Telia

Environmental report 2021

Responsible digital consumption requires circular economy solutions

Information and communications technology consumes up to around a tenth of the world's electricity and has a carbon footprint greater than air travel. With the rise of digital services, the number of devices worldwide is growing rapidly. This increases both the need for raw materials and the amount of electronic waste putting a strain on the environment.

We can all list practical actions for reducing our carbon footprint: cutting down on air travel, switching to a vegetarian diet, and lowering indoor temperature at home. Few of us realise that streaming videos or storing files can have a larger carbon footprint than flying. According to a recent study by Telia, 88 per cent of Finns have given little thought to the environmental impact of internet use or streaming services.

The mining of rare earth metals and the rapidly growing amount of electronic waste inflate the environmental load caused by the ICT sector. According to the Digitalisation and Natural Resources study by Sitra, the Finnish National Fund for Research and Development, the reasons for this include the short life cycle of devices, difficulties in recovering materials, and the small number of recycled devices. The recycling and recovery of critically important metals used in IT devices is difficult but necessary.

The circular economy as the solution

The most important decisions in terms of device lifecycle management and material recycling are made in the early stages of the life cycle of a phone, laptop, or a computer. The European Commission estimates that up to 80 per cent of the environmental impacts of a product are locked into place already in the product and material design phase. This is something that we must address.

Telia has set climate and circular economy requirements on its equipment and device suppliers. We have been involved in creating the industry's first Eco Rating for smartphones. The rating measures the environmental impact of mobile devices in five categories. Measured aspects are the durability, repairability and recyclability of the device as well as climate and resource efficiency. The purpose of the Eco Rating is to encourage phone manufacturers towards more sustainable production. It enables customers to compare the environmental impact of phones before making a purchase.

From a throw-away culture to a new model of ownership

The circular economy can also be promoted by transforming how we understand ownership. In the circular economy, instead of just always manufacturing new products and owning them, they are leased, repaired, and borrowed. Using device as a service gives users freedom from worry. At the end of the contract period, Telia repairs the devices used by the company for reuse. Devices that cannot be repaired are recycled securely, and their raw materials are reused. The increasing popularity of cloud services also reduces the need for physical devices, which in turn cuts down the energy consumption and emissions resulting from their manufacture and maintenance.

It is great to see that environmental awareness is beginning to influence how people buy phones. In December, refurbished phones reached Telia's list of best-selling phones for the first time. The transition towards more sustainable digital consumption is already here, but businesses must lead the way in accelerating the change.

Heli Partanen
CEO
Telia Finland Oyj

Boosting the circular economy

At Telia, we have continued our work towards achieving ambitious climate and circular economy targets. **We are committed to reduce the emissions of our entire value chain to zero and to become a zero-waste company through circular economy by 2030.**

During 2021, we stepped up our efforts to improve circular economy practices by increasing the reuse of equipment and devices, adding climate and circular economy criteria as part of our supplier requirements, and introducing the Eco Rating system for smartphones. We increased our employees' readiness to engage in active climate and circular economy discussions with our stakeholders by training a large number of sales and sales support professionals.

We introduced the Eco Rating for smartphones to help our customers compare the environmental impacts of new smartphones. The rating gives smartphones an environmental performance score based on the device's entire lifecycle and circular economy metrics.

Our climate and circular economy work is based on ensuring that all our operations in Finland are covered by an ISO14001 certified environmental management system and the ETJ+ certified Energy Efficiency System. In 2021, our certification expanded as Telia Inmics-Nebula was granted the ISO14001 and ETJ+ certificates, while Telia Cygate received the ETJ+ certificate.

Telia's carbon footprint

As a consequence of our activities, greenhouse gas emissions are generated throughout our value chain, from suppliers to customers. We track our carbon footprint annually, in accordance with the calculation principles set in the Greenhouse Gas (GHG) Protocol.

In principle, the emissions from Telia's own operations (Scope 1 & 2) are low due to purchase of renewable electricity. The majority of our emissions, 98%, are caused by indirect (Scope 3) emissions in our value chain. Of these, approximately 65% comprise emissions generated by the manufacture of products and services purchased by Telia. These include, for example, the mobile phones, laptops, tablets, and other consumer-grade electronics sold by Telia. In 2021, the rise in emissions from purchased products and services was due to more accurate calculation formulas and the use of more detailed emission factors.

Telia's carbon footprint (tCO2e)

Year	2019	2020	2021
Scope 1	1 000	1 000	1 000
Scope 2, market-based	2 000	3 000	3 500
Scope 2, location based	28 703	31 000	38 000
Scope 3	234 000	187 000	220 000
1. Purchased goods and services	141 000	113 000	141 000
2. Capital goods	25 000	34 000	34 000
4. Upstream transportation and distribution	17 000	20 000	21 000
11. Use of sold products	14 000	5000	6 000
13. Downstream leased assets	4 000	4 000	5 500
Other categories	33 000	11 000	12 000
Total emissions (Scope 2 marked-based)	237 000	191 000	224 500

A more detailed breakdown of Telia's Scope 3 emissions is available **on our sustainability website.**

kiwa certified ETJ+
Inspecta Sertifiointi Oy

kiwa certified ISO 14001
Inspecta Sertifiointi Oy

Aiming for zero emissions

We have been carbon neutral since 2020, in terms of greenhouse gases caused by our operations (Scope 1 & 2) and business travel (Scope 3, Category 6).

We reduce our emissions by purchasing only 100% renewable energy. We reached the target set in the Energy Efficiency Agreement already in 2020, and since 2015, our total energy savings are nearly 12%.

We have improved our energy efficiency over the long term through a number of energy efficiency initiatives, thus helping to cut our growing energy consumption despite increased data usage. During 2021, we continued modernizing the 4G mobile network with the latest base station equipment by Nokia, and simultaneously expanded our 5G coverage area. As capacity grows, connection speeds and data usage have increased significantly, raising our electricity consumption. We are curbing the increase of electricity consumption with software power saving features, among other measures.

The introduction of the 5G network will significantly improve the energy efficiency of data communications, as less electricity is required to transfer the same amount of data. Energy efficiency is also considered in the construction of new base stations by using energy-efficient components and by moving radio units outdoors to minimise the need for energy used for cooling. We have also improved our energy efficiency by transferring our data centre operations to the most modern and energy-efficient facilities in Finland, Telia Helsinki Data Center.

In addition to these emission reduction initiatives, since 2020, we have compensated all unavoidable greenhouse gas emissions generated from our operations. The emissions we compensate consist of emissions from district heating and cooling, fuel oil used in backup power generators, and the coolants used in our refrigeration units, as well as emissions from Telia's fleet of vehicles and business travel. In 2021, we allocated half of our compensation to biological carbon sequestration and half to new technologies aimed at capturing carbon from the atmosphere.

	2019	2020	2021
	237	247	268
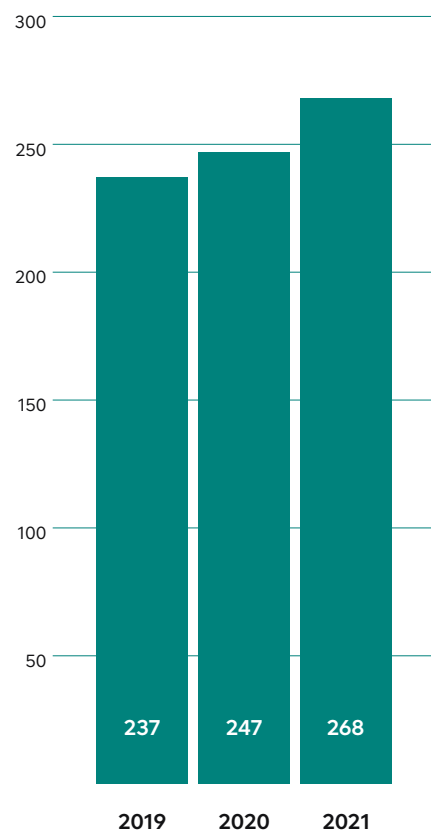
Total electricity consumption (GWh)

Reducing supply chain emissions is critical

We work closely with our suppliers to reduce our Scope 3 greenhouse gas emissions. In 2020, we made greenhouse gas emissions a part of our supplier selection criteria. In 2021, we added climate and circular economy requirements as part of our supplier criteria. Among other things, we require that our suppliers set science-based climate targets and that our equipment and device suppliers proactively implement circular economy practices in their operations. In 2021, through cuts and cooperation with contractors, we avoided Telia's emissions from transport and logistics by about 9% compared to the total logistics and transport emissions in 2020.

We also reduce Scope 3 emissions by increasing the reuse of equipment and devices in our own operations. This cuts down on emissions caused by the manufacture of new equipment. In 2021, we reduced emissions by about 1,600 tCO2e through the reuse of equipment and devices.

In 2021, our customers reduced emissions by a total of 590,000 tCO2e by using Telia's products and services.

Carbon handprint

Our carbon handprint describes the positive environmental and climate impacts of our operations, meaning the emission reduction potential of the products and services we provide to our customers. According to a study by GSMA, the industry's umbrella organisation, mobile technology products and services can help reduce greenhouse gas emissions by up to ten times the rate of emissions they cause. According to Telia Company's calculations, in 2021, our customers reduced emissions by a total of 590,000 tCO2e by using Telia's products and services.

In 2021, we launched the new Travel Emissions Insight service, which enables municipalities and cities to calculate transport-related emissions in real time. The service combines anonymized movement data from Telia's mobile network with the acclaimed CERO model of CO2 emissions. The service helps municipalities to reduce transport emissions more efficiently, and to plan more effective and environmental friendly transport solutions. It provides municipalities with data on which routes and modes of transport are used, and the quantity of CO2 emissions caused by transport. The model makes it possible to compare and calculate different transport options and their impact on emissions.

Our climate targets for 2022

We are progressing through milestones that are aimed at achieving our long-term targets. We have received approval from the Science Based Targets initiative (SBT) for our 2025 milestones. SBT only accepts businesses that are committed to doing their part to ensure that the Earth's climate does not warm by more than 1.5 degrees Celsius.

In 2022, our goal is to reduce the greenhouse gas emissions of our operations by 50,000 tonnes. We will reach this target by:

- Continuing to purchase 100% renewably produced energy.

- Gradually transitioning to renewably sourced district heating.

- Continuing our energy efficiency initiatives.

- Compensating for any remaining and unavoidable greenhouse gas emissions generated during our operations.

- Reducing the emissions generated by our logistics chain by 5% (compared to 2021) in cooperation with our suppliers.

- Continuing the reuse of equipment and increasing the use of virtualised services.
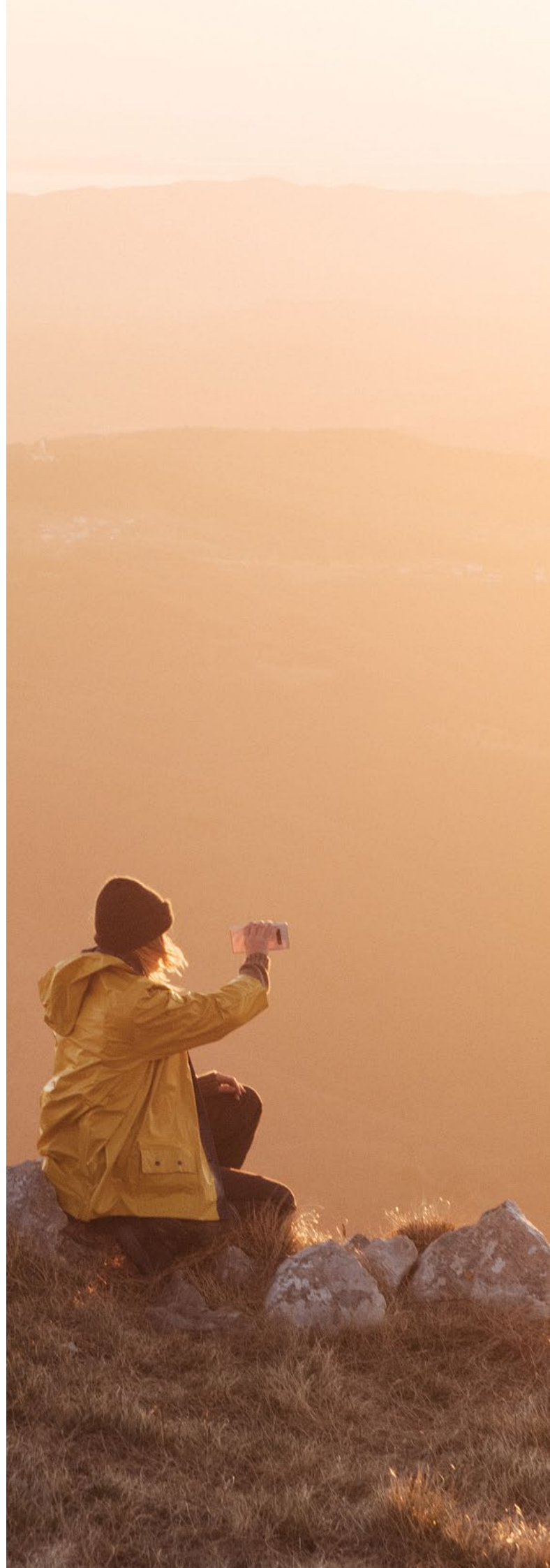
Less waste, better reuse of materials

Our operations generate a significant amount of waste material, most of which is the result of network construction and maintenance operations. This includes asphalt, cables, electronic waste, and discarded back-up power batteries. Our top priority is to minimise the amount of waste we generate, maximise the reuse of materials, and improve our recycling rate.

The total amount of waste generated by our operations each year depends on the projects carried out during the year and their scope. In 2021, our operations generated 6,400 tonnes of waste, of which 25% was recycled and 74% recovered. The project to dismantle old telephone poles is still reflected in our total waste volume and in the amount of waste which is energy recovered (45%).

During 2021, we carried out an environmental study on the packaging materials used in our operations including their consumption, the materials used and how we communicate about packaging. Based on the project's results, we will make changes to our use of packaging materials, including reducing the use of plastic, optimising packaging sizes, and piloting the use of reusable packaging.

In 2022, our goal is to further increase the recycling rate of waste materials generated by our operations and to reduce the amount of waste which is energy recovered. We are developing waste sorting and reuse processes together with our suppliers and contractors.

the share of poles from total energy recovery 90%

0,04%
0,01%
25%
45%
29%
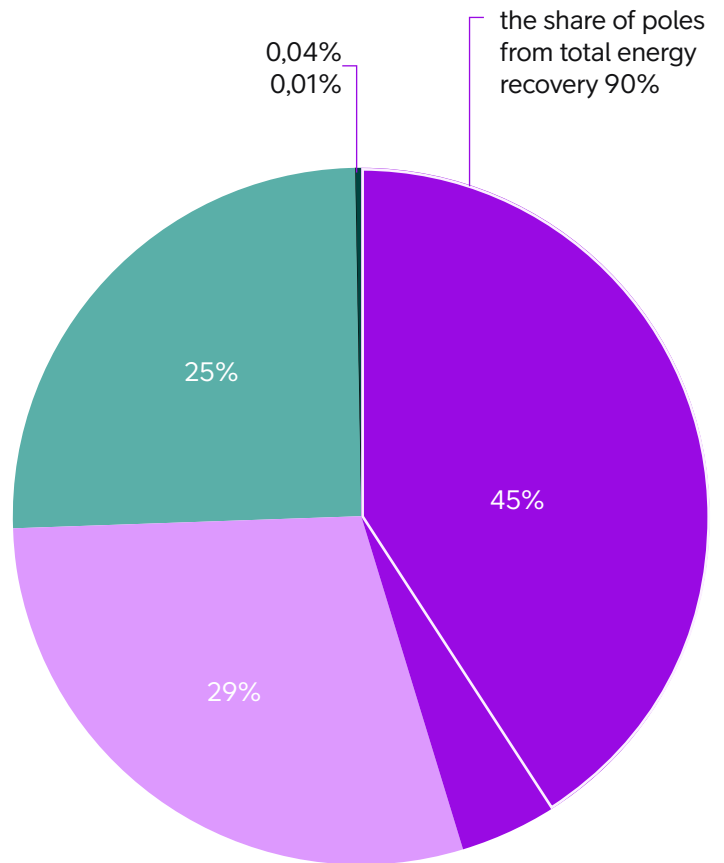
Waste treatment distribution

Energy recovery 45%
Poles, cables, municipal waste

Recovery 29%
Asphalt, construction waste, privacy material, municipal waste

Recycling 25%
Batteries, metals, electronics, cables, municipal waste

Disposal without recovery 0,04%
Hazardous waste

Landfill 0,01%
Industrial waste

Repair and reuse of second-hand devices

Our operating model is fully compatible with the reuse of network and customer premises equipment, which extends their lifetime and reduces the need for new equipment. This way, we can significantly reduce the environmental impact and emissions caused by the manufacture of equipment and devices. Customer premises equipment included in our services are returned to Telia after the contract term, after which they are refurbished and reused, or recycled for materials at the end of its life cycle. As part of our product and service offering our business customers can reduce their own annual emissions related to device purchases and foster circular economy by purchasing the device as a service or as a refurbished device.

In 2021, we further increased the reuse of business customer premises equipment up to 50 per cent, depending on the product (45% in 2020). In addition, we increased the purchase of refurbished customer equipment by 10% from 2020. We have also successfully continued the reuse of customer premises equipment in our consumer business, and in 2021, we nearly tripled the number of reused customer devices from 2020.

The Telia Recycled product family of refurbished mobile devices continued to grow in 2021, with sales nearly tripling from 2020. In December 2021, a Telia Recycled phone rose to the list of top 10 best-selling phones for the first time. As in previous years, we collected pre-owned phones from our customers through Telia Vaihtodiili. The service enables pre-owned phones to be refurbished and given a new life as a Telia Recycled phone, for example.

In 2022, our goal is to further promote the reuse of devices and to increase the purchase of pre-owned equipment. In addition, early this year, we made the Telia Recycled product range available to our corporate customers, as well. Our goal is also to continue the virtualisation of services for corporate customers.

In 2021, we nearly tripled the number of reused customer devices from 2020.

Reduced need for hardware through virtualisation

Telia Cygate provides and maintains a wide range of customised IT services that require a variety of hardware, such as servers and firewalls. Virtualising the production of services allows the hardware capacity to be utilised more efficiently, compared to a conventionally implemented solution in which each function related to a customer need is provided by a separate device.

In the virtualised service solution, the resources of a single device are programmatically divided into several segments, allowing several customer needs or services to be fulfilled with a smaller number of devices. This improves energy and cost efficiency, provides flexibility, and reduces the amount of data centre space and the number of physical installations needed. For the customer, virtualisation means flexibility, faster delivery times, and lower costs, by removing the need to separately purchase and install equipment for each need.

The virtualisation of services also has a positive impact on the environment. The total number of devices decreases, thus reducing the need for new equipment and the emissions caused by manufacturing them. Virtualisation also improves energy efficiency, as the same service is produced with a smaller number of devices, reducing electricity consumption.

Building a more sustainable supply chain together

Together with our suppliers, we are reducing the indirect (Scope 3) environmental impacts of our value chain by cutting greenhouse gas emissions and implementing measures to promote the circular economy. We want our suppliers to commit with us to a zero emissions target and to set science-based climate targets (such as the Science Based Target initiative, SBTi).

ISKU is Telia's long-term partner and has delivered all office furniture to our new head office, for example. In addition to new solutions for the use of space, a part of the delivery from ISKU consisted of old, refurbished office furniture. At ISKU, sustainability is a firm part of the entire lifecycle of products, from raw material choices to design, production, and the finished product. ISKU also has the advantage of being based in Finland: the company has concentrated all its production in Lahti and purchases 75% of its materials from Finland.

Inspired by Telia's environmental targets, ISKU decided to commit to the UN Global Compact and calculate the carbon footprint of its entire operations in accordance with the GHG protocol. Next, ISKU will set climate targets for its operations in accordance with the SBTi. This is an inspiring example of how a responsible sourcing practices can create a positive chain reaction with the common goal of reducing environmental impacts and building a more sustainable future.

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Eco Rating for smartphones

In 2021, we made it easier for consumers to compare the environmental impact of new phones by introducing the Eco Rating system, which provides consistent and transparent information to consumers about the environmental impact of smartphones. The rating takes into account the entire lifecycle of the device and the following features: durability, repairability, recyclability as well as climate and resource efficiency.

The Eco Rating has been developed in cooperation with Europe's leading telecom operators. In addition to Telia Company, Deutsche Telekom, Orange, Telefónica (operating under the O2 and Movistar brands), and Vodafone are involved in the project. The system is open to other operators, and new members are encouraged to join the project.

By choosing phones that score well in the Eco Rating, consumers can influence both the environmental impacts of their phone but also help to guide smartphone manufacturers to use new, more sustainable production methods.

Help from 5G in fighting forest fires

In 2021, Telia and the Emergency Services Academy Finland carried out a joint project to harness new 5G and artificial intelligence technology to help detect and combat forest fires. Forest fires are becoming increasingly common in Finland due to extreme weather events caused by climate change, and the summer of 2021 will be remembered for the outbreak of a major forest fire in Kalajoki. Forest fires accelerate global warming and cause danger to people and economic damage.

In the project, video and thermal cameras observing the state of the forest were installed on Telia's base station mast. Based on the observations of the cameras, the AI application alerts the emergency services, if necessary. The AI uses network edge computing, which means that the data is already processed at the base station to speed up the processing of detected fires. The camera transmits real-time footage of forest fire observations to the emergy service's control room via a remote presence service, to enable the authorities to get eyes on the situation immediately.

All data communications required by the service are implemented securely in Telia's mobile business network. In addition to the Emergency Services Academy Finland, the project's partners included the joint situation centre for the Rescue Services of Eastern Finland, Erillisverkot, Finwe Oy, and Fincloud Oy.