EE BUSINESS

REFURBISHED DEVICES

ENVIRONEMNTAL CLAIMS SUBSTANTIATION

INTRODUCTION:

As part of our refurbished devices range, EE makes reference in marketing, digital and sales material to the environmental benefits of refurbished devices, compared to buying brand new. This document will substantiate environmental claims, using supporting evidence and data from articles and studies that examine the environmental impact of producing a new phone versus purchasing a refurbished device.

CLAIMS REFERENCED IN EE MATERIALS:

Environmental claims:

1. Buying a refurbished phone has a lower carbon footprint than buying a new one, helping to reduce your carbon impact.
2. As part of our environmental efforts, your phone will be delivered in a recyclable box.
3. The device box, inner packaging and leaflet are all made from 100% recycled materials.
4. Refurbished phone uses less virgin materials, while reducing e-waste which can find itself into landfill, with potentially harmful impacts on the environment.
5. Our refurbished phones are eSIM compatible, to help reduce plastic waste further with no physical SIM required.

CLAIM 1:

Buying a refurbished phone has a lower carbon footprint than buying a new one, helping to reduce your carbon impact.

1) Sources & Evidence:
According to a study by Pamminger, R., Glaser, S., & Wimmer, W. titled *"Modelling of Different Circular End-of-Use Scenarios for Smartphones,"* published in the *International Journal of Life Cycle Assessment* (2021), the environmental impact of various circular economy strategies, including refurbishment, was analysed for smartphones. The study aimed to provide insights into the potential reductions in global warming potential (GWP), used as a key metric, when choosing refurbished phones over new ones. Access the full article here.

2. Definition of Refurbished Devices

The study defines refurbished smartphones as "discarded smartphones [that] go through a process of refinishing to serve their original functions. Used smartphones are reconditioned and sold to new users" (p. 470).

3. Life Cycle Assessment (LCA) Overview

The research utilised a Life Cycle Assessment (LCA) to evaluate the environmental impacts of different circular end-of-use scenarios, including refurbishment. The LCA considered the entire lifecycle of a smartphone, including raw material extraction, manufacturing, distribution, usage, and end-of-life phases. For circular scenarios, additional use phases and processes (such as refurbishment) were included to assess the environmental impact comprehensively.

4. Key Findings on Global Warming Potential (GWP)

Global Warming Potential (GWP): a measure of environmental impact for ICT products. It considers energy consumption, transportation and (dis)assembly (page 470) GWP was the main measure of environmental impact with CO2eq or carbon emissions being the key metric, as one of the main contributors to environmental damage.

The LCA results, focusing on GWP, revealed that:

- Refurbished Phones: Contribute 55% less to GWP compared to new phones over a 2.5-year use phase. The study measured GWP using CO2 equivalent (CO2eq) emissions, where a new

phone contributed 34.6 CO2eq, while a refurbished phone contributed only 15.5 CO2eq (pp. 478-479).

- Taking different circular routes into account (repair, refurbishment, refurbishment with components); the repair scenario shows the smallest environmental impact, whereas the remanufacturing with components scenario has the biggest impact. However, compared to the linear scenario (producing and using a new phone), all three refurbishment smartphone scenarios show a significant reduction of the GWP: – 25% for replacing a new smartphone by remanufacturing, – 55% by refurbishing and – 71% by repair.

5. Supporting Evidence:

Figure 6 from the study below shows the comparison between GWP of refurbished versus new phone production and usage over 2.5 years:

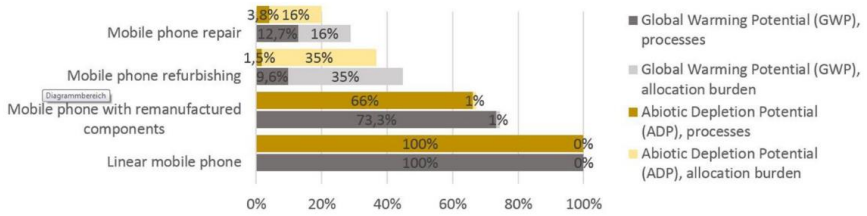
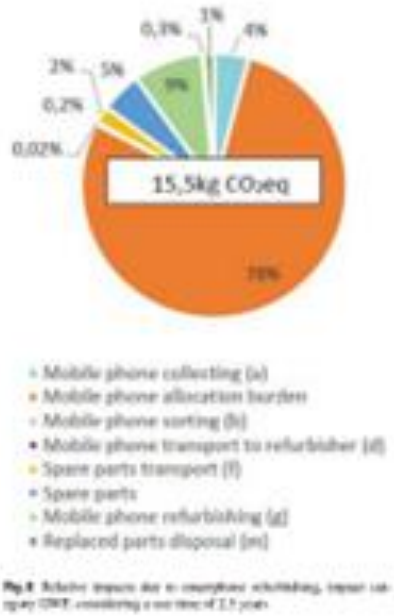


Fig. 6 Environmental impacts of the individual scenarios, impact category GWP and ADP, considering a use time of 2.5 years

Springer

Figure 8 from the study provides a detailed breakdown of the CO2eq contributors during the refurbishing process across the 2.5-year use phase.



6. Conclusion

The study concludes that circular practices regarding the repair and refurbishment of smartphones reduce the environmental impact of a smartphone, when compared to buying new. Based on LCA data, and supporting evidence referenced in the study, the largest proportion of environmental impact from a smartphone is linked to the initial production of devices and sourcing of materials, and therefore the additional steps involved in refurbishment contribute relatively little to overall GWP. Therefore, choosing a refurbished phone over a new one can substantially lower your carbon footprint.

CLAIMS 2 & 3: PACKAGING

As part of our environmental efforts, your phone will be delivered in a recyclable box.
The device box, inner packaging and leaflet are all made from 100% recycled materials.

EE worked with suppliers to reduce the impact of our refurbished device packaging.

The device box and inner packaging are made from 100% recycled cardboard. The cables tied are made from 100% recycled paper, and the leaflets are made from 100% recycled paper, using vegetable-based ink to further reduce environmental impact.

CLAIM 4:

Refurbished phone uses less virgin materials, while reducing e-waste which can find itself into landfill, with potentially harmful impacts on the environment.

According to a study by Ademe, titled *"Assessment of the environmental impact of a set of refurbished products"*, published in 2022, which compared the full lifecycle impact of a new smartphone compared to a refurbished phone, key findings outlined in table 62, page 152, findings show significant portion of the carbon footprint of smartphones is in material extraction and processing as well as parts manufacture. Material extraction includes the mining of minerals, oil extraction and the use of any other non-recycled resources.

9.5. Additional quantified results for the main product families

9.5.1. Smartphone family

Impact over the entire life cycle	New smartphone		Refurbished smartphone		unit
	USAGE INCLUDED	OUT OF USE	USAGE INCLUDED	OUT OF USE	
Lifespan	3 years		2 years		
Climate change (GWP)	85.2	84.4	7.61	7.09	kgeqCO2
Ecological load (MIPS)	268.6	266.7	25.3	23.1	Kg
Production of WEEE	200.20	200.2	22	22	g
Depletion of natural abiotic resources - metals and semi-metals (ADPe)	2.50E-03	2.50E-03	5.97E-04	5.96E-04	kgeqSb
Depletion of natural fossil resources (ADPf)	1,269.5	1,119.8	205	105.4	MJ
Water usage (WU)	89.2	89.1	13.6	12.1	m3eq
Acidification (AP)	4.89E-01	4.84E-01	4.23E-02	3.92E-02	kgeqH+
Fine particles (PM)	2.91E-06	2.74E-06	4.02E-07	2.85E-07	disease occurrence
Ionising radiation (IR)	36.3	16.0	17.92	4.43	kgU235eq

Table 62–Impact over the entire lifespan of a reference refurbished and new smartphone

Key figures:

- A brand new smartphone generates about 7.06 oz (200.2 g) of e-waste
- A refurbished smartphone generates 0.78oz (22g) – primarily due to avoiding the extraction of raw materials and minerals.
- Study shows refurbished phones reduce e-waste amounts by 89%

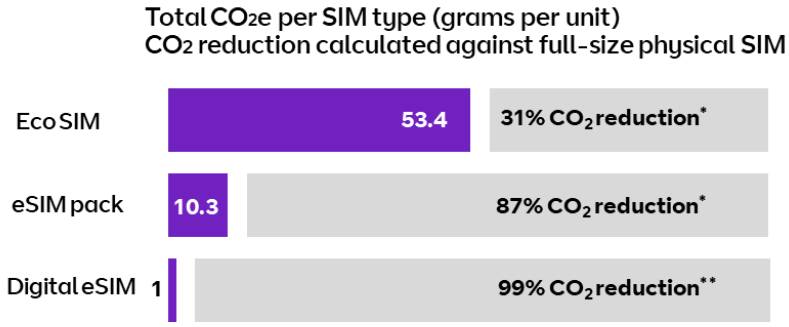
Impact of smartphones in landfill can be found: The Surprising Benefits of Recycling Phones for Developing Countries (it-recycle.uk)

CLAIM 5:

Our refurbished phones are eSIM compatible, to help reduce plastic waste further with no physical SIM required

EE's latest eSIM digitises the SIM process, meaning no physical SIM is required.

EE worked with its SIM suppliers to obtain LCA carbon footprint data for the different SIM card types supplied to EE. eSIM has a reduced carbon footprint, due to the eliminating of production & materials, and logistics footprint emissions. eSIM also eliminates plastic waste, helping to further reduce environmental impact.



*CO2 reduction of eSIM/SIMs VS Full size physical SIM (exc. delivery to customer). The CO2e figures are provided directly from our suppliers and relate to the material, production and delivery stages of the relevant SIM type. Not included are emissions related to usage and end-of-life as these are deemed negligible, nor are emissions related to end device hardware as this will vary depending on smartphone manufacturer. As many smartphones are now eSIM compatible those related emissions will always be there, regardless of which SIM type is used.