EEB ecodesign project

Case study fact sheets
Kettles

an estimated
26 million
Kettles sold in the EU market each year

400kg CO₂eq
Life-cycle emissions from a typical electric kettle, mostly electricity consumption during use

Up to 140,000 kettles destroyed or directly recycled each year, despite being brand new and unused (estimate)

Eco-friendly design

3.5 Mt CO₂eq saved each year from improved product efficiency and design
= 8 million barrels of diesel

€ 2.5 bn savings in electricity and water bills for EU households due to more efficient product design

Increase durability by 1 year

390 kt CO₂eq saved each year from reduced production volume, and:
• 2,000 tonnes of steel saved
• 2,000 tonnes of plastics saved
• 68m litres of water saved

€ 200 m consumer savings p.a. (EU) from less frequent replacement of kettles

Ban destruction of unsold kettles

Resource and GHG emissions savings:
• 64 tons of steel
• 64 tons of plastics
• 2m litres of water
• > 11,000 tons CO₂eq in GHG emissions

Note: These figures are reasonable best estimates made by Cambridge Econometrics based on the existing available data. More details on the assumptions in the study are provided in the main report. Kettle icon made by Freepik from www.flaticon.com.
Microwaves

an estimated 18 million Microwave ovens sold in the EU each year

416 kg CO₂eq Life-cycle emissions from a typical microwave, mostly electricity consumption during use

Up to 100,000 unsold microwave ovens are destroyed or directly recycled each year (estimate)

Eco-friendly design

1 Mt CO₂eq saved each year from improved product efficiency and design

€ 650 m electricity bill savings p.a. across EU households if all microwaves were replaced with more efficient models

Increase durability by 1 year

over 280 kt CO₂eq saved each year from reduced production volume, and:
• 14,000 tonnes of steel saved
• 2,000 tonnes of glass saved
• 40m litres of water saved

€ 240 m consumer savings p.a. (EU) from less frequent replacement of kettles

Ban destruction of unsold microwaves and stop overproduction

Resource and GHG emissions savings:
• 690 tonnes of steel
• 110 tonnes of glass
• 2m litres of water
• > 13,000 tonnes CO₂eq in GHG emissions

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T-shirts

approx. 3.3 billion T-shirts and similar tops on the EU market each year

Over 22 Mt CO₂eq GHG emissions each year from making cotton and polyester t-shirts for the EU market plus:

- 3.5 bn m³ water used;
- 1.2 m tonnes of raw cotton;
- 190 m litres of crude oil consumed.

Potential benefits of enhanced Ecodesign measures:

- Use of recycled cotton in 50% of cotton t-shirts: Could save:
  - 600 m kg of raw cotton
  - 560 m m³ of water

- Use of renewable energy and organic cotton in the other 50% of cotton t-shirts production

- Increase durability of cotton and polyester t-shirts by 10%

Potential savings if the longer product life is realized in 50% of t-shirts:

- 57 m kg of raw cotton
- 160 m m³ of water

Between 11–32 million brand new but unsold T-shirts tops are destroyed or directly recycled each year in the EU

Potential savings if this overproduction was eliminated:

- 12–35 m³ of water
- 4,000–12,000 tonnes of cotton
- 80,000–220,000 tons CO₂eq

Note: These figures are reasonable best estimates made by Cambridge Econometrics based on the existing available data. More details on the assumptions in the study are provided in the main report.
Cement

Approx. 196 million tonnes
Annual production of cement in the EU

117 Mt CO₂eq
Annual emissions from EU cement production (estimate)
~ GHG emissions of Belgium

7% of global GHG emissions linked to cement production

Potential benefits of Ecodesign measures:

- Replace last wet kilns with dry kilns
  → 1.7 Mt CO₂eq saved each year
  = roughly equivalent to burning 4 million barrels of diesel

- Widespread use of alternative fuels in clinker production
  → 7 Mt CO₂eq saved each year
  = roughly, the annual GHG emissions of Cyprus

- Use renewable energy and carbon capture 50% of EU cement production
  → 28 Mt CO₂eq saved each year
  = roughly, the annual GHG emissions of Slovakia

Note: These figures are reasonable best estimates made by Cambridge Econometrics based on the existing available data. More details on the assumptions in the study are provided in the main report.
Office desks and chairs

- **Extremely diverse product group**, involves many different materials (wood, textiles, leather, metals)
- **>10m tonnes** of products: EU furniture consumption p.a.

6m desks sold in the EU each year (estimate)  
12m office chairs sold in the EU each year (estimate)

2.1 Mt CO₂eq  
Production emissions p.a. roughly equivalent to Malta’s annual GHG emissions

**Overproduction:**  
- An estimated 70,000 desks/tables and 130,000 office chairs unsold each year and destroyed or recycled

**Potential benefits of Ecodesign measures:**

- Increase recycled material content
- More sustainable production processes
- Enhanced durability

- Reducing production emissions by 10%:  
  → 100,000 tonnes CO₂eq saved each year
- Better durability (1 extra year)  
  → 65,000 tonnes CO₂eq saved each year

- Replace 1 kg of virgin aluminium with 1 kg of recycled aluminium in all office chairs  
  → 12,000 tonnes of aluminium saved each year
- Better durability (1 extra year)  
  → 100,000 tonnes CO₂eq saved

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