Reducing the electricity consumption of digital services together

A sustainable future through digitalisation

Elisa's mission is s sustainable future with digitalisation, and digital responsibility is one of the main pillars of Elisa's responsibility.

We live in an age of knowledge and emotion. Likewise, the digital and physical worlds co-exist and are sometimes difficult to distinguish. The digital environment creates significant social and economic opportunities for society. Utilising mobile technologies, the climate handprint can have a tenfold positive impact (source: GSMA The Enablement Effect report). Elisa wants to increase its digital handprint with an efficient network and automation, and by offering video conferencing services for virtual meetings, for example, which reduces the need to travel and eliminates the whole question of distances.

Digitalisation offers enormous opportunities, but also brings with it responsibility

The rapid development of digitalisation is estimated to generate almost 150 zeta bytes of data globally between 2010 and 2024 (source: Statista). It is easy to forget that information also has a carbon footprint and therefore sustainable data management and consumer choices are important. The information transmitted over digital channels is ultimately ones and zeros. Transferring bits requires energy, mainly electricity, which causes emissions. The ever-increasing use of data requires equipment and services that consume electricity. Equipment manufacturers have paid special attention to the energy efficiency of equipment. Similarly, the energy consumption of digital services is of interest to both the service provider and the user. The use of electricity forms a significant part of the environmental footprint of digitalisation.

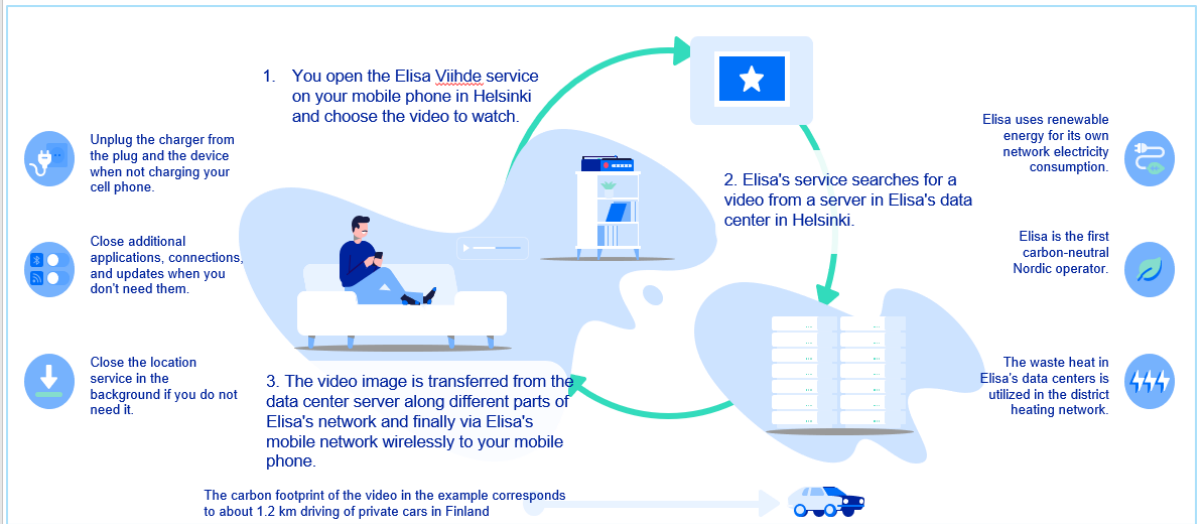## Example calculation of the CO_2 footprint of the customer's Elisa video service

We wanted to understand the carbon footprint for Elisa's digital services, and therefore studied energy consumption through one of the services we offer. We selected a rental movie offered by Elisa Entertainment for this case example. The carbon footprint for this service was defined by using emission factors for electricity.

Because of the several tens of variables, we first made certain initial assumptions because each of the variables affects electricity consumption and thus the carbon footprint.

Following assumptions were made:

- the video provided by the Elisa Viihde service lasts one hour, is located on Elisa's server and in Elisa's own data centre in Helsinki

- the video image is transferred via Elisa's network

- a person in the Helsinki metropolitan area is watching a video on a smart phone with an Elisa mobile subscription

The video image is transferred in bits from Elisa's server to the user's smart phone via Elisa's network structures and requires electricity for this purpose. We calculated and estimated electricity consumption in different parts of the network and converted electricity consumption into a carbon footprint by using Statistics Finland's average CO_2 emission factor for electricity production in Finland (Tilastokeskuksen keskimääräinen sähköntuotannon CO_2-päästökerroin). We compared the emissions to the statistics of the Finnish Transport and Communications Agency Traficom Liikennefakta.fi website on the average CO_2 emissions of private car in traffic use.

1. You open the Elisa Viihde service on your mobile phone in Helsinki and choose the video to watch.

2. Elisa's service searches for a video from a server in Elisa's data center in Helsinki.

3. The video image is transferred from the data center server along different parts of Elisa's network and finally via Elisa's mobile network wirelessly to your mobile phone.

Unplug the charger from the plug and the device when not charging your cell phone.

Close additional applications, connections, and updates when you don't need them.

Close the location service in the background if you do not need it.

Elisa uses renewable energy for its own network electricity consumption.

Elisa is the first carbon-neutral Nordic operator.

The waste heat in Elisa's data centers is utilized in the district heating network.

The carbon footprint of the video in the example corresponds to about 1.2 km driving of private cars in Finland
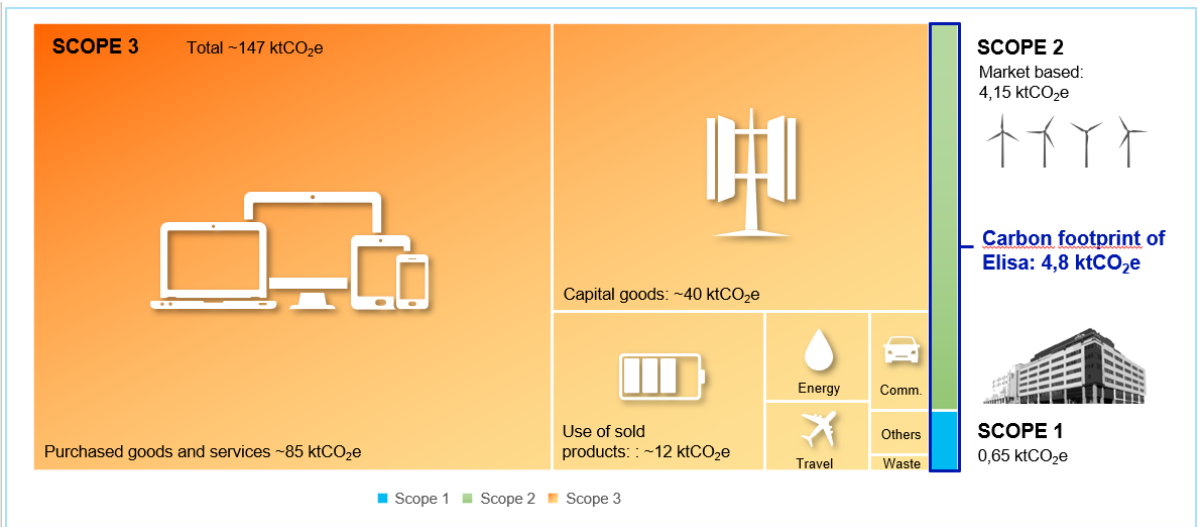
Based on our calculations, we estimated that the carbon footprint (gCO_2 eqv) for watching an hour-long video on Elisa Viihde corresponds to driving a passenger car approximately 1.2 kilometres in Finland.

It is good to understand that the calculation of this case example involves a lot of estimation, but we believe that our understanding of the impact of digital services will increase with ongoing research. In addition, it is important for us to have stakeholder discussions, e.g. by participating in climate strategy work within the ICT sector, and to encourage concrete actions through a carbon footprint discussion.

Carbon footprint of Elisa's operations and own measures

Elisa is Finland's leading provider of telecommunications and digital services. At Elisa, we closely monitor our own electricity consumption and carbon footprint.

Elisa's carbon footprint is calculated based on the latest full-year statistics and actual data. Elisa's own energy consumption includes direct (scope 1) and indirect (scope 2) energy use. Other indirect emissions (scope 3) make up most of the Elisa's energy consumption.

SCOPE 3 Total ~147 $ktCO_2e$

Capital goods: ~40 $ktCO_2e$

Purchased goods and services ~85 $ktCO_2e$

Use of sold products: : ~12 $ktCO_2e$

Energy

Comm.

Others

Travel

Waste

SCOPE 2
Market based:
4,15 $ktCO_2e$

Carbon footprint of Elisa: 4,8 $ktCO_2e$

SCOPE 1
0,65 $ktCO_2e$

■ Scope 1 ■ Scope 2 ■ Scope 3

Elisa is the first carbon-neutral Nordic operator. All the electricity we use is renewable. Our carbon footprint has decreased by a total of more than 60 percent from 2016 to 2019. We are continuously optimising optimise our network and utilise the waste heat of our data centres in the district heating.

The Elisa Ideal Work flexible working model and location-independent working opportunities have significantly reduced employees' travel and, hence, emissions. We also automatically remove outdated and unnecessary data from our servers, which not only saves money but also reduces the environmental load on the storage space.

In addition to energy reduction measures, we obtain emission offsets through the Gold Standard-certified improved cookstoves project.

Thanks to Elisa's own energy measures, the carbon footprint of this video example is neutral when watched with an Elisa subscription.

Tips to help you contribute to the carbon footprint of video watching

- Decrease the backlight intensity of the mobile device
- Close additional applications and wireless connections (e.g. WiFi, BT) when you are not using them
- Close the location service in the background if you do not need it
- Reduce the resolution if possible
- Unplug the charger from the plug and the device when not charging your mobile phone
- Disable background data update