



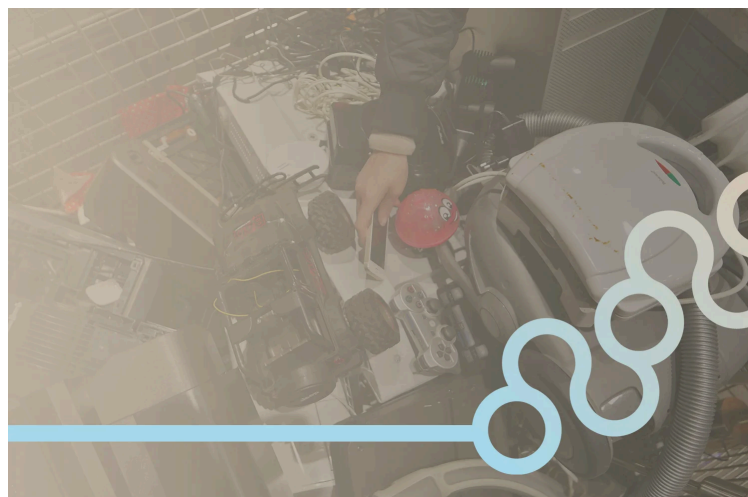
Sustainability Report 2022

About this Report

El-Kretsen 2022

According to Chapter 6, paragraph 10 of the Annual Accounts Act (1995:1554), El-Kretsen is required to produce a sustainability report. This report has been produced in accordance with the requirements of the Annual Accounts Act and it is published as a separate document alongside the annual report.

As a nationally approved collection system for WEEE and batteries, El-Kretsen handles large flows of e-waste. This report explains the processes involved and accounts for the volumes of WEEE and batteries dealt with. The sustainability report also describes the risks involved in this work, as well as the possibilities and important sustainability aspects as identified by El-Kretsen's management. The aim and ambition of this report is to provide a clear, transparent description of our organisation from a sustainability perspective. Although we can set targets for our own activities and then measure and assess the outcome, quite a few sustainability aspects are linked to activities that take place outside of El-Kretsen's organisation. These also reflect on El-Kretsen's performance, even if no data is readily available for them. We are talking about a mindset that extends beyond the limits of one's own system, and cases where El-Kretsen can see that the other organisation – or the knowledge this organisation generates – can contribute to a positive development.



Making long-term cooperation the basis for increased sustainability

Rarely has it felt so good to step over the threshold into a new year. The bright spots in the general darkness of 2022 were to be found in the small, local things: in meetings between people and the plans we had made for ourselves for the future. I sincerely hope the past year will denote this century's global low point. Climate reports, war and the pandemic joined forces and shook the foundation of our existence, only to be topped with a sprinkling of rising inflation and interest rates hitherto unknown to an entire generation of Swedes. And although the turn of a year is mainly symbolic – one numeral being replaced by another – it nevertheless provides us with an opportunity to turn a new leaf and once again start using our ability to turn the economy, the world situation and our hope for the future into something brighter and better. This is an innate power we human beings have, and it is high time we started using it to make constructive and sustainable choices. Let's make sure that 2023 is the start of something better!

So, what is El-Kretsen's role in this scenario? And what have we achieved in the past year? We have previously spoken about our efforts to better express our mission, our role and the contribution we wish to make to developments. Both as a vision and a strategy, the roots can be found in the concept of circularity: El-Kretsen's contribution should be to retain as much as possible of the existing materials in circulation to the highest quality possible. In this way, we help to reduce the mining of virgin raw materials at the same time as we increase the materials supply for producers. The results from 2022 show that we collected and treated almost 155,000 tonnes. Materials like iron, steel, aluminium and copper dominated, but also plastics, other metals and glass are being recycled and turned into new products.



Fredrik Benson, Acting CEO El-Kretsen

But everything doesn't have to be recycled. Some of the products we want to hand in at the recycling still work, and it is generally much more beneficial for the environment to keep using products to the end of their working life than producing new ones. However, activities on the second hand markets are largely out of El-Kretsen's care and control. We have no idea how many mobile phones, X-ray machines or industrial tools are sold to other countries. Nor do we know how many toys, height adjustable desks or exercise bikes change hands through second hand websites, garage sales or municipal platforms for reuse. The fact that all this happens is good. We have had long-standing agreements with all Sweden's municipalities governing the main part of our collection. In 2022, however, the agreements were re-negotiated and 2023 marked the start of our updated long-term cooperation. One newly-introduced item is actively creating an incentive for re-use. Something the municipalities can do – and are in many cases already doing – is pointing as many still functioning products as possible away from El-Kretsen's collection crates. It is a way to prolong the lifespan of our electronics and also something that may create value in a new market. In this way, we work together to provide smart, sustainable options to everyone who comes to hand in their electrical and electronic products for recycling *or* reuse.

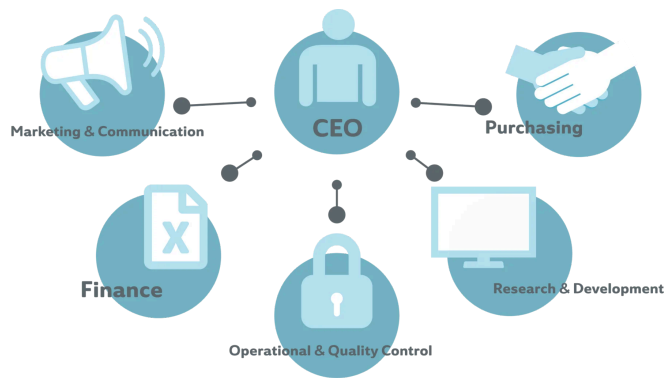
Producer responsibility for electrical and electronic equipment (WEEE) and batteries

El-Kretsen is a nationally approved collection system that offers producers of electronics and batteries a nation-wide collection service for WEEE and batteries. This includes the administration and compilation of data and statistics relating to the following: the volumes placed on the market, how much of this is actually collected as e-waste, how the collected materials have been treated and the degrees to which they have been recycled. El-Kretsen's vision is to be able to recirculate all the resources we source from WEEE and batteries, and on this basis we strive to develop smart solutions that can aid us in creating a sustainable society and a circular economy. El-Kretsen is a non-profit organisation owned by 18 trade organisations.

El-Kretsen has been around since 2001 when the *Producer Responsibility legislation* came into force. The collection, transportation and pre-treatment operations are carried out by a network of external partners. Despite dealing with large volumes and making collections all over Sweden, El-Kretsen only employs 15 people.

El-Kretsen's organisation:

- Marketing/Communications – Responsible for El-Kretsen's website, the production of information and publicity materials for customers, and customer support for affiliated producers.
- Operations management – Responsible for collection and logistics as well as for customer support for municipalities, collection points, transportation companies and pre-treatment companies.
- Finance – Responsible for budget work, invoices and external questions on financial matters.
- Purchasing – Responsible for the procurement of services and purchasing of materials.
- Business Development/IT – Responsible for El-Kretsen's IT system, its analytical plant and for external research projects.



Sustainability Management

From policy to practice

Under det senaste året har El-Kretsen befunnit sig i ett förändringsarbete. Syftet har varit att tydliggöra vår roll i ett cirkulärt Last year, El-Kretsen underwent a number of organisational changes with the aim of clarifying our role in a circular society. We also wanted to find out how we could be an even more positive partner to our customers, suppliers, owners and other stakeholders. This quite some challenge as both demands and expectations vary from stakeholder to stakeholder, but rooted in the producer responsibility legislation and with a view to the future, El-Kretsen can now present a clear way forward. It is not only the demands on sustainability reporting that can be divided into direct and indirect risks – also the possibilities can be categorised in the same way. El-Kretsen's point of direct influence is to be found in the demands we have and the choices we make to ensure both collecting and recycling is done as efficiently as possible. It would also be possible for us to influence the choices others make, outside our immediate vicinity – but then the question is how we would do this. One concrete thing we can do in our role as producer responsibility organisation is to display the work we and our partners do and emphasize its importance. Another way would be to point to areas of development and how we can create the conditions for even more and smarter future solutions.

“ El-Kretsen's point of direct influence is to be found in the demands we have and the choices we make to ensure both collecting and recycling is done as efficiently as possible.

- Motivating and teaching the coming generation how important it is to sort their electronics and batteries and make it second nature to take the WEEE to be recycled.
- Setting an example to the rest of the world by sharing our knowledge and experience as well as high-lighting any research and progress made by others in our field.





In 2022, El-Kretsen launched its new website. Under the heading [About us](#) is where you can find the Sustainability Report alongside some more explanatory reading on concrete aspects such as the *how*, or in other words El-Kretsen's sustainability management. Our goals should be set in such a way that they always improve the quality of our operations. Moreover, they should have a preventative component to reduce the effects on the environment. Here, you can read that it's El-Kretsen's job to:



- Involve all our employees and provide the working environment they need to be able to fulfil their duties and responsibilities
- Develop our processes through constant improvements to prevent environmental impact, lacking quality and work-related injuries
- Use information material and workshops to raise people's awareness and increase their competence, both internally and externally
- Enable R&D to fuel sustainable solutions within our organisational framework
- Work with stakeholders to develop together and create a joint positive impact on the entire collection chain
- Implement routines that ensure that laws and regulations relating to collection and recycling are followed

Strategies, goals and attitudes are also supported by the tools El-Kretsen has been using for many years. These are the management systems ISO 4001 relating to the environment and 9001 relating to quality; requirements on those who treat the collected e-waste to treat manage it according to the European standards WEEELabex or Cenelec *and* that all flows must be reported in the reporting tool Reptool; and lastly that our partners adhere to CECED (The European Committee of Domestic Equipment Manufacturers) Code of Conduct. In short, this means that we make sure our partners adhere to the same ethical guidelines that ban child labour, promote fair wages and combat discrimination, etc. In 2022, El-Kretsen created and filled a dedicated quality manager position. This provides a better structure for sustainability management issues and quality aspects, which can now be dealt with in a more comprehensive manner.

Risks, possibilities and important sustainability aspects

Follow-ups and achievements 2022



Handling WEEE and batteries is always risky work. Both here and now under the present conditions, but also with a more long-term view and more distant places in mind. To a company whose entire business concept is based on recirculating materials, these risks become key business factors. A lot of this may be things we automatically take for granted, but since El-Kretsen is merely a link in a long chain it makes a lot of sense identifying first which risks lie within our responsibility and then how to deal with them. One way of concretising and categorising the risks is to use our important sustainability aspects as a starting point.

El-Kretsen's important sustainability aspects are:

- Quality assuring both our collections and our treatment of materials to ensure that hazardous or environmentally damaging substances are not leaked into the air, ground or water.
- Ensuring that what is deposited at El-Kretsen's collection points is treated within our own processes, i.e. that the WEEE is neither lost or stolen and finds its way to unregulated markets.
- Climate-smart transportation.

Since the three sustainability aspects listed above have been classed as important (by which we mean aspects of our business that could cause problems, but that El-Kretsen also has the power to control), they are a part of our operative goals as well as a more long-term strategic perspective. They have been identified so that we can create a structure for handling the possibilities of creating positive change and minimise both direct and indirect risks.



Direct and indirect risks

WEEE and batteries may contain environmentally damaging substances and chemicals. If these leak during the collection, transport or treatment of the waste, the leaks may have an effect on the flora and fauna or people in the area. Heavy metals don't disappear with time, and if they are spread through the water or air, they can be absorbed by small wildlife and then travel all the way up the food chain until they reach us humans. Since neither airborne pollution nor climate gasses heed national borders, our operations may even be said to pose direct global risks. Accidents pose another kind of risk which can lead to both environmental damage and personal injuries. Everyone who works with the collection and treatment of WEEE and batteries faces risks at their workplace, such as having a physical accident or suffering injury from being subjected to hazardous substances. These risks to people increase if work routines and procedures are vague or inadequate, if there is no quality assurance or if safety at work is neglected due to corruption.

An example of indirect risks could be those products that never reach El-Kretsen's collection points. If instead they end up in nature, in the general household waste or disappear to another country, there are obvious risks that their contents soon leak out into both society and the environment. Another consequence of this is that the

materials that would have been recovered under El-Kretsen's stewardship disappear and are lost.

Goal setting, constant improvement and minimising risks

Every day, El-Kretsen is subjected to the risks that come with handling batteries and electrical items. On the bright side, every day also offers a possibility to contribute to positive development. Our goals are set against a background of both risks and possibilities that have a bearing on our company's important sustainability aspects.

One example of an improvement made last year is the addition of a lining bag to the boxes containing vermiculite, in which large and/or damaged batteries are placed. Once a battery box is full, the bag is tied up and sealed. This makes the contents easier to handle, and in case of an accident that damages the box, the internal bag is an additional safety feature. The main aim of these bags, however, is to reduce the oxygen supply in case of fire. The combination of vermiculite and a low-oxygen environment reduces the danger of the fire spreading.



The collection crates we use for collecting WEEE have a hard life. They travel back and forth, filled to the brim in one direction and empty and folded in the other. Broken crates can cause crush injuries and lead to generally unsafe handling and leakages. In 2022, we carried out a project where we followed crates through the entire process to try and identify in what phase and how the handling could be improved, thereby lessening the number of damaged crates. The project resulted in one of El-Kretsen's subcontractors designing a "crate turner". This allows the crates to be turned and emptied in a gentler way than before. Compared with being hoisted by fork lifts, there is less risk of the crates being squashed and damaged.

To be able to make improvements you need to know when something goes wrong. This could be incidents with a crate or vessel or something that makes the collection process less than smooth. This could be things like overfull crates or the transporters failing to collect everything that has been reported to us. At El-Kretsen, we have always recorded any collection inconsistencies. For this to be a powerful tool, it needs to be easy to use and rely on structured reporting, so that the reported inconsistencies can easily be correlated and compared. In 2022, we launched a project for simplified reporting of collection inconsistencies. This will soon be implemented in the app "Insamlare" ("The Collector"). The initial aim is to make sure more inconsistencies are reported. Now, transports are also planned and registered in this new digital tool. The overall aim has been to simplify the process, which should lead to a higher reporting rate. This will also help those who plan the collection logistics to do their work as efficiently as possible. The main object of the exercise is always to drive as few tonne kilometres as we possibly can.

All the different parties of the recycling chain don't necessarily know what all the others are doing, but finding out can be a way to learn more, have fun and enthuse other people. Knowing that your efforts here and now enables someone else to do their job in another part of the recycling chain is a motivating factor. This is why El-Kretsen in 2022 created a number of video tutorials which describe our collection, transport and pre-treatment processes, contain guides to our agreements and offer other useful information. These videos are to put anyone in the recycling chain in the best possible position to do their job correctly, at the same time as they get a better overall view of our business.

At the beginning of 2022, we invited all our suppliers in the collection chain to a workshop. Naturally, El-Kretsen has agreements with all of these suppliers, but they have rarely had an opportunity to establish working relationships among themselves. Meeting like this meant that we could all discuss what works well and what works less well at the different stages and try to establish ways of improving things. Through the workshop, different stakeholders also improve their overall view and get a better understanding of what their colleagues do. How do different crate filling ratios affect the transportation of crates and vessels, for example? And how can the loading and unloading procedure affect the pre-treatment and recycling processes?

Throughout last year, El-Kretsen dealt with the ideas that came up during the workshop, and a follow-up workshop was also held at the beginning of 2023.



In 2022, we also renewed our collaboration agreement with Sweden's municipalities through "Elreturavtalet" ("the Agreement for WEEE Returns"). This has created a foundation for better sorting and reuse as well as better cooperation with the municipalities.

Our efforts to improve are closely connected to the sustainability aspects we have already mentioned, which serve as a tool to reach the goals we have set. The goals concern minimising risks, for example no leaks of hazardous substances or no lost crates. Another goal focuses on possibilities such as increasing the knowledge base of decision-makers so that they can make the right decisions. This refers to everyone, from someone removing a spent battery and wondering whether it's worth walking all the way to the battery bin to politicians who are contemplating future policy instruments. Yet another possibility is the goal of reducing carbon dioxide emissions from our transports.



To further advance these efforts we place demands on our closest stakeholders, which are the ones we have agreements with. This creates an incentive to build momentum and encourages producers, municipalities, transporters and recyclers to pull together and help one another. When it comes to stakeholders who have no direct contact with El-Kretsen, we hope that if we speak with one voice and share the information on how to deal with WEEE and batteries at the end of their useful life, it will reach all those who stand to make decisions on this in our society.

Looking to Europe

Looking to other organisations in a similar line of business is one good way of expanding our perspective and offering a chance to view our work more from the outside. Good examples can be copied, bad experiences offer a chance to learn from and avoid in the future. At El-Kretsen, we have a close, ongoing cooperation with the other Nordic countries. And on a European level, the umbrella organisation WEEE Forum acts as a monitoring and inspecting body and also runs various collaborative projects with a focus on WEEE producer responsibility. This covers all kinds of issues from collection and recycling to communication and political policy-making. When it comes to batteries, El-Kretsen is a member of Eucobat, a European association of national battery collection schemes. In 2022, there was a lot of focus on the new battery ordinance which is now in the pipeline. One of the plans is to supplement the legislation with clear guidance. The increasing number of lithium batteries on the market also increases the need for safe transport solutions once these batteries need to be recycled. Eucobat is involved in different projects with both practical and regulatory issues. Throughout last year, El-Kretsen visited numerous different facilities, of current as well as potential suppliers of treatment and recycling services.

El-Kretsen and the Sustainable Development Goals



In 2015, the UN member states agreed to create Agenda 2030 and a set of global sustainability goals – [a universal agenda for sustainable development](#). The Agenda comprises 17 goals and 169 interim targets, as well as 230 indicators of social, financial and environmental sustainability. Several of these targets touch on one another, and El-Kretsen's core business – a circular economy – also touches on several. Of the 17 global sustainability goals, we have selected four for their strong and direct connection to El-Kretsen's operations. Within these four goals, there are seven specific targets that El-Kretsen regards as particularly important as they affect our organisation, or are affected by us, and also happen to be open to our efforts to create change.

Target: 11.6 Reduce the environmental impact on cities



Why is this important to El-Kretsen?

Over the past century, communities and cities have been growing in both size and number through continuous urbanisation. Today, around 90 per cent of Sweden's population live in urban areas. More people equals more waste, which puts pressure on cities and communities to provide the capacity and alternatives necessary for safe and efficient waste handling. In El-

Kretsen's view, the society we live in should be made up of clean, safe, including, sustainable and pleasant cities that are attractive to both people and animals. El-Kretsen is a key operator in the general effort to enable the collection of WEEE and batteries and make it more efficient, whether the items collected are reused, recycled or simply hazardous goods safely taken care of.

How does El-Kretsen relate to goal 11 and what action is being taken?

Target 11.6 deals with reducing the negative environmental impact of cities, with a focus on waste management. Many electronics and battery producers use El-Kretsen's services to make sure that at the end of their products' useful life, they are collected and taken care of in the best way possible. The procedure for this is partially regulated by the producer responsibility ordinances that govern the activities of producers, El-Kretsen's and Sweden's municipalities. The ongoing dialogue between

different stakeholders such as the municipalities, their umbrella organisation Swedish Waste Management ("Avfall Sverige") and the Swedish Association of Local Authorities and Regions ("Sveriges Kommuner och Regioner" or SKR) provides an opportunity to hone both the exchange of knowledge and shared working models. In conjunction with our structured approach of recording any collection inconsistencies and our constant endeavours to improve, the above dialogue aims to facilitate waste sorting and handling as well as to ensure that there is no risk of hazardous waste ending up in nature. Another positive outcome is that more and more batteries and electrical and electronic products are returned to society through reuse and materials recovery.

An indicator used for this target is measuring and following up on how much waste is handled as well as in what way, all in relation to the total volume of waste recorded. El-Kretsen carries out such follow-up analyses on a regular basis. This is also one of the goals in the producer responsibility legislation.

Examples of challenges

- A growing number of products come with integrated electronics and batteries. When it comes to informing people that these products need to be recycled as well as motivating them to do so, there is as of yet no ready-made solution. The process is still being developed and tested. The information will need to reach both the decision-makers of today and those of tomorrow, whether they be decision-makers on a personal, local or national level.
- Some WEEE is attractive to thieves. Needless to say, break-ins at collection facilities is a source of concern and unease for those who work there. Thefts also mean that the material disappears from the approved collection system and is handled by those who are only looking for the highest possible profit, which in turn increases the risk of dangerous substances such as oils, heavy metals and chemicals not being handled in a sustainable manner.
- Lithium batteries have an amazing capacity for storage and being recharged. At the same time, they also constitute a risk at the end of their useful life. They contain a lot of energy, and if they catch fire this is very difficult to put out. In 2022, El-Kretsen improved the collection process for large and/or damaged batteries by introducing special bags that now line the inside of the battery collection vessels, completely surrounding the insulating material Vermiculite. The aim is to make the entire collection and recycling process safer and reduce the risk of potential fires spreading.

Target: 12.4 Responsible handling of chemicals and waste

Target: 12.5 Significantly reduce the amount of waste

Target: 12.8 Increase people's awareness of sustainable life styles



Why is this important to El-Kretsen?

We need to transition into a life-style where our production and consumption are sustainable in the long run. In a linear economy, the globe's resources are used as if they were endless. In a circular economy, we strive to give our resources as long a life as we meaningfully can, by reusing, restoring, upgrading and recycling items to the highest value possible. As a

facilitator of technological recycling, El-Kretsen is a key performer in the circular transition process. However, Goal 12 also pinpoints competitiveness and economy. Some producers have already experienced the effects of a shortage of resources. Keeping re-circulating the materials we have already started using is an important aspect of making sure we can supply enough raw materials in the future.

How does El-Kretsen relate to goal 12 and what action is being taken?

El-Kretsen contributes to reaching Goal 12 by collecting WEEE and batteries, by removing and treating any hazardous substances hidden inside these products and by then reintroducing as much of the recovered material as possible to circulation. In 2022, 75 % of the collected weight was recovered. Iron is the most common material, followed by plastics, aluminium, glass, copper and other metals. To encourage and facilitate the development of recycling technologies, El-Kretsen focuses on long-term contracts and close co-operation with its suppliers. This creates an incentive to develop and invest in new solutions for a greater number of more efficient recycling processes. An example of this is our close co-operation with Stena Recycling and their investment into recycling plastics. There is now a facility for turning plastic WEEE into a number of different plastic fractions of such a high quality that these products can be sold directly to the manufacturing industry.

When it comes to Target 12.4, El-Kretsen is ISO certified with respect to the environment and to quality. Not only that, we also require all our partners in the recycling chain to have implemented a methodical environmental management system. Moreover, our WEEE recycling partners must be able to present third-party certification for the standards Weelabex and Cenelec for the treatment of electronic and electrical waste. The indicators for this target are concerned with international agreements on information, which is also one of El-Kretsen's focus points. Another indicator deals with quantifying and following up how much hazardous waste is generated per person and then relating that figure to how much has been collected and how the collected items have been treated. El-Kretsen is working to map out these flows. As more homogenous information is delivered from an increasing number of organisations, it will become easier to compare the processes and goals of these organisations. The ultimate aim is to identify the best and most efficient process. As our industry is rated as a whole by collection systems and other customers, this will also further all general developments in this field. Developments are powered by the motto of "following best practice".

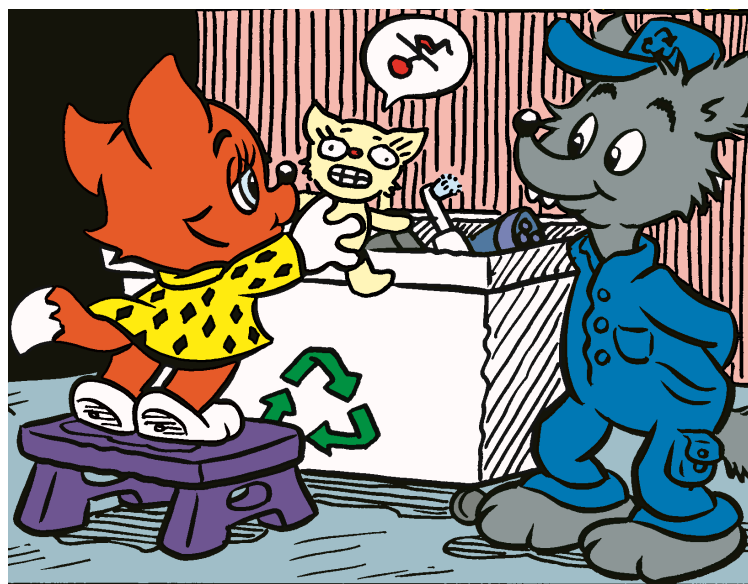
Target 12.5 focuses on significantly reducing the volume of waste. For El-Kretsen, the implications of this target are that items not meant to be handled as WEEE (such as products that are still working) should never be thrown away as waste. In 2020, El-Kretsen renewed its cooperation agreements with all Swedish municipalities. The agreements now include a clause which refers to the municipalities' efforts to encourage reuse. The aim is to make those who work at recycling centres and other collection facilities help recyclers place their waste in the correct vessels. However, before this can become the norm, the municipalities need a structure and a plan for how to work with reuse. For this target, the indicator is the number of tonnes of materials that are collected and recycled, data which El-Kretsen has been collecting and reporting since the very beginning in 2001.

Target 12.8 deals with educating people and providing continuous learning for the decision-makers of tomorrow. Both El-Kretsen and Sweden's municipalities are working to produce information that will assist and motivate people to make the right choices. To achieve this, the information material we produce is spread through many channels:

- via municipalities
- via joint trade projects (such as the info channel Sopor.nu) and other more short-term campaigns (such as International E-Waste Day)
- via educational materials such as special editions of the Swedish comic Bamse (ages 5-9) and in the book "Natur- & miljöboken" ("A Book on Nature and the Environment", ages 10-12).

El-Kretsen also has a separate website, the [Sustainability Library](#), where the general public can find articles and facts on many different topics, such as information and briefs on sustainability in relation to electrical equipment and batteries. In 2022, we also started posting information on [TikTok](#) in an attempt to reach out directly to the next generation of decision-makers. The information El-Kretsen produces as a basis for publishers of educational media is in line with the target indicator and will hopefully be useful in the shaping of national policies on how to teach sustainability as well as how to rate the levels of this knowledge.





Examples of challenges

- Keeping up-to-date with what actually constitutes “best practice” is a continuous and time-consuming task. Electrical products are constantly being developed, and this puts pressure on the recycling business to develop in order to keep up. One good example is TVs, which in a few decades have gone from CRT sets to plasma screens to LCD screens – and now to LED screens. These are based on four totally different kinds of technology which each require totally different recycling processes to be efficiently treated. This puts pressure on research and developments, as well as on close communication between the recycling industry and producers. Producers will always be one step ahead and can provide the most accurate information on exactly what their products are made of.
- Reuse is one way of reducing the volume of waste, at least temporarily. In the end, however, reused products will also need to be recycled. Today, there is a problem with measuring the reuse flows, as they are often headed for other countries. This direction of flow also makes it difficult to know just how these items are treated when they finally reach the end of their useful life.
- Using weight as the only measuring tool has proven to be a bit of a blunt instrument. Everything we collect and treat is taken into account in our statistics, but we know that the sustainability aspects of different materials vary enormously, as do the different treatment processes for materials like, for example, concrete versus cadmium. Picturing a future where all substances and materials are to be treated and largely recovered, it will be important to be able to deal with metals in very small quantities as well. Producer responsibility for batteries will soon include this kind of target-setting.

Target: 13.3 Increase the knowledge and capacity to handle climate change



Why is this important to El-Kretsen?

These days, extreme weather is a recurring and frequently mentioned news item. The worst and most destructive events take place in other countries, but Sweden is not totally unaffected. Climate change affects both food and water supplies. It destroys eco systems (for example by acidifying the sea) and this in turn negatively affects our living conditions, health and

safety. We (whether we are individuals, companies, municipalities, societies or countries) also affect the climate negatively through our greenhouse gas emissions. At the same time, we *can* be part of the solution and help coming generations to a life on a healthy planet with clean water, clean air and a healthy eco system providing nutritious food and a stable climate.

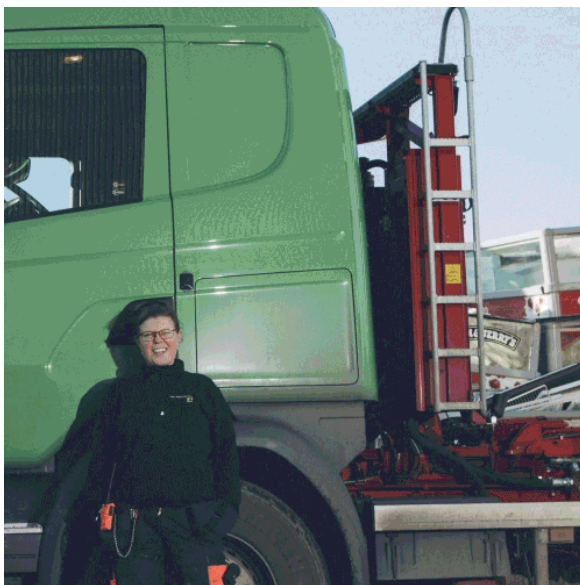
How does El-Kretsen relate to goal 13 and what action is being taken?

El-Kretsen itself affects the climate both positively and negatively. The positive aspects that relate to Goal 13 can be directly linked to our core business. Our

collection and handling of products containing refrigerants (like refrigerators and air-source heat pumps) reduces the risk that these will leak out into nature and have a negative effect on the climate. Another positive effect from our operations is the energy we save from recycling new raw materials compared with sourcing virgin raw materials from deep inside the earth. Mining and oil drilling are very energy-intensive activities, so the more producers can use recycled materials for their production, the more they will reduce their carbon footprint.

El-Kretsen's main negative impact stems from transporting the 150,000 tonnes of waste products from collection points to recycling facilities.

The scope of Target 13.3 is quite broad, and at El-Kretsen we have continuous and long-term ambitions both in-house (placing demands on our sub-contractors; taking part in joint industry initiatives such as Fair Transport; keeping up to date with the latest research developments, etc) and externally (by being able to offer expert advice in view of changes in the legislation or when it comes to preparing and producing informational and educational materials).



Examples of challenges

- A fossil-free transport sector is a non-negotiable goal. However, the combination of a lack of renewable fuels and the lack of fully built-out systems to support new technologies like electric and hydrogen-powered vehicles means that the transport sector will remain dependent on fossil fuels for some time to come. The best option El-Kretsen has of reducing its logistical climate impact is making sure that our transporters drive as few tonne kilometres as possible – or, in other words, that they drive the shortest possible distance carrying the greatest possible load.
- Considering all the environmental aspects of a product and comparing different scenarios with one another is generally a complex task. However, introducing a tool such as Life Cycle Assessment (LCA) suddenly makes it possible to estimate the carbon footprint of a certain product. But trying to determine which is best, making a product with a longer life span but less efficient recycling process or a product with a shorter life span but with an established recycling process is still fraught with uncertainty. The “truth” may vary from product to product, which only adds to the difficulties of climate communication. This points to an educational challenge to make sure that all decision-makers – from children in kindergarten to politicians – make informed and wise decisions.

Target: 17 Partnerships for the goals

Why is this important to El-Kretsen?

When it comes to recycling, Sweden is often thought to be a role model. Intense technological progress teams up with sophisticated know-how. The Swedish culture and high general level of societal involvement also account for the fact that recycling is regarded as important. All in all, these characteristics team up to produce a good chance of achieving high collection rates and ensuring that the collected waste is handled efficiently. But no matter how great El-Kretsen's figures are, the volumes of

17 PARTNERSHIPS FOR THE GOALS



WEEE we collect still only account for less than 0.5 per cent of all the electronic waste generated world-wide. This is why sharing our knowledge with others remains a good way of educating even more people and raising the chances of reaching the Environmental Goals.

How does El-Kretsen relate to goal 17 and what action is being taken?

Our international cooperation has primarily included our neighbouring countries. They have been the obvious partners for joint development projects and knowledge exchange. European umbrella organisations such as Weee Forum and EUCOBAT work to facilitate knowledge transfer between their member countries. They also run development projects and studies, for example within the area of illegal waste export. Being a member of these organisations offers El-Kretsen a possibility to gain new knowledge and also make new contacts.

Since the pandemic, contacts with countries outside the EU have not been as frequent as they used to be. A few delegations have come to meet face-to-face and to discuss the legal framework around producer responsibility and/or the logistical and technical solutions available on this front. Against the background of target 17.6, El-Kretsen invites anyone interested in knowing more about how we deal with producer responsibility and what the collection and treatment means in practical terms. Insofar as we engage in development efforts and projects that may be useful to other parties, we are happy to contribute by sharing these. This is a simple way of making circular progress in areas and places that are slightly behind on the curve.

Some of these studies have a more obvious connection to Target 17 because they relate to export or reuse in other countries.

Examples of challenges

Electronic and electrical waste is the fastest growing waste category in the world, and the challenges it brings are virtually endless. To put El-Kretsen in a better position to influence the handling of WEEE, this area needs to be narrowed down to those parts or projects that we are actually able to influence. Sharing and spreading knowledge directly, via other partners or together with other partners is one way of doing this. Another way can be taking part in individual projects. Our specific challenge is that El-Kretsen is a relatively small organisation and as such, the number of staff is a limiting factor. We still adhere to the old motto of thinking globally but acting locally, even though our ambition is to power positive development not only in Sweden, but in the entire world.

Stakeholders

How we respond and how we reach out

As a collection system, El-Kretsen plays a major part in Sweden. With respect to our workforce, however, we are only a small company and we rely on a long line of partners to assist us in the day-to-day running of our business. This ranges from those who provide basic essentials like IT services or text translation to those who operate on a larger perspective, for example motivating consumers to take their WEEE to designated collection points or making sure the waste collected is removed for recycling.





Owners

El-Kretsen was set up in 2001 as a joint venture between a number of trade organisations. Today, the shares are distributed between 18 trade organisations. El-Kretsen is still a non-profit organisation.

Our owners are represented through the company board. This is where discussions are held about El-Kretsen's long-term mission and whether the company's progress is in line with the stakeholders' interests. However, there is also communication and direct exchange between El-Kretsen and individual trade organisations. This relates more to information sharing and how a trade organisation can inform its members about El-Kretsen activities relating specifically to a member's particular niche or product.

Producers – El-Kretsen's customers

Those who have producer responsibility for electronic and electrical equipment (Swe. [SFS-2022:1276](#)) and batteries (Swe. [SFS-2008:834](#)) can apply to become an El-Kretsen affiliated partner and consequently become part of an approved producer responsibility organisation. Our customers report what they put on the market and at the end of the calendar year this information is collected along with information on the amounts that have been recycled. The sum total is then reported to the Swedish EPA. At the end of 2022, El-Kretsen had 2,122 customers. We also collect WEEE directly from many producers or their stores.

Most of our customer dialogue happens in the everyday working life. It may be questions about how to categorise a certain product, when and how we report to the Swedish Environmental Protection Agency or how a product is recycled. However, some of the dialogue happens in the shape of projects when we want to find out more about certain specific aspects of our business. In 2022, El-Kretsen's Sustainability Report was the subject of a quality survey, and we also sent out questionnaires on the Declaration Portal to measure the level of satisfaction among our customers, and to ask for ideas for improvements. The outcome of these surveys was incorporated into our constant improvement work, which spans from minor adjustments to total remakes.

Municipalities

El-Kretsen has co-operation agreements with all of Sweden's 290 municipalities. The collection system is based around the municipal recycling centres, but these are also supplemented with alternative collection points like mobile collection systems, collection close to real estate, etc. Another way in which El-Kretsen contributes is by providing municipalities with information which they can use to educate and motivate the residents.

A lot of El-Kretsen's information work is done through the municipalities, which are actively working to inform their residents of where and how they can recycle their waste as well as why it is important to do this. At El-Kretsen, we can contribute by

sharing information from our website as well as providing statistics relating to the quantities collected in each municipality. In 2022, the agreements between El-Kretsen and the municipalities were reviewed and revised, which lead to a more intense dialogue than normal. The main driving forces behind this new long-term cooperation between El-Kretsen and the Swedish municipalities were the municipal umbrella organisation Swedish Waste Management ("Avfall Sverige") and Elreturrådet, a forum where these issues have been discussed for years.

New legal frameworks for businesses on how to report hazardous waste has led to new questions about who does what and what to do. El-Kretsen's services and tools available in this area are meant to simplify both the day-to-day work at the municipal collection points and the interaction between the collection staff and the businesses which hand in waste. In 2022, El-Kretsen initiated a workshop focusing on these new questions, and many other issues concerning cooperation around collection also came up for discussion. A year later, in February 2023, we arranged a follow-up workshop where we were able to display the improvements that had been implemented, and continue the discussion on new, smart and environmentally-friendly solutions for the problems we share.

Recyclers

The process that precedes the actual recycling is called the pre-treatment process. This is where screens, circuit boards, leads, batteries and other parts are disassembled into smaller components. These components then take different routes to be recycled, as there are separate recycling plants for different kinds of WEEE. Some suppliers deal with the complete process, from waste to new raw material, whereas others focus on preparing the waste for recycling.



In 2022, El-Kretsen has visited a number of recycling facilities all over Europe. Our main focus was batteries, and we visited facilities for small and/or portable batteries as well as those dealing with large industrial batteries and electric vehicle batteries. A few facilities dealing with the recycling of plastics were also on our list. By visiting both existing partners and other plants and facilities, we learn more and more about the different ways these processes are handled, something which in the long run indicates what demands we can make in our agreements. At the moment, there are stores of spent batteries waiting to be treated, and these stores have also been visited along with Swedish battery sorting facilities to ensure that the services they offer are carried out in accordance with our agreements.

Services for pre-treatment are secured through procurement. For the largest fraction, "Miscellaneous electronics", the procurement process for new contracts that was started in 2022 continues in 2023.

Transport companies

El-Kretsen's contracted transport companies pick up waste from the many different collection points and transport the different fractions to the appropriate treatment facility. The majority of all WEEE is collected and transported in cages, but luminaires and batteries are an exception and travel in plastic boxes. Some major collection points also ship their waste in skips.

Every year, we have a dialogue with our logistical partners to follow up and evaluate their work. The aim is to look at current operational issues at the same time as we review the long-term sustainability progress. Both problems and possibilities are

raised and discussed. Our subcontracting transport companies were also invited to the workshop as described above.

Research institutions

El-Kretsen co-operates with, follows and supports research projects that promote our vision of feeding all resources harvested from recycled WEEE and batteries into a circular loop.

Authorities

The legislation governing the collection, transporting and handling of hazardous waste is very strict – as are the criteria that need to be met to qualify as an approved producer responsibility organisation. At the same time, laws and regulations change over time. Having a good relationship to other authorities as well as the same view of our duties from a legal perspective is central to El-Kretsen. We don't just want to be a passive entity that reports only for supervision.

Politics

A large part of El-Kretsen's activities are outlined on the local, national and European political scenes. Here, our role is to share the knowledge we have to enable fact-based political decisions.

Non-Governmental Organisations and Trade Organisations

El-Kretsen provides information and promotes a dialogue with organisations that have an interest in the issues we support. These may be trade organisations that represent our customers but are not among our owners, or organisations that operate in the grey zone between research and politics and that nudge society in a certain direction.

Media

El-Kretsen provides fact-based knowledge and information upon request. We also play an active role in airing the issues that support our vision.

Society, schools and private individuals

For information seekers who wish to extend their knowledge about WEEE and batteries, El-Kretsen has expanded its website with a Sustainability Library. Here, we have gathered articles on our activities as well as information about projects and studies on and around sustainability in relation to WEEE and batteries. We are also co-operating extensively in order to reach the next recycling generation: Sweden's school children.

Natur- och Miljöboken ("A Book on Nature and the Environment") is a Swedish educational series in three parts for school children aged 10-12. The information has been adapted to the relevant age groups and the material is available both in printed and digital form. Each stage has its own teacher manual. The overall experience is a comprehensive, climate-smart educational series for pre-teens. El-Kretsen's contribution is providing information on the recycling of WEEE and batteries.

For younger children who have not yet turned 10, El-Kretsen supplies complete study kits based on the Swedish comic book character, Bamse. This is a special issue dealing with batteries and recycling.

Tillsammans för Kretsloppet (eng. Closing the Loop Together): El-Kretsen's conference for a broader network and deeper knowledge in the field of sustainability

In June 2022, El-Kretsen organised a 24-hour conference at Djurönäset on Värmdö outside Stockholm. This was a meeting of people from many different industries representing all the different stages in the life of an electrical item, and the intention was to provide us all with better and deeper knowledge and insights. Lectures were interspersed with face-to-face talking, providing a rare opportunity for us all to have in-depth discussions and ponder the roles different stakeholders can have and how this collaboration can be enhanced even further. This conference was much appreciated by the participants and we are now planning next year's #TillsammansFörKretsloppet Conference.





Logistics

Efficient logistics – a boost for the environment

El-Kretsen's logistics can be divided into three parts. The first one is contractual and stipulates the roles and requirements of the different participants as well as timings and time frames. The second is made up of the IT systems which make it possible for different members of the collection chain to see what is happening and take action. These IT systems have not only led to simpler handling and reduced the time spent on administration, they have also enabled more precise planning, which in itself leads to more efficient logistics. The third and final part is where we find the interaction that takes place between El-Kretsen, collection points, transporters and treatment facilities. No matter how well-defined the agreements are and what figures are entered into the IT systems, the end result is still totally dependent on the people who perform these tasks. Being an expert in your own field with a knowledge and an understanding of the other logistical steps is what makes for smooth hand-overs. It is actually a necessary requirement to achieve the straightforward, efficient logistics we are aiming for.

The more efficient the logistics, the better it is for the environment. The ultimate goal is driving as few kilometres as possible with lorries that have been loaded as full as possible. At the same time, we need to remember that storage possibilities for fridges, white goods and other electronics vary between collection points. Another thing to take into account is the length of Sweden, which measures almost 1,600 kilometres from north to south. This is why transportation is a very important consideration in El-Kretsen's climate action.

Where does the waste go?

Kartorna nedan visar var den insamlade elektroniken inom varje fraktion omhändertas och av vilken samarbetspartner. Ur insamlingssynpunkt är ljuskällor den allra enklaste att beskriva eftersom den transporteras till ett och samma ställe oavsett varifrån i landet det kommer. Vissa produkter, såsom vitvaror, hanteras på ett flertal platser medan produkter som kylskåp The maps below show where the collected electronics within each fraction is dealt with and by which of El-Kretsen's partners. The collection of luminaires is most easy to describe, as it is taken to the same facility regardless of where in Sweden it is collected. Some products, like white goods, can be handled in many different locations, while products like refrigerators and batteries require closed and more specialised processes which have only been set up in one or a few locations.

✓ **Small appliances**

✓ **White goods**

Collection, Recycling and Statistics

El-Kretsen in numbers



Electric cages in circulation in Sweden

Collected and treated

WEEE is collected in fractions. The table below shows the variation in the collection (in tonnes) over the past two years.

2021/2022

Fractions for collection	2021	2022
● Small appliances	68 208	74 356
● Fridges & freezers	28 474	28 495
● White goods	35 051	45 057
● Batteries	3 547	3 411
● Light tubes	–	830
● Lamps	–	1 307
● Light tubes/lamps*	2 253	–
● Other/professional electronics	1 214	1 304
Total	138 749	154 759

*The division of light sources was changed in 2022.

The statistics in the table above mainly stems from what we collect in co-operation with the municipalities in Sweden. However, some consumer electronic waste is collected by private entrepreneurs. Coffee percolators, for example, are classified as household consumer goods whether they have been used in someone’s home or in an office. The recyclers we co-operate with who collect household consumer goods from offices or users other than private individuals supply us with their statistics, and we then compile all the figures and report the result to the Swedish EPA. While we have less control over these lateral flows, they nevertheless affect our statistics.



Battery boxes in circulation in Sweden

Reporting to the Swedish EPA

Sweden's recycling targets for WEEE and batteries are regulated by SFS-2014:1078 and SFS2008:834. WEEE is reported in six different categories. The Swedish legislation is based on EU-Directive-2012/19/EU.

Reported amounts of collected and treated WEEE:

Equipment for temperature control Reused: 0,5% Material recovery: 85% Other recycling*: 12% Other kinds of treatment**: 3%	Screens and Monitors Reused: 0% Material recovery: 69% Other recycling*: 28% Other kinds of treatment**: 3%
Lamps Reused: 0% Material recovery: 16% Other recycling*: 73% Other kinds of treatment***: 11%	Large EEE Reused: 0% Material recovery: 74% Other recycling*: 19% Other kinds of treatment**: 7%
Small EEE Reused: 0% Material recovery: 75% Other recycling*: 15% Other kinds of treatment***: 10%	Small IT and telecommunications equipment Reused: 0% Material recovery: 86% Other recycling*: 6% Other kinds of treatment**: 8%

*Energy recovery and materials that replace virgin materials, for example fillers or construction material.

**Concrete, porcelain and similar materials that are not recycled, as well as environmentally hazardous materials that undergo thermal combustion or storage.

Reused

As the above table shows, only a very small part of the items El-Kretsen collects are reused. How many owners an item has had by the time it reaches our collection vessels we will never know, but we do know that most of them are old and broken and have long since passed their best-before date. To find information about the volumes of reused products, you need to turn to the second hand markets, both in Sweden and abroad. However, some of the products we collect at El-Kretsen can be

dusted off, mended and reused. In a joint project with Stena Recycling and the second-hand white goods dealers Begagnade Vitvaror, we recover white goods that can still be reused. Even if the entire product can't be used, individual components that are still working can be disassembled and sold on.

The oil we empty out of compressors is virtually negligible if you only focus on weight, but it makes a world of difference from an environmental point of view. This oil is checked, purified and can then be used as a new product. Compressors are found in fridges and freezers, for example, which also contain refrigerants. These refrigerants would have a seriously adverse effect on the environment if they were released into the air, so they are handled in separate and closed processes. Through gas separation we are able to extract hydrochloric acid and hydrofluoric acid, both of which can be reused.

Material recovery

The vast majority of all the WEEE we collect is recovered. (76 per cent, to be more precise). Different metals are sourced. Iron accounts for the largest proportion if we are looking at weight, but copper, aluminium and small amounts of precious metals are also recycled. In addition to this, materials such as plastic and glass are also recovered and used for the production of new products.

Other recycling

Additional recycling includes the waste we turn into heating, such as unrecoverable plastics, wood, fabric, or other combustible materials. Since 2020, materials that are reused for construction purposes are also classed as "additional recycling".

Other kinds of treatment

Finally, there is waste that cannot be recovered, recycled or reused as energy. The bulk of this category is made up of the weights used in white goods such as washing machines. In the past, these weights were made of metal, but these days they are made from concrete or some similar stone-based material.

"Other kinds of treatment" also covers hazardous waste that goes into storage, like mercury or radioactive units found in smoke alarms. Other examples of hazardous waste may be materials or liquids with particularly dangerous properties. These need to be burned in specialised thermal incinerators.



El-Kretsen is a non-profitmaking business created by trade organisations for electronics and battery manufacturers in Sweden. Our task is to help them fulfill their producer responsibility by offering a nationwide collection system for electronic products. In addition, we function as a center for knowledge thanks to our data which describes the history, current situation and trends of the collection and management of electrical waste and batteries.



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Do you have an interesting topic that you think we should address in the Sustainability Library? Maybe you are a researcher or a student, and have immersed yourself in something? Then email info@el-kretsen.se.