

#WhyESGMatters

Ice cream: Deliciously sustainable?



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Ice cream: deliciously sustainable?

Ice cream is an increasingly popular treat around the world, but investors should be aware of sustainability issues ranging from climate change to labour conditions. While investors should take into account how ice cream is sourced, produced and sold, they should also consider that it doesn't (and might not) last forever.

In this issue of #WhyESGMatters, we look at the key contributors towards ice cream's environmental impact (raw materials, manufacturing and retail and packaging), and social issues associated with popular flavours (vanilla and chocolate) and marketing. We also consider how the ice cream sector is impacted by climate change.

Did you know?



1. Environmental and social impacts

Scooping it up

The ice cream industry is growing globally. According to Fortune Business Insights, ice cream market revenue could grow from cUSD74bn (2022) to USD105bn by 2029. Key drivers of this growth include rising demand for innovative flavours and increased consumption, especially in developing markets.¹ We believe that this increased consumption could lead to greater stakeholder focus on sustainability aspects.

Before it melts

Ice cream has a significant climate impact, arguably higher than many other treats. For example, the emissions from producing 1kg of premium vanilla ice cream is 3.94 kg CO₂ (see Figure 1), which is 1.8x the climate impact of producing the same quantity of cupcakes and 2.2x that of chocolate-coated biscuits.² We believe this could lead to more scrutiny of retailers' commitments to reducing the climate impact of ice cream, while also considering the social aspects of ice cream production.

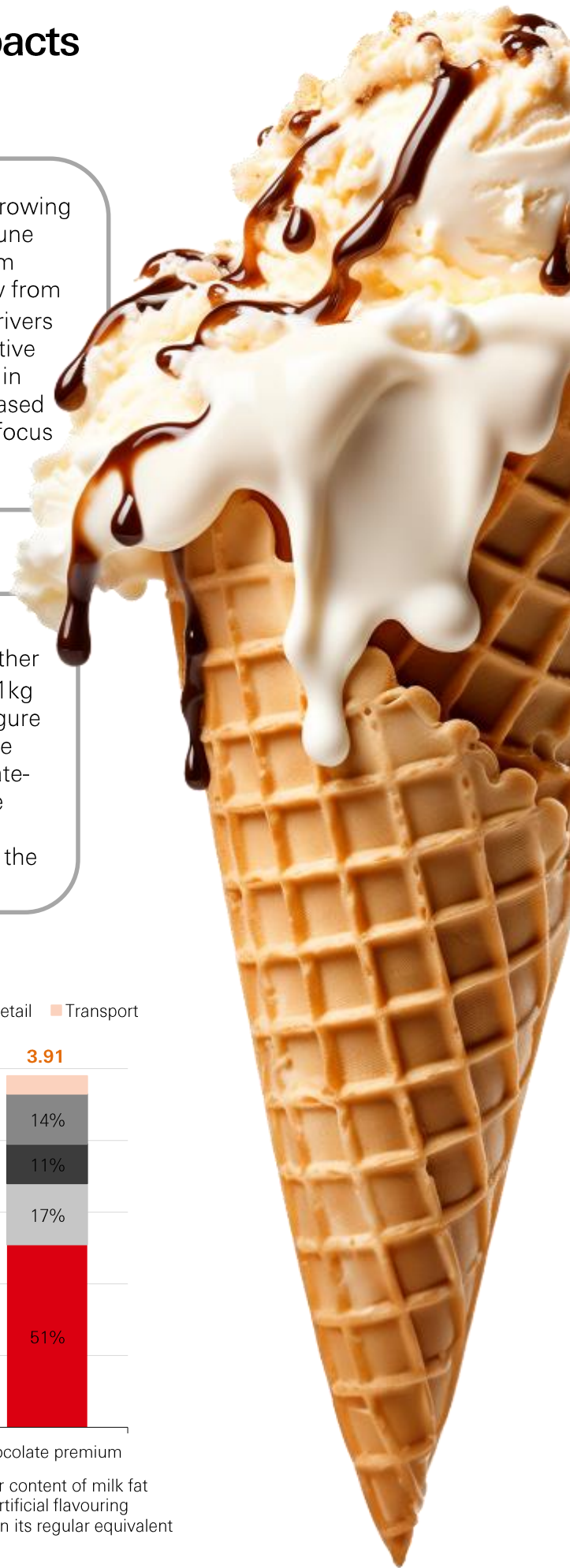
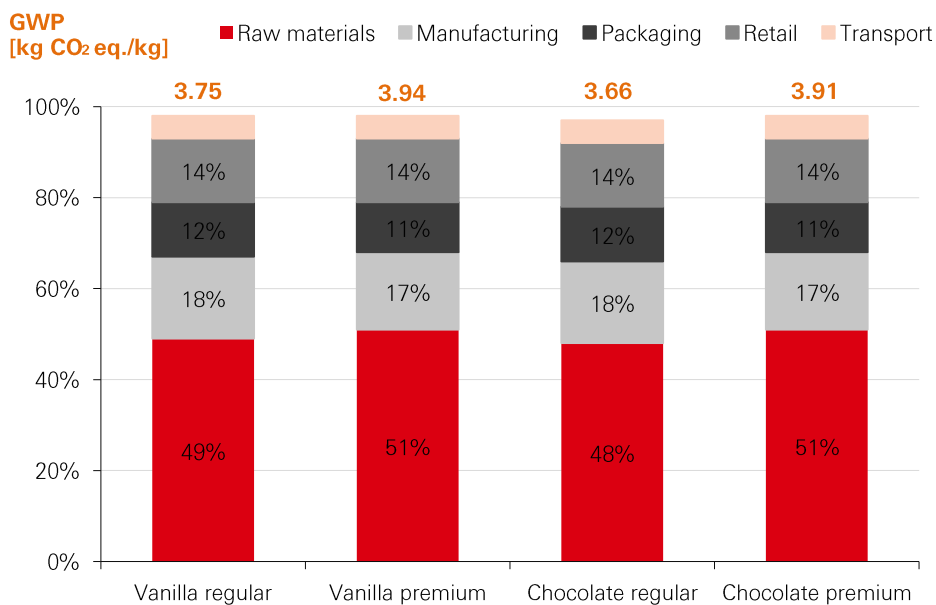


Figure 1: Climate impact of ice cream



Source: 2019 University of Manchester Study The 'premium' variety has a higher content of milk fat and sugar, contains eggs. Vanilla premium contains vanilla, the regular has an artificial flavouring agent (vanillin). The premium chocolate variety has also more cocoa powder than its regular equivalent

1. Grand View Research, Ice Cream Market Size, Industry Report, 2022-2030

2. A Konstantas et al, Evaluation of environmental sustainability of biscuits at the product and sectoral levels, Journal of Cleaner Production, 2019

Environment impacts

Dairy farming and the cultivation of other raw materials used for making ice cream are associated with a number of environmental impacts.



Impacts of milk:

- Climate impact, e.g. methane produced by cows
- Water consumption (mainly used to grow feed for dairy cattle)³
- Agricultural land usage
- Freshwater and marine ecotoxicity (biological, chemical or physical stresses that affect ecosystems), e.g. from pesticide and fertiliser usage to grow feed

Investors can make a difference by scrutinising retailers' commitments to reducing the environmental impacts of ice cream production. The climate impact of milk, for example, could be reduced by modifying cows' feed to reduce methane production. Research suggests that a 50% replacement of dried grass with fresh grass, combined with manure composting, could reduce the climate impact by 16%.⁴

Impacts of other raw materials (e.g. cocoa, vanilla):

- Freshwater and marine ecotoxicity, e.g. pesticide and fertiliser usage especially during cocoa production
- Deforestation and biodiversity loss, e.g. cocoa or palm oil production which threatens tropical rain forests⁵
- Water consumption, mainly green water (water held in soil available to plants) consumption, resulting from cultivation⁶



Addressing ecotoxicity caused by cocoa cultivation could involve reducing the use of conventional fertilisers and/or replacing them with organic alternatives, as well as reducing the amount of pesticides applied.⁷ A new deforestation law approved by the EU may also prompt palm oil and cocoa growers to improve their practices, ensuring that these ingredients aren't produced from plants grown on deforested land.

3. WWF, Milk's impact on the environment, 2019

4&6. A Konstantas et al, Environmental impacts of ice cream, Journal of Cleaner Production, 2018

5. WWF, Ice cream's impact on the environment, 2016

7. A Ntiamoah and G Afrane, Environmental impacts of cocoa production and processing in Ghana: life cycle assessment approach, The Journal of Cleaner Production, 16 (2008)

Social impacts



Vanilla: While some mass-market producers now use artificial vanilla flavourings, real vanilla remains an ingredient in some ice creams, particularly high-end products. It's the second-most expensive spice in the world (after saffron) due to its sophisticated and labour-consuming production process. The orchid that produces vanilla beans is pollinated by wild *Melipona* bees. Since there're not many of these bees in other top vanilla-producing countries, each flower must be pollinated by hand.⁸

Investors are increasingly scrutinising retailers' approach to protecting workers as media and different organisations regularly highlight child labour and harsh working conditions in the vanilla sector.⁹ Madagascar is the world's leading producer of vanilla, representing about 80% of the global supply.¹⁰ A study by the International Labour Organisation reported about 20,000 children aged 12 to 17 working in vanilla production in Madagascar, accounting for more than 30% of the sector's workforce.

Cocoa: According to the World Cocoa Foundation, c70% of cocoa is produced in West Africa, mostly Ghana and Côte d'Ivoire. Small-scale farmers are the beginning of complex, fragmented supply chains that often include harsh conditions. Limited access to water, sanitation, health and education services mean that many producers are below the poverty line.



We think investor focus on transparency in cocoa production will continue to increase given concerns over labour conditions.



Mislabelling and deceptive marketing: Due to growing competition, rising cost of ingredients and pressure to deliver differentiated products, numerous instances of mislabelling and misselling of ice cream have been reported across different geographies.

Investors should be aware of the potential for lawsuits as a number have been filed against some of the leading global and regional ice cream companies, especially in the US given their stronger consumer-protection laws.

8. Danwatch, Every single vanilla orchid must be pollinated by hand
9&10. For example, P Lykke Lind, Madagascar's £152m vanilla industry soured by child labour and poverty, The Guardian, 2016

Key manufacturing and retail impacts



Manufacturing: The impacts are mostly attributable to energy consumption, particularly during the hardening process and deep freezing. Considering annual consumption of ice cream in the UK, the total primary energy demand contributes to 3.8% of energy consumption in the whole food sector. In our view, there's an opportunity to reduce the energy intensity of the manufacturing stage by optimising energy use and increasing the use of low-carbon energy sources.

Packaging: Stakeholder attention to reducing the impacts of packaging, e.g. fossil fuel depletion, energy demand and waste management, is likely to increase. Polypropylene tubs, which are the most widely used packaging material for manufactured ice cream, are a notable hotspot for these impacts. Some brands are planning to introduce or have already introduced ice cream packaging made from a monolayer wrapper, paper-based materials, or fully biodegradable materials. We believe these moves will help reduce the percentage of plastic packaging ending up in landfills.



We think investors should ask companies for more detail on how they're reducing the retail-related impact on ozone depletion, which is mainly due to the storage time and leakage of refrigerants. For example, shortening the storage time from 7 to 3 days can reduce the impact of ozone depletion by more than half (54%).¹¹ In addition, better insulation in ice cream freezers and lowering shipping temperatures are among the options. Expanding the use of environmentally friendly packaging solutions will also be vital.



11. A Konstantas et al., Environmental impacts of ice cream, Journal of Cleaner Production, 2018

2. Will climate impacts melt the ice cream industry

We believe that investors should also consider how the ice cream sector is impacted by climate change and how companies respond to these challenges. For example, rising temperatures can affect cow milk productivity; in hot climate conditions, cows tend to eat less, and this reduces the amount of milk they produce. Water shortages due to climate change are another significant challenge as dairy products are the third-largest food product category in terms of water footprint.¹²

As global warming impacts production of ice cream ingredients, leading ice cream companies are taking measures to mitigate these risks. For example, according to the International Union for the Conservation of Nature, vanilla crops are facing the highest risk of extinction due to rising temperatures exacerbated by climate change.

Similarly, global cocoa production is threatened by climate change, as according to the International Centre for Tropical Agriculture, rising temperatures in the tropical equatorial countries may significantly impact the suitability of the main-producing countries for cocoa production over the coming years. To mitigate these risks, leading cocoa processing companies are diversifying their supply sources and developing sustainable agricultural practices.

3. Conclusion

Investors should continue to scrutinise companies' commitments in the ice cream industry, in our view; with future improvements focusing on the raw materials stage, especially raw milk production, as well as vanilla and cocoa cultivation. Other areas of potential investor attention include energy reduction during the refrigeration stage, plugging refrigerant leaks, correct labelling of ingredients, honest marketing practices and social impacts on workers in supply chains. With investor input, we can help make ice cream more sustainably delicious over time.



GLOBAL WARMING

12. Philip Shine et al, A Global Review of Monitoring, Modeling, and Analyses of Water Demand in Dairy Farming, 2021

Disclosure appendix

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2. All market data included in this report are dated as at close 5 July 2023, unless a different date and/or a specific time of day is indicated in the report.
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