



# VODAFONE REFURBISHED PHONES

## 'KINDER TO THE PLANET' CLAIM SUBSTANTIATION

April 2023

### Introduction

Vodafone has relaunched its Pay monthly refurbished phone range and in our marketing of and merchandising for this range, Vodafone references that purchasing a refurbished phone has a lower carbon footprint than buying a brand new one and therefore is kinder to the planet. To substantiate this claim Vodafone refers to supporting information and data from an article by Pamminger et al. which explores the environmental impact of producing a new phone versus that of reusing a phone. This document aims to summarise this article, show customers which elements support our claims and aid overall comprehension of the substantiation.

### Claims

Kinder to the planet

Kind to your pocket, kinder to the planet, kinda perfect - on the UK's only major network to offer a two-year warranty with every Pay monthly refurbished phone.

Kinder to the planet

Buying a refurbished phone has a lower carbon footprint than buying a new one

Kinder to the planet

Buying a refurbished phone has a lower carbon footprint than buying a brand new one – reuse and give a phone a second life

### Substantiation

According to an article by:

Pamminger, R., Glaser, S. & Wimmer, W. Modelling of different circular end-of-use scenarios for smartphones. *Int J Life Cycle Assess* 26, 470–482 (2021).

Full article can be found here: <https://doi.org/10.1007/s11367-021-01869-2>

The lifecycle assessment study detailed in this article examined the impact on global warming potential (GWP) of different circular economy (CE) strategies, which included refurbishment, versus one time production and use of mobile phones (kept for 2.5 years, referred to as a 'linear scenario'). It found that a refurbished phone can have a 55% lower contribution to GWP compared to a new phone (see page 478-9 for details). Based on this finding, buying and using a refurbished phone can be considered 'kinder to the planet' in comparison to buying and using a brand new phone. Since the results of this study were measured in CO<sub>2</sub>eq as the metric for measuring GWP; where buying and using a brand new phone contributed to 34.6CO<sub>2</sub>eq versus 15.5 CO<sub>2</sub>eq buying and using a refurbished one, the latter scenario can be considered to have a lower carbon footprint than the first (see page 479 for details). The report also draws particular attention to these results being largely driven by the fact that fewer new resources are required to refurbish and sell devices versus producing and selling a new one, along with lower CO<sub>2</sub>eq contributions from factors such as transport (see page 479-480 for details).



The diagram below shows the comparison between GWP of refurbished versus new phone production and usage over 2.5 years:

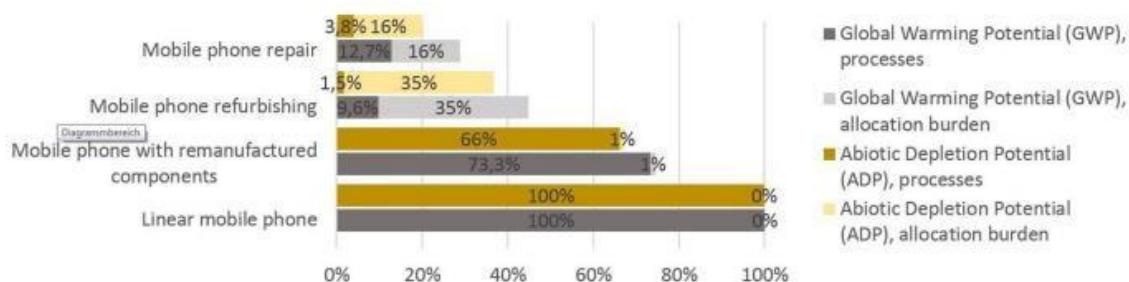


Fig. 6 Environmental impacts of the individual scenarios, impact category GWP and ADP, considering a use time of 2.5 years

And this one shows the breakdown of the CO<sub>2</sub>e contributors for refurbished phones:

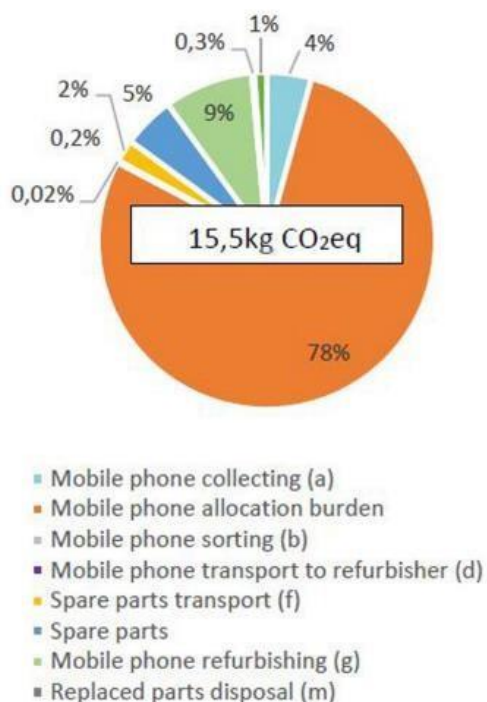


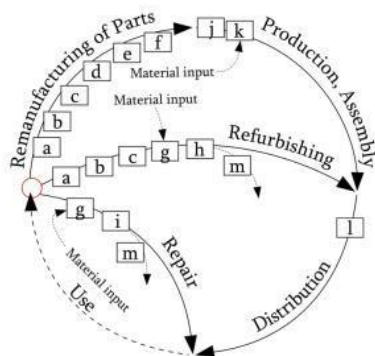
Fig. 8 Relative impacts due to smartphone refurbishing, impact category GWP, considering a use time of 2.5 years

## Substantiating Article Purpose

The purpose of this article is to analyse the environmental impact of different re-use scenarios, including refurbishment, of a generic smartphone. This was with the aim of demonstrating the merits of these circular economy strategies, specifically to those organisations like networks that can affect and implement them and was therefore a useful resource for Vodafone's consideration of the same. (see page 470-471 for details)

## Substantiating Article Methodology

This article utilised life cycle analysis (LCA) to explore the potential of circular economies or 'end-of-use' scenarios. It aimed to consider an average life cycle on a 'common' smartphone and considered use time, extraction of raw materials, manufacturing, distribution and disposal (for more detail see page 471-474). For full breakdown see the diagram below:



- a. Smartphone collecting
- b. Smartphone sorting (at recycler)
- c. Smartphone dismantling and PCB extraction (at recycler)
- d. PCB transport to remanufacturer / Smartphone transport to the refurbisher
- e. Part desoldering and remanufacturing (CPU and memories)
- f. PCB transport back to recycler
- g. Spare parts transport
- h. Smartphone refurbishing: testing, repairing, resetting, cleaning
- i. Smartphone repair
- j. Remanufactured parts transport
- k. Smartphone production and assembly
- l. Smartphone distribution
- m. Replaced parts disposal

Fig. 4 End-of-use scenarios repair, refurbishing and remanufacturing and their process steps

GWP was the main measure of environmental impact with CO<sub>2</sub>eq or carbon emissions being the key metric, as one of the main contributors to environmental damage.

### Substantiating Article Key Terms

- Circular economy (CE): 'a concept aimed at maintaining the value of products, materials and resources in the economy for as long as possible, and generating minimum waste through establishing product cycles (European Commission 2015)', (page 470) refurbishment is an example of this
- Global Warming Potential (GWP): a measure of environmental impact for ICT products. It considers energy consumption, transportation and (dis)assembly (page 470)
- Abiotic Depletion Potential (ADP): the second measure of environmental impact used in this article, relating specifically to resource depletion (page 470)
- Refurbished: 'discarded smartphones [that] go through a process of refinishing, to serve their original functions. Used smartphones are reconditioned and sold to new users' (page 470)