White paper on long-lasting products that maximise performance and minimise environmental impact

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Executive summary

At Icotera we see the growing demands from ESG and the green transition as a way of differentiating in the market, adding extra value to our products. As a company developing and manufacturing high-end FTTH hardware and software, we believe in high-quality and effective use of resources to benefit our customers, end-users, and the environment.

We understand our customers' need for valid ESG data on product level and deliver data that fits directly into their reporting systems in alignment with the ESRS standard for reporting.

Using the Life Cycle Assessment model (LCA), it is possible to deliver valid data for a range of our products in the full product life cycle. The data adds value to Icotera's products, documenting why it is an excellent choice to go for long-lasting products that maximise performance and minimise environmental impact.

One of the most efficient ways to minimise environmental direct impact is by prolonging the product's lifetime. Through refurbishment as a service on our routers we help our customers lower the total cost of ownership, reduce the CO2 footprint, save virgin raw materials, and reduce E-waste. All without compromising performance, thanks to our high-quality, in-house refurbishment service.
Let's explore the ESG opportunities together!

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Introduction

The internet industry is by nature carbon intensive. This only makes our responsibility more pressing. At Icotera, we have a declared focus to act on this responsibility – in the way we operate our business and in partnership with our suppliers, but particularly through constantly working on reducing the impact from our products when they are installed in millions of homes across Europe.

Innovating and optimising products are at the core of Icotera's DNA and position in the FTTH market. As a company developing and manufacturing high-end FTTH hardware and software, we believe in the high-quality and effective use of resources benefitting our customers, end-users, and the environment. For this reason, we strive hard to produce long-lasting products with low environmental impact.

Icotera takes responsibility for the green transition together with our ISPs and network operators. We have an open and transparent dialogue on how to improve together in the full product life cycle from resources to manufacturing, distribution, use, and end of life. And by delivering high end refurbishment services that prolong the lifetime of our products and lower the total cost of ownership.

As a European company, we recognise the importance of being able to deliver valid ESG data on the product level to our customers, following the ESRS taxonomy, making it easy for our customers to buy responsible products that comply with industry regulations and non-financial reporting demands.

This white paper outlines Icotera's ESG vision, strategy, and methods to how we deliver valid and transparent data to enable our customers to make the right decisions in a trade-off between price, quality, and planetary impact.

Icotera's ESG vision and strategy

Sustainability is important to Icotera for the following reasons.

- We acknowledge our responsibility in designing products with respect for people and the planet.
- Sustainable choices are an additional parameter of customisation that we offer to customers to differentiate themselves.
- We understand our large customers' need for valid ESG product data for their reporting.
- Reducing the footprint of our products is an integral part of lowering the total cost of ownership.

Icotera's ESG vision is clear:

We empower ISPs and network operators to differentiate with green offerings and reduce their overall footprint, via long-lasting products that maximise performance and minimise environmental impact.

ESG strategy

In line with this, Icotera's ESG strategy is standing on the following four pillars.

1. Minimising the life cycle impact of products
2. Reducing the climate impact of operations
3. Ensuring responsibility across the supply chain
4. Respecting and developing talent

The first three pillars address how Icotera strives to optimise the product portfolio from an environmental perspective. The last pillar addresses the importance of nurturing the people onboard and their talents.

René Brøchner, CEO of Icotera, explains the vision:

"ISPs and network operators are asking for more and more documentation on environmental issues in tenders and sales processes, enabling them to optimise on price, functionality, as well as ESG", he says.

"Our dedicated ESG Manager and R&D teams are tirelessly working on optimising existing products and designing new ones with lower impact, establishing Icotera as a strategic partner in our customers' ESG reporting and green transition", René Brøchner says.

René Brøchner, CEO, Icotera

He also points to the importance of prolonging the product lifetime and reducing the amount of e-waste in the ICT sector:

"We are going all in on refurbishing as many routers as possible for our customers. We have a well proven, in-house setup for receiving, testing, repairing, and returning units. By refurbishing routers, we can lower the total cost of ownership, the CO_2 footprint, conserve virgin resources, and reduce e-waste together. We make the circular economy an easy choice", says *René Brøchner.*

New sustainability and ESG reporting demands

In Icotera we understand our customers' need for ESG-data for their reporting.

Starting in 2024, large companies across industries and countries in the EU must report much more specifically on their impact on people and the environment in the full supply chain.

This is due to the Corporate Sustainability Reporting Directive (CRSD), a part of The Green Deal growth strategy. The specific topics to report on are defined in the European Sustainability Reporting Standards (ESRS).

The reporting standards include 12 areas covering Environmental (E), Social (S), and Governance (G), to evaluate the sustainability and societal impact of a company and its products. This taxonomy provides a detailed framework to report on sustainability performance, ensuring consistency, comparability, and reliability of the information disclosed. It ensures that stakeholders, including investors, customers, and employees, have access to comprehensive information about the company's sustainability practices and impact. This helps to evaluate the sustainability performance, potentially leading to better long-term financial performance along with social and planetary benefits.
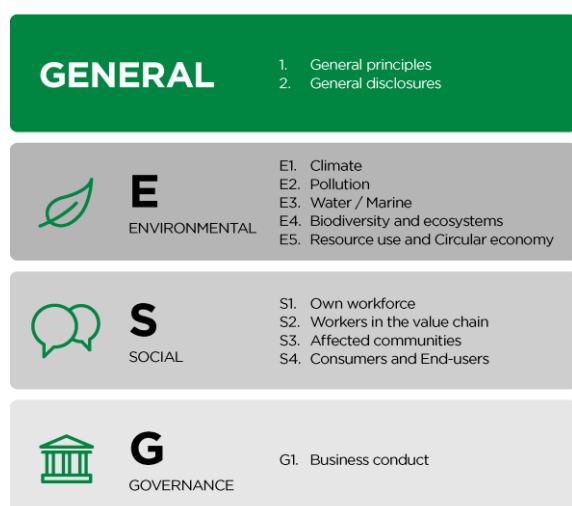

Figure: The taxonomy for ESG-reporting following the ESRS

To comply with the CSRD, companies need to collect ESG data from their own operations and their supply chain partners on environmental and social impact and governance and disclose the results in the company's yearly non-financial report following the ESRS.

The United Kingdom's conformity with the Corporate Sustainability Reporting Directive (CSRD) and the Sustainable Finance Disclosure Regulation (SFDR) of the European Union guarantees that British organizations correspond with wider European expectations.

What is included under (E)nvironment?

ESRS E1: Environmental and climate conditions, such as CO_2 emissions

ESRS E2: Pollution

ESRS E3: Water and marine resources

ESRS E4: Biodiversity and ecosystems

ESRS E5: Resource use and circular economy

What is included under (S)ocial?

ESRS S1: Own workforce

ESRS S2: Workers in our value chain

ESRS S3: Affected communities

ESRS S4: Consumers and end users

What is included under (G)overnance?

ESRS G1: Matters within business conduct, such as corporate culture, protection of whistleblowers, anti-corruption, cyber security, suppliers' code of conduct, and political engagement.

How we document and optimise the environmental impacts of our products

Icotera is now delivering data on the product level so that our customers can fit into their ESG reporting, following the ESRS taxonomy. It is a new journey for us, our supply chain partners, and our customers. The regulation on the general level is comprehensive. Add to that the many demands coming from specific regulations on the area and business level over the next years, forcing companies to reduce their negative impact in the full product life cycle.

As an innovative company, Icotera has decided to be a part of the green transformation and differentiate by having green offerings in the FTTH industry. We do that through open dialogues with our customers on their needs and by delivering as much knowledge and product specific ESG data as possible in a way that is valuable for our customers.

The Icotera LCA model

In Icotera we experience customers asking new ESG-related questions to our products like

- What is the footprint of manufacturing a CPE?
- Is it free of hazardous substances?

- Can it be refurbished to prolong product lifetime?

We use the Icotera LCA Model to measure and reduce the climate and environmental impact associated with a product. LCA is a comprehensive approach to understanding and mitigating the climate and environmental impact associated with products and services. Our managers and key-employees are trained and certified in LCA models.

Icotera is updating our product sheets with sustainability data to create transparency and documentation. As products vary, there will be differences in the level of information available. We prioritise updating data for the newest products first.
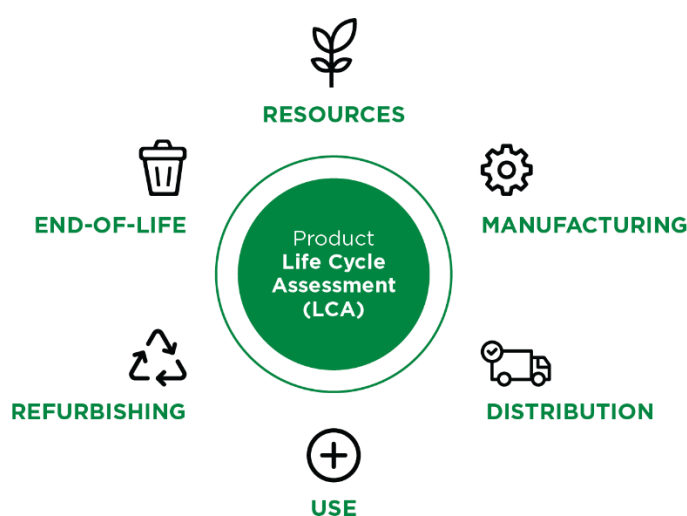
RESOURCES

MANUFACTURING

Product
Life Cycle Assessment (LCA)

END-OF-LIFE

DISTRIBUTION

REFURBISHING

USE

Figure: Icotera LCA model.

The Icotera LCA model visualizes the journey of a product in six phases.

1. Resources
2. Manufacturing
3. Distribution
4. Use
5. Refurbishing
6. End of life

The circular perspective illustrates why choosing long-lasting products that maximise performance and minimise environmental impact pays off. By considering the impacts in full life cycle, we can deliver valid data and documentation on sustainability factors on the specific products regarding the following features.

- Climate change and CO2 management - ESRS E1
- Avoidance of pollution - ESRS E2
- Responsible use of resources and circular economy - ESRS E5
- Responsible supply chain management - ESRS S2

In the following, the Icotera LCA model will be explained, documenting the method, and linking data to the ESRS taxonomy for ESG reporting.

In May 2025 Icotera took the LCA model to next level by being industry first in releasing third-party verified Environmental Product Declarations (EPD) for CPE equipment. This proved timely, as EPDs are figuring in several ISP tenders in 2025. The first EPDs launched cover Icotera's Wi-Fi 6 router series, including i4882, i4883 and i4862, and more EPD's will follow.

The EPDs are verified and published by EPD International, adhering to internationally recognized standards, including ISO 14040:2006, ISO 14044:2006, and ISO14025:2006, ensuring robust scientific analysis and full transparency. With all ESG data and methods in one document, Icotera makes it easier for customers to include ESG parameters in purchasing to meet reduction targets and reduce administrative burdens in company ESG reporting.

Resources and manufacturing 🌱 ⚙️

With data from our suppliers, we strive to deliver product-specific data for all newer products on the impact related to resource acquisition and manufacturing on climate change, measured by CO_2 cradle-to-gate footprint, avoidance of pollution by not using hazardous and unwanted chemicals, responsible packaging, and social responsibility.

Climate change

According to the CSRD, large EU companies must report their CO_2 emissions on three levels: Scope 1, 2 and 3. These scopes categorize the various kind of direct and indirect carbon emissions that a company creates in its operations and through its value chain, upstream and downstream.

CO_2 emissions are reported in the ESG report under the category of Climate Change, ESRS E1, following the Green House Gas (GHG) protocol.

Scope 1 emissions cover the emissions that a reporting company owns or controls directly, for example, while running its company facilities and vehicles.

Scope 2 emissions are the emissions made indirectly by the electricity or energy that a reporting company buys for heating and cooling buildings.

Scope 3 emissions: In this category goes all the emissions associated not with the reporting company itself, but what the organisation is indirectly responsible for. The responsibility is both upstream and downstream of its value chain. For example, from buying products from its suppliers, and from its products when used by the customers.

Emissions-wise, Scope 3 is nearly always the big part of a CO2 report, often more than 90 percent of the total. It is also the most difficult to reduce because it can only be done indirectly through the supply chain. Scope 3 Calculation guidance.
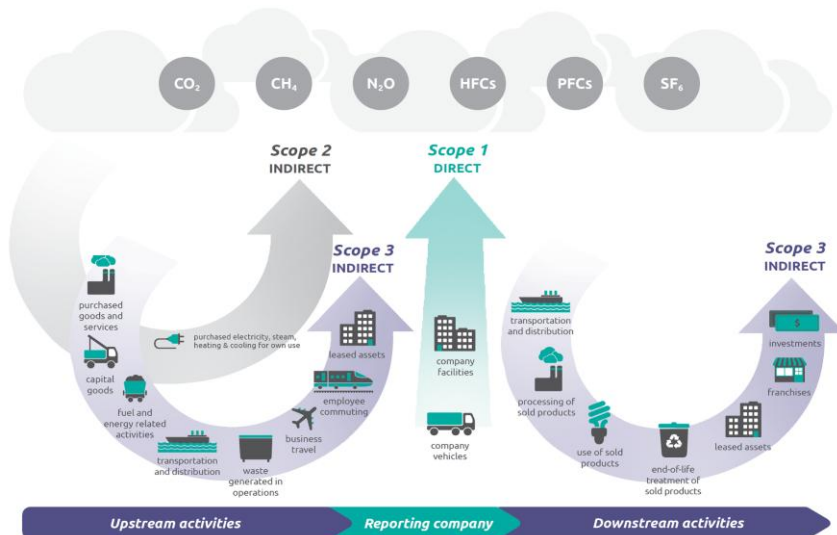

Figure: CO2 emissions in scope 1, 2 and 3.
Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard (PDF)

CO2 footprint cradle-to-gate

Icotera can deliver cradle-to-gate CO2e footprint reports for a range of products, relevant to customers' scope 3 accounting under ESRS E1. The cradle-to-gate CO2 footprint is delivered and documented by our manufacturer and covers raw material acquisition and manufacturing.

The term **cradle-to-gate** refers to the first two phases in the Icotera LCA model. The cradle is the extraction of the resources and virgin raw materials that are processed and used to produce the components in the unit. The gate refers to the point where the manufactured and packed unit leaves the factory. The footprint is conducted through a CFP analysis on item level (kgCO2e) using a valid LCA assessment tool, e.g. SimaPro, based on an approved environment database like Ecoinvent.

Raw material extraction

The C02 footprint from raw material extraction is by far the largest part of the cradle-to-gate sum of a typical Icotera product because of the chipset and components inside, made of a long list of raw materials and minerals used for all parts and components within the product. Counting the emissions of the raw materials included in a product involves measuring the amount of CO2 released by all components used.

1. Identify sources: Determine the source.
2. Measure quantity: Weight used (kg).
3. Carbon emission factor: Use standardised factors that estimate the amount of CO2 produced per unit by using databases on carbon emission factors like the Ecoinvent. Each activity in the Ecoinvent database is attributed to a geographic location.
4. Sum Up: Add up the emissions from all sources to get the total CO2 emissions.

Manufacturing

CO2 footprint from the manufacturing includes SMT/DIT/PK:

- SMT (surface-mount technology).
- DIT (Dual In-line Technology).
- PK (packaging).

The C02 footprint from manufacturing an Icotera product is typically very low compared to the footprint of resources. As an example, one of our manufacturing partners is strategically reducing the CO2 in their factories, committed to the Science Based Target initiative (SBTi) reduction goals, rated EcoVadis Silver, and part of the Carbon Disclosure Project (CDP). To many large customers, committing to SBTi is a prerogative. Icotera is committed to SBTi within 2024 with the science-based reduction targets.

> **SBTi**
> Icotera was SBTi approved in November 2024, committed to a 42 percent reduction of emissions in scope 1 and 2 from base year 2023, and monitoring and reducing scope 3.
>
> The Science Based Targets initiative (SBTi) is a corporate climate action organisation that enables com-panies and financial institutions worldwide to play their part in combating the climate crisis. Compa-nies and financial institutions can use the SBTi's standards, tools and guidance to set science-based targets. They then submit these targets to the target validation services team to have them validated. Targets are considered science-based if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to 1.5°C above pre-industrial levels.
>
> SCIENCE
> BASED
> TARGETS
> DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Pollution (ESRS E2)

We pay constant attention to limiting the use of substances of concern in our products. We have extensive black and gray lists of chemicals and adhering to these is legally binding across all our suppliers and drives our design process. All Icotera products are CE marked, affirming that they meet high safety, health, and environmental protection requirements set by the EU legislation.

Avoiding hazardous substances and unwanted chemicals is a high priority. We have an environmental policy, and all our suppliers have signed The Icotera Supplier Code of Conduct including the Icotera blacklist and gray list of hazardous and unwanted substances. Link to webpage document

Our products comply with the Swedish chemical tax legislation and the [EU Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS).](#) The Directive restricts the use of hazardous substances in electrical and electronic equipment (EEE) to protect human health and the environment, including the environmentally sound recovery and disposal of E-waste. The original RoHS Directive, also known as RoHS 1, was introduced in 2003, and it has since been updated to RoHS 2 (2011) and RoHS 3 (2015).

The RoHS Directive bans the following hazardous substances:

- Lead (Pb): Maximum concentration limit of 0.1% by weight in homogeneous materials.
- Mercury (Hg): Maximum concentration limit of 0.1%.
- Cadmium (Cd): Maximum concentration limit of 0.01%.
- Hexavalent Chromium (Cr(VI)): Maximum concentration limit of 0.1%.
- Polybrominated Biphenyls (PBBs): Flame retardants, banned with a limit of 0.1%.
- Polybrominated Diphenyl Ethers (PBDEs): Flame retardants, banned with a limit of 0.1%.
- Bis(2-ethylhexyl) phthalate (DEHP): Added in RoHS 3, banned with a limit of 0.1%.
- Butyl benzyl phthalate (BBP): Added in RoHS 3, banned with a limit of 0.1%.
- Dibutyl phthalate (DBP): Added in RoHS 3, banned with a limit of 0.1%.
- Diisobutyl phthalate (DIBP): Added in RoHS 3, banned with a limit of 0.1%.

This focus also drives our design process. We have reduced the use of flame retardants based on bromine (Br), chlorine (Cl) and phosphate (P) to less than 0,1%. When choosing an Icotera product, positive actions towards reducing pollution can be noted in the ESG report under the category Pollution, ESRS E2.

Plastic cover

The plastic housing for our existing products is made from two widely used thermoplastic materials, Polycarbonate (PC) and Acrylonitrile Butadiene Styrene (ABS). The housing is designed to last for many years at the end user's home.

We acknowledge the importance of contributing to reducing the amounts of plastic waste globally and can deliver some products with housing made of 60-98% PCR plastic. Post-consumer recycled housing is available as a customization for products like i4882/83 and coming products on Wi-Fi 7.

PCR housing is a consumer choice with a positive effect on the climate and environment. Recycling plastic waste reduces carbon emissions by up to 42% compared to conventional plastic production, [according to research.](#) Using recycled materials reduces the amount of water and chemicals used for producing new virgin plastics. It reduces the amount of plastic waste.

Packaging

Icotera is compliant with the [Extended Producer Responsibility (EPR)](#). Extended Producer Responsibility (EPR) refers to the environmental policy approach and practice that requires producers to be environmentally responsible throughout the life cycle of a product, especially its post-consumer or end-of-life stage and report the amounts of packaging sent to the market per year. From August 2024 producers and importers

are responsible for the entire life cycle of the packaging they place on the market, including take-back, recycling, and disposal.

Icotera is working hard together with our manufacturers to optimize product packaging and choose the green options for our customers. Our products have for many years been delivered in optimized-size brown boxes without plastic covering, with single colour print on minimized areas. This is good for the environment, and the cost price too.

By that, we are striving to follow the waste hierarchy by first producing as little waste as possible and second choosing reusable materials.

- Optimised in product-to-package ratio
- Minimised in packaging volume and weight
- Plastic-free
- PE bag free
- Up to 95% recycled cardboard
- Toxic inc free
- Removed paper printouts.

Packaging is compliant with Directive 94/62/EC on packaging and packaging waste. This directive is pushing the standards to reduce the environmental impact of packaging waste in the EU. By promoting sustainable packaging practices in the prevention, reduction, reuse, and recycling of packaging materials, we contribute to a more circular economy.

Green Packaging

We are handling that responsibility by continually optimising our packaging and registering as a part of the Danish Emballage Return system.

RIC marked

Single-recyclable brown box design

Single color printed on minimized areas

Print brief version user manual and product DoC and encourage digital version downloads

Image: Icotera CPE box

Icotera

Social (ESRS S1, S2)

Icotera has clear values protecting our own workforce and the workforce in our value chain.
We carefully choose our suppliers, and all suppliers have signed Icotera's Supplier Code of Conduct accepting the following values promoting human rights, labour rights, health and safety, and anti-corruption.

Standards differ from country to country. This is to be expected. Therefore, we have ensured the legal right to audit and request documentation from all our suppliers and sub-suppliers to ensure a high quality of operations. Our quality checks include annual onsite visits, ongoing dialogue, random checks, and sample quality checks. These are made to keep track of our entire supply chain and make sure our products and processes always live up to our internal standards.

Human Rights

- Icotera treats all employees, temporary or permanent, with respect and dignity and is entitled to fundamental human rights. Icotera makes sure that all employees working directly or indirectly for them know and understand these rights.
- The freedom of expression and the privacy of employees, customers, vendors and other stakeholders is especially respected.
- Diversity is promoted. Discrimination is prohibited regardless of grounds and specifically on ethnicity, gender, sexual orientation, marital, social or parental status, religion, political grounds, nationality, disability, age or union affiliation.
- Icotera does not employ a person who is below the minimum legal age for employment. It is strictly forbidden to use children or minors under the minimum legal working age as labour.

Labour Rights

- All employees, temporary or permanent, have a written contract in a language understandable to them. The contract contains working hours, overtime compensation, notice period, salary and frequency of payment.
- Icotera has fair pay and terms and must meet basic needs, which could be equal to a minimum wage by national law, including allowances and benefits.
- The employees are informed about, and fully understand, their employment conditions and rights in their own language. Employees are encouraged to use grievance mechanisms, i.e. to be able to voice concerns without fear of punishment or retaliation.
- Working descriptions, including documented hazard work, are established, updated and communicated to all employees and consultants. All employees have access to basic amenities such as drinking water, toilets and adequate rest facilities or dorms that are clean, safe and fit for purpose.
- Any form of involuntary labour is strictly forbidden. Nor are employees required to lodge deposits or original identity papers or equivalent. Employees are allowed to move freely and have the possibility to leave the premises outside of working hours.
- Nobody is subject to physical punishment, unlawful detentions, physical, sexual, psychological, or verbal harassment or abuse. Deduction from wages as a disciplinary measure is not permitted.

- All employees are free to form and to join, or not to join, trade unions or similar employee representative organisations and to bargain collectively.

Health & Safety

- Construction, Field Maintenance, Repair and Network Roll-Out Services involving the following: work in confined spaces; overhead work/ lifting operations; ground/civil/ construction work; radio frequency; electrical work; work at height; driving (where it is an integral part of the job) have to comply with OHSAS 18001 or equivalent standard.
- Icotera's working environment contains fair working conditions and is safe and healthy, including both physical and psychosocial health.
- Icotera provides appropriate health and safety information and training to employees including, but not limited to fire safety, correct handling of chemicals and machinery, emergency preparedness and first aid.
- Adequate steps to correct and prevent physical accidents and injuries as well as psychosocial illnesses are taken to limit built-in causes of hazards in the working environment. Icotera provides appropriate personal protective equipment without any charge to the employee. Physical incidents and accidents as well as psychosocial illnesses are documented and reported to Icoteras' top management.

Anti-corruption requirements

- All forms of corruption, including but not limited to extortion, bribery, facilitation payments, nepotism, fraud, and money laundering, are strictly forbidden.
- No one shall offer, ask for, give, or accept, directly or indirectly, a personal payment, gift, or benefit in exchange for the favourable treatment intended to influence a business transaction or to obtain a personal or business advantage. This provision includes both families and employees of Icotera, the Supplier and its subcontractors.
- Icotera employees are strictly prohibited from receiving or giving any kind of gifts during procurement processes and in relations with officials. It is also strictly forbidden for Icotera employees to be published in any advertising or promotional materials for Supplier products or services.
- Employees of Icotera Procurement can only accept and give gifts on behalf of Icotera, if the gifts demonstrate a clear business objective, are appropriate for the nature of the business relationship and are of limited value. Events have to be directly related to business. All gifts will be registered and will be the property of Icotera.
- Fair competition and open markets have to be respected, and business decisions must not be motivated or affected by personal relationships or interests.

Distribution (ESRS E1)

Icotera's products are manufactured in different destinations in Asia and shipped to Europe. We are doing all we can to reduce the CO2 footprint in the line of distribution by choosing the following options.

- Space-saving packaging
- Pallet optimisation
- Shipping instead of air freight when possible

Our logistics department can soon help customers make the right decisions on distribution, including the CO2 footprint as a parameter. Ask for CO2 data on logistic solutions that comply with ESRS E1, CO2 scope 3. CO2 emissions calculations will be delivered by our distribution partner, Blue Water Shipping, using their Carbon Calculator, answering questions like:

- How much carbon the transport is causing
- Carbon emissions compared across transport modes
- Calculations on shipments via Blue Water or other LPS
- Greenhouse gases CO2 and CO2 equivalents such as air pollutants SOx, NOx, NMHC and PM10.

Use

Designing and delivering powerful units with maximum performance, giving the end user the best experience for many years, is what we do in Icotera. High performance requires higher power consumption in the use phase of the product's life. But if having one high-end router powerful enough to cover the entire home means you can avoid three or four extenders, the total energy use will be minimised.

We are fully aware of the importance of lowering the energy consumption to help the customer reduce their CO2 footprint and the end user reduce the electricity bill. Our hardware and software developers are working hard to lower energy use while keeping up performance, following the EU Ecodesign Directive and the regulation of network equipment.

The main purpose of the Ecodesign Directive is to reduce energy consumption and the environmental impact of energy-related products throughout their life cycle. These are covered under specific implementing measures designed for networked standby and small network equipment. The Commission Regulation (EU) No 801/2013 amends Regulation (EC) No 1275/2008 about ecodesign requirements for standby, off mode, and networked standby for electrical and electronic household and office equipment. It sets requirements for networked standby, including power.

How we calculate the CO2e emissions from use of sold products

Indirect emissions from Use of sold products are registered as post 3.11 in companies' CO2 baseline, following the ESRS taxonomy. In Icotera's 2023 baseline 3.11 emissions was up 80,9% of the total baseline. This post is covering the power consumption for all Icotera units sold in 2023 and deployed in end-users' homes in the expected lifetime.

Let us explain the method behind:

- Using GHG method 3.11
- Total lifetime expected use of products: 5 years for routers and access points, 10 years for fibre termination units.
- Numbers sold in reporting period are split into products and countries.
- Electricity consumed per use (kWh) using Typical Power Consumption Factor to estimate the Active state.
- Emission factor for electricity (kgCO2/kWh) is based on the average grid-mix per country in the reporting year.

Carbon Intensity average grid-mix (2022)
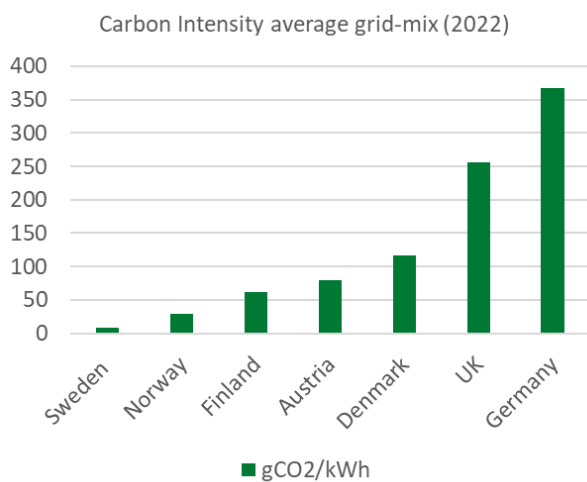
The size of scope 3.11 depends on different variables according to the GHG 3.11 method. The estimated product lifetime is one of them. Icotera is proud to deliver long-lasting products, with high-quality components to our customers and their end-users, giving the best customer experience and the most responsible use of raw materials.

However, with long lifetimes come a high scope 3.11 post as we account for the end-user's power consumption for 5 years ahead for routers and access points, and 10 years for fibre termination units. Longevity might seem" negative" in that perspective. But seen in a yearly perspective, long-lasting products is still better for the total cost of ownership and the planet.

Refurbishment ♻

Our routers are designed with high-quality components and software updates for an expected +5-year product lifetime which is longer than the typical end-user churn.

This is why refurbishment of end of use routers makes perfectly good sense to many of our customers and why a return flow of units is common in our industry.

To get the full picture of the economic and climate effects of integrating refurbishment service to a contract with Icotera, we have designed an **Icotera Refurbishment Calculator**. This tool allows the customer and sales team to have a transparent dialogue on how to reach the point where price, quality and circular economy are optimised.

Every time we prolong the lifetime of a router, the total cost of ownership is reduced, and the planet is saved from the CO_2 emissions of manufacturing a new product, according to the Icotera Refurbishment Calculator. Add to that a substantial reduction in extractions of virgin raw materials and minerals used and a reduction in the amount of E-waste.
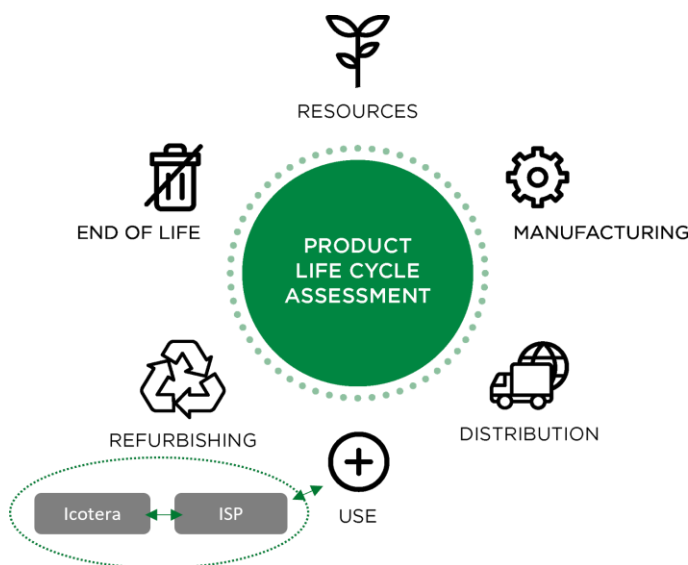

Figure: The refurbishment flow from user to ISP to Icotera and back prolongs the product lifetime.

Choosing the Icotera refurbishment service of routers is a great way to lower the total cost of ownership (TCO), save planetary resources, and show commitment to the green transition. We wish to make the circular economy an easy choice for customers.

Icotera high-end, in-house refurbish process

Refurbishment service	Icotera refurbishment service is selected to
- In-house - High-quality - Replacement within warranty - Dedicated staff - Refurbishment Report and ESG	- Lower TCO - Lower CO2 footprint - Valid supplier data on Scope 3 CO2 for own ESG reporting - Reduce use of virgin raw materials and minerals - Reduce amounts of electronic waste
ESG reporting	
C02 report on refurbishment compliant with CSRD, easy to integrate in the customers' ESRS E1, C02 scope 3 emissions	

The Icotera Refurbishment Service is different from the companies providing a lighter refurbishment, often just a polish, repack and return service.

Our refurbishment stands out in the market by offering an in-house, high-quality service. All routers are handled by a dedicated team with high product knowledge, tracking the performance of every unit, and ensuring that only products that pass all visual and technical tests are leaving the warehouse for new users.

Icotera's refurbishment service of end of use routers includes the following steps.

Visual inspection

Visual inspection of the device, checking for physical damages, discolouring, writing, printing, scratches on the housing, and unremovable dirt or labels.

Basic functionality test

- Reset test
- Check env
- Optical signal level (if applicable)
- LAN-WAN traffic test
- VOIP test
- USB test
- LED working
- Upgrade to the latest firmware.

Units that failed our technical tests are replaced or refunded within warranty.

Cleaning of devices

- Removing labels, stickers etc.
- Wiping off housing with cleaning detergent free of chemicals.

Packaging

- Devices are packed in plastic bags
- Devices are packed in new boxes, along with PSU, cable, and stand (if needed)
- Box is labelled
- Boxes are packed in cartons
- Cartons are packed on pallets.

Reporting

- Devices are returned to the customer with a refurbishment report
- An ESG report can be delivered on request.

After completion, Icotera will return the refurbished units to the ISP, and if so, desired also the failed units, and provide a report on the including the number of units failing tests. Icotera can handle the failed units as e-waste for the customer, securing responsible recycling of materials.

We also offer an ESG report, documenting the C02 savings from choosing refurbishment as a service - fitting right into the ESRS E1 scope 3 reporting.

Image: Icotera i4850 routers are going through the technical test in the refurbishment flow in our warehouse.

End of life (ESRS E5) 🗑

The amount of e-waste generated every year in the EU is increasing rapidly. It is now one of the fastest growing waste streams with 13.5 million tonnes put to the market a year in the EU and less than 20 percent collected for recycling.

E-waste contains a complex mixture of materials that can cause major environmental and health problems if the discarded devices are not managed properly. Modern electronics also contain rare and expensive resources, including critical raw materials. These can be recycled and reused if the waste is effectively managed.

Improving the collection, treatment, and recycling of electrical and electronic equipment at the end of their life can increase resource efficiency and support the shift to a circular economy. It can also contribute to the security of supply for critical raw materials, enhancing the EU's strategic autonomy.

Compliant with WEEE

Icotera products have been designed for everyday use for many years. But at some point, the unit comes to its end of life. We mark our products with this symbol to verify that it is compliant with the Waste Electrical and Electronic Equipment (WEEE) Directive.

The directive seeks to reduce the amount of electrical and electronic waste, promote recycling, and recovery, and improve the environmental performance of all operators involved in the life cycle of EEE.

The icon shows that the unit must be recycled after use, not thrown in the garbage.

Producer responsibility

We handle our WEEE producer responsibility through the Emballage and Elretur system in Denmark. We report data on the amounts of EEE produced to the authorities, as required under the extended producer responsibility, and Elretur handles our producer responsibility obligations, collecting and handling WEEE on our behalf.
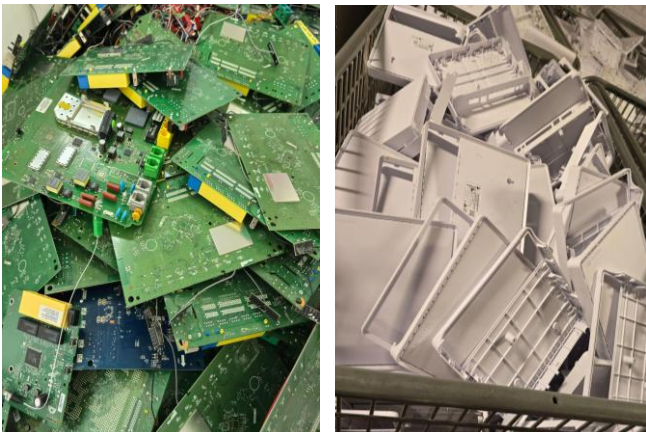
Image: Sorted PCBs ready for upcycling and sorted plastic housing from Icotera routers ready for recycling.

Conclusion

Icotera is dedicated to empowering ISPs and Network operators to differentiate with green offerings and reduce their overall footprint, via long-lasting products that maximise performance and minimise environmental impact. We use our innovative mindset to prolong the product lifetime of existing and new products, understanding the need for a shift from a linear to a more circular economy. We also understand our customers' needs for valid and transparent ESG data to make the right choices in a trade-off between price, quality, and planetary impact and comply with CSRD.

Want to know more about ESG in Icotera?
Please contact our ESG manager, Freja Ludvigsen, at FLN@icotera.com.