

ENVIRONMENTAL IMPACT ASSESSMENT

Fossflakes synthetic pillows outperform down-feather pillows

Save
33%
CO₂

NORDIC SLEEP
BY FOSSFLAKES



SUMMARY

The truth about pillow sustainability



Fossflakes' unique and patented filling consists of 70% polyethylene flakes mixed with 30% polyester fiber balls.

For the first time, a scientific study has analyzed the environmental footprint of sleeping pillows, challenging the widely held belief that natural materials like down are always the most environmentally friendly choice.

The study compared pillows with three filling types: down-feather, polyester fibre, and Fossflakes' unique blend of polyethylene flakes and polyester fibre.

The findings are eye-opening: synthetic filled pillows outperform down-feather filled pillows in 16 out of 18 environmental categories, including climate change, water use, and land use.

Fossflakes best of all

Fossflakes' pillow emerged as the one with the lowest environmental footprint overall.

This independently reviewed study debunks assumptions and provides clear data to help retailers, consumers, manufacturers and distributors make informed choices.



Synthetic pillows outperform down-feather in **16/18 environmental categories**

Fossflakes pillow vs down-feather pillow



33%
lower carbon
footprint



131
litres
less water



90%
less land

Don't be fooled

Just because it's natural doesn't mean it's better.
Always ask for the proof behind an
environmental claim.

BACKGROUND

A market based on a dangerous assumption

In a world facing climate change, biodiversity loss, and resource depletion, the environmental impact of everyday products cannot be ignored. The global pillow market is worth between \$13–30 billion^{1,2}, with millions of pillows sold every year.

Yet, until now, no environmental impact study had ever been conducted on sleeping pillows, leaving decisions to be made on assumptions rather than facts.

Consumers and retailers often believe that “natural” means better for the environment – potentially resulting in bad decisions for the planet. This study puts this belief to the test.

Fossflakes sought to understand its own product’s footprint while also comparing it to conventional down-feather and synthetic-filled pillows.

¹ Pillows Market Analysis 2024–2028, May 2024, Technavio <https://www.technavio.com/report/pillows-market-size-industry-analysis>

² Sleeping Pillow Market Size, Share, Growth, Forecast 2030, August 2023, Zion Market Research <https://www.zionmarketresearch.com/report/sleeping-pillow-market>

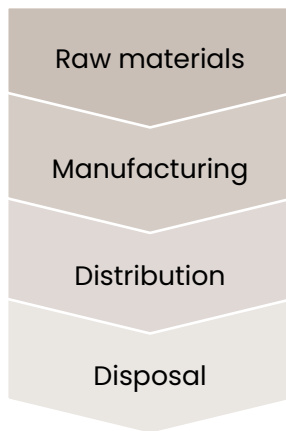


How do you make a decision you won't regret?
On gut feel? Or comprehensive data?

METHODOLOGY

The most rigorous assessment of pillows ever conducted

Fossflakes used the globally recognized life cycle assessment (LCA) method to evaluate the full environmental impact of pillows from cradle to grave – covering raw material extraction, manufacturing, distribution, and disposal.



The study assessed each pillow across its full life cycle.

Taking over a year to complete, and with hundreds of hours invested, the study examined three pillows containing different fillings.

The three pillow types are:

1 Down-feather pillows

Filled with feathers and down from ducks or geese. Widely regarded as a “natural” and luxurious choice, known for softness and ability to retain warmth.

2 Polyester fibre pillows

Filled with soft balls of synthetic fibre. Generally more affordable than down-feather pillows, although with reduced breathability and comfort. Can become lumpy over time.

3 Fossflakes’ blend pillows

Filled with a unique blend of polyethylene flakes and polyester fibre. Offering the comfort and functionality of down. Known for softness, breathability, and long-lasting support.

METHODOLOGY

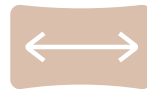
Ensuring a fair & accurate comparison

The study³ followed ISO 14040 and 14044 standards and was independently reviewed by experts from engineering group Rambøll, the Danish Technological Institute, and down-feather pillow manufacturer DYKON, to ensure accuracy and credibility.

Each pillow was assumed to have the same cotton shell, amount of filling, transport distance to the consumer, usage period, and method of disposal. The primary variable between the pillows was the type of filling.

A detailed sensitivity analysis was conducted to further validate the reliability of the findings.

Key parameters for each pillow



Pillow size:
50cm x 70cm (medium loft)



Filling weight:
700g of material



Shell material:
130g cotton



End-of-life:
Assumed disposal in Northern Europe (incineration)



Transport:
1,000km by truck from factory to consumer



Usage period:
Two years (without washing or drying)

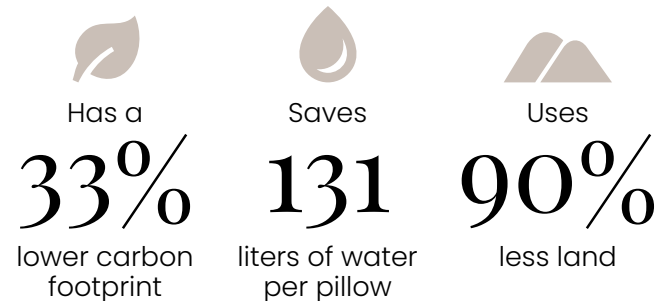
³ The Environmental Impact of Sleeping Pillows: Comparing polyester, down-feather and Fossflakes fillings, November 2024, Fossflakes A/S https://www.fossflakes.com/media/wysiwyg/pdf/Fossflakes_pillow_LCA_Nov_Edited_for_Publication.pdf

FINDINGS

Down production more resource intensive than synthetic

The results challenge conventional thinking: synthetic filled pillows, including Fossflakes, significantly outperformed down-feather pillows. Despite synthetic fillings being derived from oil.

Compared to a down-feather pillow, a Fossflakes pillow:



Why Fossflakes outperforms down-feather:

Down-feather



Raising birds requires large amounts of feed and water



Processing feathers involves chemical treatments and high energy use



Farming requires a large amount of land

Fossflakes



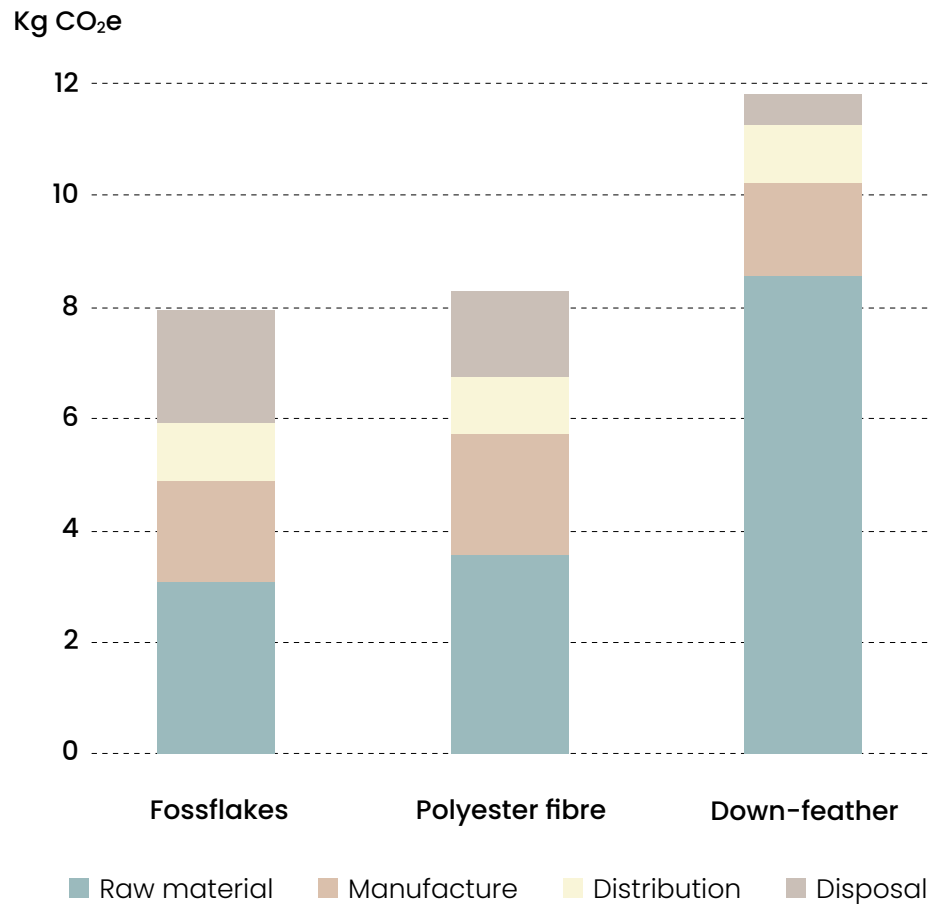
Plastic materials are produced highly efficiently



Polyethylene flakes are less energy-intensive than polyester fibre

Importantly, across all pillow types, the cotton shell had a significant environmental impact, particularly in water consumption. This highlights the need for the industry to rethink all materials used in pillows, not just fillings.

The climate impact of each pillow type, by life cycle stage



Together we can make gigantic savings

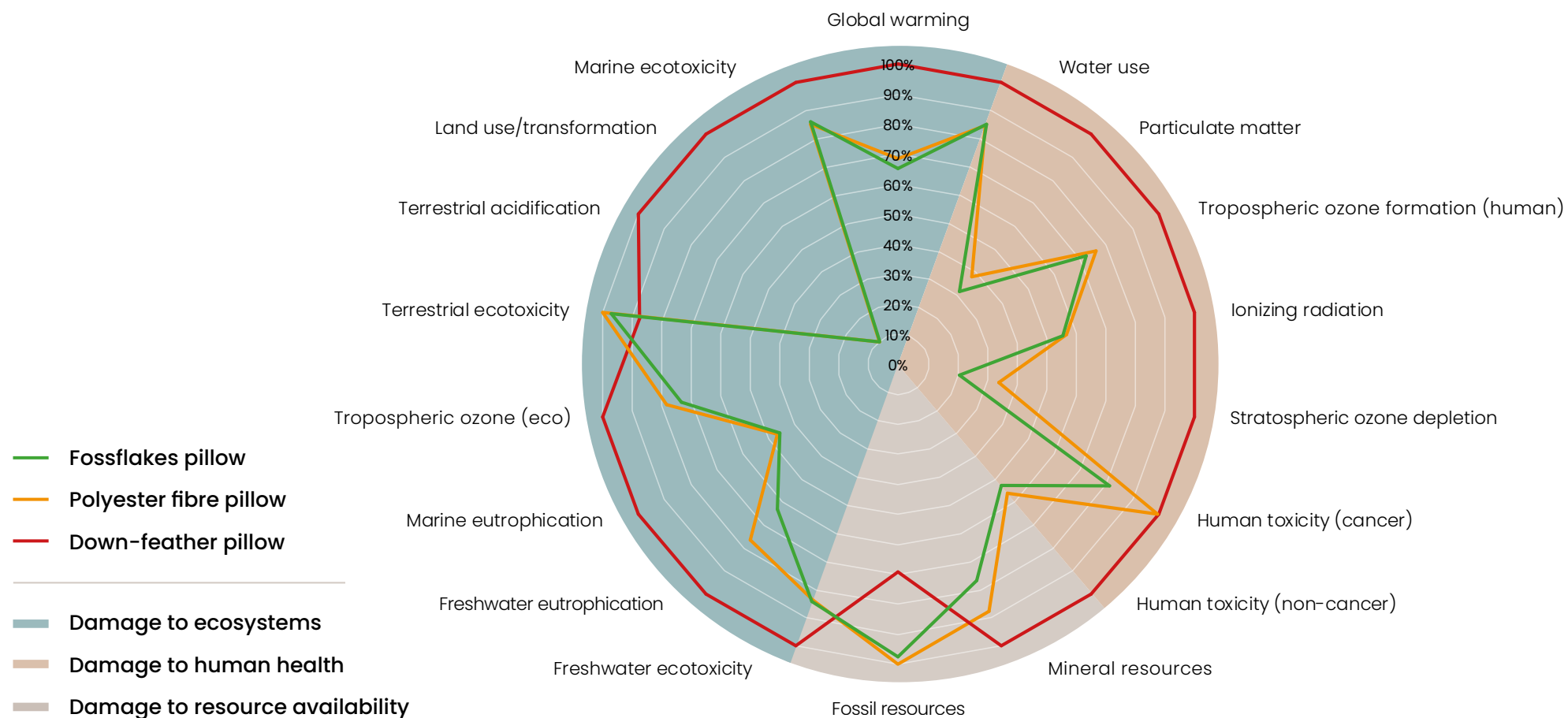
 **2** football stadiums of CO₂

 **50** Olympic swimming pools of water

 **3** Central Parks of land

For every million Fossflakes pillows sold compared to down-feather pillows.

Environmental impact of each pillow relative to each other



The diagram shows the environmental impact of the three pillows relative to each other. Points closer to the centre of the diagram indicate lower environmental impact. Of the three pillow types, down-feather has the highest environmental impact in 16 of the 18 impact categories. Polyester fibre performs better, with the lowest impact in four environmental categories. The Fossflakes pillow performs best, with the lowest environmental impact in 12 categories.



ACTIONS

Now is the time for smarter decisions

Making sustainability decisions based on data, not assumptions, is critical. To reduce the impact of pillows, manufacturers, retailers, and consumers must act together:

Manufacturers

Innovate on materials to reduce environmental impact.

Extend product lifespan through durable design.

Offer pillow refresh programs to prevent landfill and incineration.

Be transparent about environmental impacts and educate consumers.

Retailers

Curate a lower-impact product range and promote eco-conscious options.

Demand hard data from brands about sustainability claims.

Provide clear sustainability information to help consumers make informed choices.

Support circular economy initiatives for used pillows.

Consumers

Choose lower-impact options based on reliable data.

Extend the life of pillows through proper care.

Recycle or donate used pillows whenever possible.

Sleep peacefully

The better environmental choice is already available:
Fossflakes pillows are sold around the world.

So join the movement, and be part of a better future for you,
your family, and future generations.



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BY FOSSFLAKES

Contact us

Download the study

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About Fossflakes

Fossflakes is a Danish manufacturer of premium-quality pillows and duvets. Founded in 2005, the company uses a patented filling made of a unique blend of polyethylene flakes and polyester fibre, ensuring long-lasting loft, resilience, and breathability.

All Fossflakes products are made in Denmark and certified to the OEKO-TEX® Standard 100, verifying that they are harmless to human health. Fossflakes products are available in retail stores in Europe, North America and Asia, as well as through online channels such as **Fossflakes.com**.

The company has worked strategically with sustainability since 2021 and shares its progress through annual sustainability reports. For more information, visit **Fossflakes.com**.