



The interior of the Audi A7, with its 10 square-metres of leather. The automotive company has admitted that the carbon emissions from the leather are lower than the figure its official lifecycle assessment for this model suggests.

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Carbon figures show why hides must not go to waste



Towards the end of 2020, the Leather and Hide Council of America (LHCA) began looking into an aspect of leather's sustainability story that has commanded surprisingly little attention until now. It began asking what the environmental impact is, in terms of greenhouse gas emissions, of cattle hides that go to waste and decompose.

According to the European Commission, waste is the fourth-biggest source of emissions. The situation, in the European Union (EU) at least, has improved immensely in the last three decades and, with a share of 3%, emissions from waste lag far behind those arising from fuel combustion (77%), agriculture (10%) and industrial processes (8%)¹. In 2018, total greenhouse gas emissions in the EU equalled 3.9 billion tonnes of CO₂-equivalent. A 3% share of that total is 117 million tonnes of CO₂-equivalent. Emissions from waste have fallen by 33% over the 28 years for which the EU has greenhouse gas inventories² but the trading bloc wants member states, municipalities, companies and citizens to lower the figure further. Disposing of material into landfill has an environmental impact and decreasing that impact would be a good thing.

Food for thought

This applies to cattle hides as it does to all other materials, but the amount of greenhouse gas emitted varies according to the nature of the material we throw away. In carrying out its analysis of this question, LHCA worked with the Leather Research Laboratory at the University of Cincinnati. While no specific study verifying the greenhouse gas arising from the decomposition of untreated hides came to light, the team in Cincinnati suggested that evaluating hides as a food waste

In diverting hides from landfill or incineration, leather production does more than create jobs, generate value and promote circular practice. It brings an environmental benefit by preventing the greenhouse gas emissions that decomposing hides emit.

was a reasonable basis on which to move forward. LHCA found an online tool set up by the local authorities in Oakland, California, to allow residents to calculate the emissions-savings they were able to make by generating less waste, including food waste. This tool suggested that food waste produces a CO₂-equivalent of 88% of its mass³.

After speaking to organisations including multi-stakeholder body the Leather Working Group, LHCA later said it thought 88% was "probably conservative", which is to say the emissions from organic waste of this kind are probably higher. Certainly, a research team at RMIT university in Melbourne seems to think so. Its online tool calculates that one tonne of food waste would generate 1.9 tonnes of CO₂-equivalent in emissions, more than double the Oakland figure⁴. For the purposes of this analysis, we can be kinder to the people who dump hides than they, perhaps, deserve and go with Oakland's 88%.

Weight of waste

The next question is to try to estimate how many hides abattoir operators around the world are dumping and, from that, the extent of the problem of greenhouse gas emissions from discarded cattle hides.

LHCA says it knows that hides are being dumped in many places these days, not least in the US, where, by its own analysis, 5.5 million hides went to waste in 2019. However, it is confident that most of the hides that the meat and dairy sectors generate in places such as western Europe, Australia, New Zealand, North America, China, Argentina and Brazil make their way into the leather value chain. In other parts of the world, it seems that cattle hides are far more likely to go to landfill than to a tannery. The Leather and Hide Council of America has decided, for this exercise that, if it assumes 100% of hides in the first group of countries are made into leather and that 100% of hides in the second group go to waste, the exceptions will even themselves out.

This is an illustration. It calculates that there are around 1 billion head in the global cattle herd, of which about 300 million will go to slaughter each year. From these, 55% of the hides will be turned into leather and 45% will go to waste. This would mean 135 million hides per year going to landfill. LHCA attributes an assumed average weight to these hides of 25 kilos, which gives a total mass of this waste of almost 3.4 million tonnes. Using the Oakland formula, this would lead to emissions of 3 million tonnes of CO₂-equivalent per year. If we used the Australian figure, this total would be 6.4 million tonnes. In sticking to Oakland's 88%, LHCA's figure is 3 million tonnes.

Tannery-specific emissions

Our next task will be to work out the greenhouse gas emissions that accrue from tanning hides rather than letting them go to waste. In taking this up, we must address briefly, if not for the first time, the question of upstream carbon footprint. The industry calculates that leather's share of the upstream carbon footprint is 0.4% of all of the environmental impact associated with rearing the animal. There is nowhere in the world where more work has gone into producing an answer to this question than in Europe. The leather industry's representative body in the European Union, COTANCE, spent years preparing a submission to the European Commission to gain official recognition of leather as a "green product". In working out product environmental footprint category rules for leather, 0.4% was the figure the submission included for upstream carbon footprint. COTANCE's efforts were successful and the European Commission has accepted that 0.4% is leather's share⁵. For the purposes of this discussion, this is an academic question anyway because the same upstream carbon footprint share would apply whether we use the hide or throw it away, but the point is frequently misunderstood and seems worth repeating.

This takes us as far as the abattoir. From there until finished leather goes for shipment to the makers of footwear, furniture, leathersgoods, sporting goods, automotive seating or a wide variety of other finished products, transportation and all the processing in the tannery contribute the bulk of leather's environmental impact. The emissions that this work generates are, clearly, avoided if the hides are tossed into the trash. What interests us in this article is to see how these tannery-specific emissions

compare with the emissions from decomposition of the material. The tricky thing is to show what those tannery emissions are.

Audi's audacity

Much depends on the nature of the raw material and the particular processes tanners put it through. This, in turn, will depend on where they operate, where they source hides from and which market they are serving. A 2017 paper from the United Nations Industrial Development Organisation outlines a number of different scenarios⁶. A separate example, from automotive company Audi, shows how confusing the exercise can be.

Audi carried out a lifecycle assessment of the 2015 model of its A7 car, in keeping with ISO standard 14040. The car uses 10 square-metres of leather in its interior. At the end of the study, the company attributed 500 kilos of CO₂-equivalent to the leather, or 50 kilos per square-metre. However, Audi itself has acknowledged that this figure is unfair. It accepts that only 25% of the footprint it assigns to leather is attributable to the production of the material itself; the other 75% comes from the agricultural activities and livestock farming in the upstream supply chain. "Of course this is not fair," an Audi spokesperson has said, "because it assumes cattle are slaughtered to make leather, when the hide is simply a by-product of the food industry."

A better example

An example that we shall use here instead comes from Scottish Leather Group (SLG). By sourcing hides close to home and starting a pioneering environmental strategy as early as 2003, with ambitious measures for energy efficiency, recovery of energy from waste and the creation of oil for use in heat and power generation, SLG brought the footprint of its leather production down to 1.4 kilos per square-metre of finished leather in 2019. Pioneers lead the way: we quote this figure because SLG has shown what is achievable in the leather industry of today⁷. We know it can be done.

Industry professionals calculate that a hide weighing 25 kilos, to stick with LHCA's average, would yield 3.25 square-metres of finished leather. This would give a figure for emissions of 4.55 kilos of CO₂-equivalent for each hide. This is nearly five times better than the level of emissions that would arise from letting the hides go to waste. At the same time as generating this lower level of emissions in the manufacturing process, tanners also create wealth, generate jobs and produce material that is long-lasting, high-performance, natural, renewable, noble, affordable, safe, reusable and beautiful. To let it go to waste makes no sense whatsoever. ☺

Notes

1. *Greenhouse gas emissions from waste, Eurostat (official statistics office of the European Union), January 2020.*
2. *Climate change - driving forces, Eurostat, August 2020.*
3. *Greenhouse Gas Reductions Calculator, www.stopwaste.org.*
4. *Watch My Waste, RMIT, Australia.*
5. *Nothing To Hide, Essay 12, www.nothing-to-hide.org*
6. *Leather Carbon Footprint Review of the European Standard EN 16887:2017.*
7. *www.scottishleathergroup.com/Sustainability/Carbon-Footprint.aspx*