The municipality and all other PROs shall be given the opportunity to have their opinion on the information before it is made public.

## Compliance and enforcement

The Swedish Environmental Protection Agency is the supervisory authority regarding obligations for producers and producer responsibility organisations within all producer responsibility.

The municipalities, in the form of the environmental office or equivalent, usually supervise how the management of the waste locally meets the requirements of the respective ordinance.

Producers who do not use a producer responsibility organisation may be subject to an environmental sanction fee of SEK 30,000. An environmental sanction fee may also be paid for late reporting.

Both the current national regulation on producer responsibility for packaging, which is based on the EU Packaging Directive, and the soon-to-be-applicable EU Packaging Regulation (PPWR), regulate recycling targets for packaging based on materials. In both cases, these targets are to be seen as a national responsibility to achieve. Article 52 of the EU Packaging Regulation states that Member States shall take the necessary measures to achieve the material recycling targets. If the targets are not met, the Commission can require Member States to submit action plans to remedy the situation. The EU Commission can initiate infringement proceedings against countries that systematically fail to comply with the regulation. This can ultimately lead to fines in the EU Court of Justice.

In the still-applicable Swedish producer responsibility regulation for packaging, the responsibility for achieving the targets is partly transferred to the producers and the producer responsibility organisation. For example, a producer responsibility organisation is required to effectively contribute to achieving the targets. It cannot, therefore, be seen as the producers themselves being entirely responsible for achieving the targets. However, they may be required to do their share of the work. If a producer responsibility organisation does not meet the requirements of the regulation and if the shortcomings are significant, the organisation's approval may be revoked. However, the Swedish Environmental Protection Agency can also, as a supervisory authority, hold a dialogue with the PRO on the need of additional measures.

For example, for plastic packaging, the recycling targets are not being met. It also looks like it will be difficult to achieve future higher targets (50%). The producer responsibility organisation Näringslivets Producentansvar has produced reports that address what they believe needs to be done. The measures largely concern things that they believe the state needs to do to achieve the targets, such as measures against free riders and investment support.

## Pros and cons

**Pros:**

- Producers has organised themselves and taken responsibility for financing of collection and recycling.
- The producer responsibility for packaging has lead to recycling of certain packaging that was earlier not recycled, for example several types of plastic and cardboard.
- The recycling rate is high for packaging made of cardboard, glass and aluminium and rather high for steel.

**Cons:**

- The recycling rate for plastic packaging is not reaching the goal.
- The quality of the statistics needs to be improved.
- There is most certainly an unexaptable level of free-riders not taking their responsibility as producers.
- Collection of packaging is a challenge because of the large number of packaging becoming waste everyday at both households, businesses and other non-household actors.

# Deposit return systems for plastic bottles and metal cans

## Legislative background

Sweden has had a deposit return system for metal cans for beverages since 1984. In 1994, the system was expanded to also include plastic bottles for beverages. The deposit return system is regulated in the Swedish ordinance on producer responsibility for packaging. The legislation requires that plastic bottles and metal cans for beverages are included in a system that involves a deposit or premium being paid. The purpose is to encourage the packaging to be handed over to the system when it has become waste. According to the ordinance, anyone who runs a deposit return system is to be considered a producer responsibility organisation. It is therefore required that the system has approval from the Swedish Environmental Protection Agency. The requirements for the system include that it must be nationwide. The packaging included in the system must be marked with a special symbol.

The goal is that the material recycling rate should be at least 90 percent.

The level of the deposit is not decided in the legislation neither is it decided in detail how the collection should be done. It is the responsibility of the PRO to set the deposit at a limit that, combined with an accessible collection system, secures a high collection rate.

There is an ongoing work to adjust the Swedish legislation concerning the deposit return system to the requirements in the EU packaging waste regulation (PPWR).

There is also a voluntary deposit refund system for some glass bottles. This is not regulated as a producer responsibility of the reason that the included glass bottles are reused and not seen as waste. The system is organised by the Swedish Breweries Association. Glass bottles are received in some stores and in the state owned stores for alcoholic beverages.

## Organisation and functioning of the PROs

Returpack is the only approved producer responsibility organisation for a deposit return system for cans and bottles. Returpack is organised as a private limited company owned by the trade organisations for breweries, groceries and food retailers. It has board were the owners are represented.

The company is responsible for the administration of deposits and fees, as well as for collection, processing and material recycling. Returpack is also responsible for ensuring the properties and specifications of the circular material for beverage packaging, in collaboration with producers, importers, trade and other partners.

The company is organised into five departments: Marketing & CustomerService, Administration, Supply Chain, HR and Sustainability & Quality. Within these departments, there are a number of specialised teams that handle different aspects of the mission – including communications, IT, operational management and production. Returpack has 91 employees.

## Result

The results for 2025 shows that 88,8 % of the cans, and 87,5 % of the plastic bottles, are collected. The collection rate is calculated as the number of returned packages divided by the number sold.

Returpacks goal is to recycle 99.2% of all incoming materials. In 2025 99.08% recycling was achieved. The main reason for the goal not being reached is the lack of  buyers for unwashed labelling material. Some waste is still generated, primarily from incorrectly sorted materials, shavings, adhesive residue, sludge and labels that cannot be recycled.

## Collection

Collection is mainly carried out through “refund-machines” in stores. The customer bring their cans and bottles to nearest store and returns them in the machine. The barcode on the packaging shows that a deposit has been paid. The customer receives a receipt showing the refund. The receipt is possible to use as payment in the store or to get money back. Some stores have limits for how much money they pay back at each occasion. Usually it is possible to donate the refund to different forms of charity.

The legislation does not decide in detail any obligation for a store to have a refund-machine or how the refund should be paid. It is the responsibility of the PRO (Returpack) to arrange enough collections points to fulfil the general obligations and reach the goals. Most stores are part of the organisations that own Returpack and the collection is administrated through agreements between Returpack and the individual stores. The refund machine is probably seen as something that attracts customers. The arrangement works well enough so that almost all stores of reasonable size chooses to have a machine.

Returpacks chartered trucks pick up cans and bottles from the stores. The trucks transport the material to one of the 23 intermediate storage facilities around the country. Bulk trucks transport the material from the intermediate storage facility to Returpack's treatment plant. In addition to this bottles and cans are also collected from, for example recycling centres, restaurants, cafés, tourist resorts and campsites.

## Coordination with municipalities

A PRO for a deposit return system a obliged to consult with the municipalities concerning the collection. Returpack offers a solution called Pantamera Express to the municipalities. This is a larger form of refund machine adjusted for receiving sacks of bottles and cans. It is usually placed at municipal recycling centres.

A PRO for a deposit return system shall without cost provide the municaplities with collection containers for places where larger amount of used cans and bottles may arise. The municipalities are obliged to facilitate the deployment of the containers or deploy them themselves.

See also the PRO:s responsibility concerning information.

## Management and recycling

The further sorting and processing of all cans and bottles is done in one plant. For cans, iron and steel are separated from aluminium using a magnet. The material is thereafter compacted into bales, which are weighed. For plastic bottles labels and caps are removed in a disk screener. The plastic is sorted by colour using optical technology and compressed air. Caps and labels are sent to a separate process where contaminants are separated in a water bath, and where the material is ground, dried and packed into sacks.

Returpack sets requirements for how the cans and bottles should be designed and what materials may be included. This helps ensure that almost all packaging can be recycled.

The material is sorted and quality-assured through regular machine inspections and measurements of the material. At least twice a day the amount of impurities are measured in the aluminium and PET materials. The metal from the cans is transported by trucks or trains to buyers, mainly in France and Germany.

The plastic is transported to a customer in the neighbouring building. Labels are, depending on purity, either recycled as plastic or sent for incineration with energy recovery. The bottle cap material contains some aluminium residues and other impurities that make recycling difficult. An additional sorting stage separates the aluminium and other contaminants from the material. The bottle cap material is certified to allow it to be included in high-quality material flows.

## Anti littering

Anti littering was one of the main reasons for introducing the deposit return system. It can therefore be seen as an anti littering activity in itself. Avoiding the risk of empty cans and bottles becoming litter is the purpose for much of the collection system and the information activities.

Returpack is together with The Swedish Evironmental Protection Agency the founders of Keep Sweden Tidy which is a non-profit independent foundation. The organisations mission is to influence attitudes and behavior to achieve reduced littering.

## Reduction activity - re-use, repair, refurbishment

The deposit and refund system for cans and bottles is limited to recycling.

## Fees

Returpack decides on the fees for being affiliated to the return system. The fee is 0.25 SEK for a metal can, 0.24 SEK for a plastic bottle that is less than one litre and 0.59 SEK for a plastic bottle that is larger than one litre. Returpack also decides on the level of the deposit. The deposit has recently been increased from 1 SEK to 2 SEK per package (approximately 0.2 euros). The deposit and other efforts should be sufficient to reach the recycling target.

## Reporting and documentation

A PRO for a deposit return system must report the same data as a PRO for packaging, see above concerning packaging.

## Information

The PRO for the deposit return system is obliged to produce information for households and others about the obligation to sort cans and bottles, how the deposit return system works and also the result of the collection and recycling.

Returpack has a relatively extensive communication work including advertising and communication efforts. According to Returpack a significant portion of the communications is specifically targeted at groups that consume a lot but have a slightly lower return rate. Through regular surveys, collection statistics and sales data, changes are tracked in behaviour and trends, which enables relevant initiatives.

Returpack targets young adults with humorous, relatable content on social media. The eSports community is targeted hrough the Pantamera fundraising campaign, which is an established initiative that combines gaming with recycling and charity. Children and young people are engaged through a knowledge-based activity tailored for children from preschool up to Year 6, where humour and cinematic storytelling is used to spark an interest in using the deposit system and recycling. A new Pantamera commercial is produced every year to reach a wide audience.

## Compliance and enforcement

Anyone who professionally transfers or sells drinks in plastic bottles or metal cans that are not part of a deposit return system and that are not marked with information that the packaging is part of such a system must pay an environmental sanction fee. The fee depends on how many packages the violation has affected. This has been an effective measure against shops selling imported beverage without being part of the return system.

## Pros and cons

**Pros:**

- The deposit return system has resulted in high collection and recycling rates (even though not fully reaching the target).
- It is well functioning and established and also having high credibility and approval with the public.
- A success factory has been a legislation that combines creating driving forces at same time as it leavs room for the producers to decide on the implementation.

**Cons:**

- There is probably a limitation for what kind of packaging that is suitable for a deposit return system.

# Producer responsibility for waste oil

### Regulation on waste oil in the EU

In the EU Waste Directive, waste oils are defined as follows: ”waste oils means any mineral or synthetic lubrication or industrial oils which have become unfit for the use for which they were originally intended, such as used combustion engine oils and gearbox oils, lubricating oils, oils for turbines and hydraulic oils”.

According to the Waste Directive, waste oils are classified as hazardous waste. There are also specific articles concerning waste oils. In article 21 it is stated that without prejudice to the obligations related to the management of hazardous waste member states shall take the necessary measures to ensure that waste oils are collected separately, treated according to the EU waste hierarchy (including giving priority to regeneration), to protect human health and the environment, waste oils of different characteristics are not mixed and that waste oils are not mixed with other kinds of waste. Extended producer responsibility is mentioned as a non-mandatory measure to fulfil these obligations.

In addition to the above-mentioned specific obligations for waste oil, obligations relating to hazardous waste also apply. The Waste Directive stipulates that Member States shall:

- “Take the necessary action to ensure that the production, collection and transportation of hazardous waste, as well as its storage and treatment, are carried out in conditions providing protection for the environment and human health”.
- ”Ensure traceability from production to final destination”.
- ”Ensure that, in the course of collection, transport and temporary storage, hazardous waste is packaged and labelled in accordance with the international and Community standards in force”.
- “Whenever hazardous waste is transferred within a Member State, it shall be accompanied by an identification document”.

It is also stated that hazardous waste from households shall be collected separately.

## Management of waste oil in the EU

In 2023 The EU Commission presented a report titled Circularity of mineral and synthetic lubrication and industrial waste oil management in the EU (14817/23)[3]. The report contains an assessment of the treatment of waste oil in the EU. According to the report, Belgium, Bulgaria, Croatia, France, Greece, Italy, Poland, Portugal and Spain have extended producer responsibility for waste oil. In the report, it is concluded that there is no connection between if the member state has introduced extended producer responsibility and a high degree of waste oil being collected. But one could not exclude the possibility that the collection rate would always be lower without an extended producer responsibility. There is a great variation in the treatment of waste oil. Some member states have 100 % regeneration, whereas some rely fully on incineration.

## Management of waste oil in Sweden

Sweden has not introduced extended producer responsibility for waste oil. The management of waste oil is therefore mainly based on a Swedish implementation of the requirements of the EU Waste Directive. The Swedish Waste Ordinance highlights regeneration as a prioritized treatment method. For both households and businesses, an obligation is stipulated to handle and dispose of waste oil separately from other waste. For households, an obligation applies to leave the waste oil in the municipal collection system.

In large the same rules apply to waste oil as for other hazardous waste. Transportation of waste oil requires a permit. The producer of the waste is obliged to make notes of and register the origin, quantity and further disposal of the waste. The producer of the waste is also obliged to check that the recipient has the necessary permits. The information about the waste, in the form of a transport document, must then be sent to the actor responsible for the treatment. For all stages of the management, the actors are also obliged to register information about the waste in the Swedish Environmental Protection Agency's electronic waste register. Overall, this means that the waste must be traceable and that it must be possible to control its handling.

Households leave their waste oil at municipal recycling centres. In some cases, municipalities have mobile collection. The municipalities then transport the waste oil themselves or by hiring a private contractor to a treatment plant. The municipal management of waste oil is financed by the municipal fee. Businesses hire private contractors for transport to treatment plants. A significant proportion of waste oil is regenerated at plants in Germany. Contaminated oil, or oil that is unsuitable for regeneration for other reasons, is incinerated at special licensed plants.

[3] https://data.consilium.europa.eu/doc/document/ST-14817-2023-INIT/en/pdf

## Extended producer responsibility for waste oil in Flanders (Belgium)

In Flanders, an obligation to collect waste oil has been in force since 1 January 2004[4]. Producers, including importers, are responsible for the collection and processing of oil in the waste phase. This responsibility also means that certain collection and treatment targets must be achieved. Producers can fulfil this either collectively by joining the producer responsibility organisation Valorlub[5], or through individual responsibility.

Producers (through their producer responsibility organisation) compensate municipalities financially for the collection that takes place at the recycling centres. For waste oil from businesses, Valorlub provides financial compensation under certain conditions. The collection and treatment are financed by the producers charging a fee per litre of oil sold.

Valorlub is owned by several trade organisations, including those relating to petroleum products. The organisation aims to fulfil the requirements of the legislation. According to their website, they describe their task as follows.

- ”Raising the awareness of users of lubricating oils and of collectors and processors.
- Developing and implementing a management plan that determines the necessary actions to achieve the objectives regarding collection and processing.
- Preparing a prevention plan.
- The follow-up and evaluation of the results achieved.
- Reporting the results obtained to the regional authorities.”

Valorlub runs campaigns and has information materials aimed at various groups such as consumers, farmers, truck owners, garage owners, etc. Those who sell oils must have a clear notice about the possibility of leaving waste oils. According to Valorlub's annual report for 2024, 58% of household waste oil was collected and 66% of waste oil from businesses.

## Extended producer responsibility for waste oil in France

According to the website of the French Ministry of the Environment, France has had producer responsibility for waste oils since 2022[6]. Producer responsibility applies to mineral oils and synthetic oils. It includes, for example, both motor oils and industrial oils. French environmental legislation sets out the conditions for extended producer responsibility. Producers must, among other things, ensure that the oils are collected free of charge from holders throughout the national territory.

[4] https://ovam.vlaanderen.be/afgewerkte-olie?p_l_back_url=%2Fzoeken%3Fq%3Dafgewerkte%2Bolie&p_l_back_url_title=Zoeken
[5] https://valorlub.be/en
[6] https://www.ecologie.gouv.fr/politiques-publiques/huiles-minerales-synthetiques

The French legislation on producer responsibility for waste oils also ensures the implementation of the provisions of the EU Waste Directive on waste oils (Article 21). This applies, for example, to requirements for separate collection, a ban on mixing waste oils with different properties and with other hazardous waste, as well as documentation requirements, etc.

The legislation defines which companies are to be considered producers and thus covered by extended producer responsibility. These are operators who, as part of their professional activities, either produce oils and lubricants in France or import them from a country in the European Union or a third country. Actors importing equipment containing oils for the first time (except motor vehicles such as off-road vehicles or mobile machinery) are not defined as producers.

The legislation specifies that producers must cover the costs of collecting and processing used oils so that the waste is collected free of charge for holders throughout the country. It also states that producers must give priority to the regeneration of used oils over energy recovery.

The legislation includes a collection target of 55% for waste oils by 2027 and a regeneration and recycling target of 90% by 2027. In 2023, the collection and regeneration rates for used oils reached 65.4% and 78%, respectively.

Cyclevia is currently the only approved producer responsibility organisation for waste oil in France. Information about its activities can be found on the organisation's website[7]. Cyclevia was created at the initiative of the trade association the French Professional Lubricants Centre (CPL). The organisation is a privately owned, non-profit company with approximately 20 employees. The producer responsibility organisation takes financial responsibility for collection and treatment but also offers its own collection solution ("Ma Collecte") and treatment. This responsibility includes developing methods for regeneration of waste oil. Waste oil from private citizen is collected at the municipality's recycling centres and at other locations provided by partners. Both businesses and municipalities can use Cyclevia to handle their waste oil. Cyclevia also works with information, campaigns, training and development. The Ma Collecte collection solution is aimed at businesses and municipalities and is free of charge. The collection includes a digital solution for reporting and tracking.

[7] https://www.cyclevia.com