

## Calculating CO2e savings made from recycling clothing.

We needed to come up with a way of calculating kgs of CO2e saved when recycling and/or repurposing clothing fabric. To help do this we found the following report produced by the Polytechnic of Catalunya:

Reusing 1 kg of clothing saves 25 kg of CO2 according to a study by INTEXTER – UPC Universitat Politècnica de Catalunya

Based on the average that 80% of donated clothes in the study were either cotton or polyester or a mixture they worked out the above.

Next, we found this report on the Oxfam website:

SHOPPING SECOND-HAND FASHION WOULD PREVENT HARMFUL EMISSIONS EQUIVALENT TO FLYING AROUND THE WORLD 17,000 TIMES, SAYS OXFAM | Oxfam GB

WRAP (2022). Citizen Insights: Clothing Longevity and Circular Business Models receptivity in the UK.

Retrieved from: <https://wrap.org.uk/sites/default/files/2022-10/20220817%20Clothing%20longevity%20and%20CBMs%20receptivity%20in%20the%20UK%20Report.pdf>

“Emissions embedded in clothes: in 2020 the average EU citizen consumed 14.8kg of footwear, clothing and household textiles. An estimated 270kg CO2e was emitted per person to handle those items. This means that each kg of footwear, clothing, and household textiles consumed is associated with

→  $270 \text{ kg CO}_2\text{e} / 14.8 \text{ kg} = 18.24 \text{ kg CO}_2\text{e of emissions}”$

This is in line with the European Environment Agency’s estimate that each tonne of textiles produced is associated with 15–35 tonnes of CO2e emissions. Textiles in Europe's circular economy – European Environment Agency (europa.eu)

Then we took some data from the following book:

How Bad are Bananas? – Mike Berners-Lee (the Carbon Footprint of Everything)

8kg CO2e – polyester trousers (300g) = 26.6CO2e per 1kg

11kg CO2e – acrylic trousers (300g) = 36.6CO2e per 1kg

9kg CO2e – men’s cotton jeans (600g) = 31.6CO2e per 1kg

We received details of the following study commissioned by Severn Wye Energy Agency:

Recycling/ reuse of clothing vs manufacturing what is the average CO2 produced in 1kg of clothing – A review by Severn Wye Energy Agency

Average amount of CO2 per kg of clothing produced: 23.4kg (average taken from above studies 1 – 8)

From the review of studies 1 to 8 in the above study the average figure of carbon per kg of clothing is 23.4kg. The majority of studies base the figure

around one cotton T-shirt weighing about 250g. (Study 8 places a figure of 175g per T-shirt). The studies take into account the life cycle of the garment from raw fibres to end of life – this includes laundry and transport. The average life of a T-shirt/ garment is estimated at around 3 years before it is thrown away. We are confident that this is a representative figure and is only just below the figure presented in the larger Intexter study in at 25kg CO<sub>2</sub> per kg of clothing.

**From all of the above, taking an average of the 8 figures; 25, 18.24, 15, 35, 26.6, 36.6, 31.6, 23.4 an average total saving of 29.4kg of CO<sub>2</sub>e is saved per kg of clothing recycled.**

### **Carbon Footprint of books:**

Average weight of a book: 142.86g

1 book 2.7 kg CO<sub>2</sub> - Carbon Footprint Assessment of a Paperback Book

1kg of books = 18.9 kg CO<sub>2</sub>

1 book 1 kg CO<sub>2</sub> - Is it better for the planet to read online or in a paper format? | New Scientist

1kg of books = 7kg CO<sub>2</sub>

1 book 0.68 kg CO<sub>2</sub> - [https://www.jstage.jst.go.jp/article/nig/50/1/50\\_028/\\_pdf](https://www.jstage.jst.go.jp/article/nig/50/1/50_028/_pdf)

1kg of books = 4.76kg CO<sub>2</sub>

1 book 1.24 kg-CO<sub>2</sub> - Life-cycle greenhouse gas emissions of e-books vs. paper books: A Japanese case study - ScienceDirect

1kg of books = 8.68 kg CO<sub>2</sub>

How bad are bananas book

1 book 400g CO<sub>2</sub>

1 book 1kg CO<sub>2</sub>

1 book 2kg CO<sub>2</sub>

**Average for 1 book = 1.3kg**