



School of Law
Scoil an Dlí



**School of
Biological, Earth and
Environmental Sciences**

Report to the Competition and Consumer Protection Commission
regarding *'Tesco Finest Green Jasmine Pyramid Tea 15S 30G'*

Authors: Kristina Schröder, Aoife Stewart, Dr. Alicia Mateos-Cárdenas

Supervisor: Prof. Owen McIntyre

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1. Context

The topic of plastic pollution has risen to prominence as one of the most serious and concerning sustainability crises of our time. Each stage of the plastics lifecycle - production, use and end-of-life - gives rise to significant environmental impacts, including aggravating climate change,¹ toxic air pollution,² exposure to hazardous chemicals³ and harm caused to wildlife and ecosystems.⁴ An estimated 150 million tonnes of plastics have accumulated in the world's oceans.⁵ Recent attention has focused on microplastics, which have been identified in some of the most remote places on Earth, as well as in water, food and even human blood.⁶

The food industry has found itself particularly in the spotlight on this topic, due to its reputation as a major user of plastic packaging. Plastic packaging is the largest single application of plastics⁷ and due to its short lifespan, an even greater contributor to plastic waste.⁸ It has been estimated that up to 37% of food sold in Europe is packaged in plastic,⁹ and that around 40% of plastic packaging production is destined for the food industry.¹⁰

Citizens have reacted with alarm to the escalating 'plastic crisis'. 87% of Europeans have said they are worried about the impacts of plastics on the environment,¹¹ and 62% have described themselves as either 'extremely' or 'very' engaged in reducing plastic consumption.¹² According to the Environmental Protection Agency, four in five people in Ireland express at least some level of concern about single-use plastic.¹³

¹ Cabernard et al, 'Growing environmental footprint of plastics driven by coal combustion', Nature Sustainability 5, 139-148 (2022) and Zheng et al, 'Strategies to reduce the global carbon footprint of plastic', Nature Climate Change 9, 374-378 (2019).

² Center for International Environmental Law, 'Input from the Centre for International Environmental Law (CIEL) to the upcoming report on the lifecycle of plastics and human rights by the U.N. Special Rapporteur on toxics and human rights' (30 April 2021).

<<https://www.ohchr.org/sites/default/files/Documents/Issues/Environment/SREnvironment/ToxicWastes/CFI-lifecycle-plastics/ciel.pdf>>, Groh et al, 'Overview of known plastic packaging associated chemicals and their hazards' (Vol 651, Part 2, 2019) <https://www.sciencedirect.com/science/article/pii/S0048969718338828> pp. 3253–3268.

³ A recent study conducted by researchers in 2020 found that out of 3,377 chemicals potentially associated with plastic packaging and 906 likely associated with it, 68 were ranked by ECHA as "*highest for human health hazards*" and 68 as "*highest for environmental hazards*"; see

<<https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/36964/VITGRAPH.pdf>>.

⁴ UNEP, 'From Pollution to Solution: A global assessment of marine litter and plastic pollution (21 Oct 2021) <<https://www.unep.org/resources/pollution-solution-global-assessment-marine-litter-and-plastic-pollution>>.

⁵ Jambeck et al., 'Plastic waste inputs from land into the ocean', Science, 2015.

⁶ Damian Carrington, 'Microplastics found in human blood for first time', The Guardian, 24 March 2022.

⁷ OECD.Stat, 'Plastics use by Application' https://stats.oecd.org/Index.aspx?DataSetCode=PLASTIC_USE_10 (last accessed 1 Feb 2023).

⁸ In a 2019 Report, ING estimates that in Europe, plastic packaging makes up 40% of demand for plastics and 59% of plastic waste. See: <https://think.ing.com/uploads/reports/ING_-_The_plastic_puzzle_-_December_2019_%28003%29.pdf>.

⁹ Friends of the Earth, 'Plastic packaging failing to prevent food waste crisis- new study' (10 April 2018) <<https://friendsoftheearth.uk/sustainable-living/plastic-packaging-failing-prevent-food-waste-crisis-new-study>>

¹⁰ ING, 'Plastic packaging in the food sector' (2019).

¹¹ European Commission, 'Questions & Answers: A European strategy for plastics' (16 Jan 2018) <https://ec.europa.eu/commission/presscorner/detail/fi/MEMO_18_6>.

¹² Leal Filho W et al, 'An assessment of attitudes towards plastics and bioplastics in Europe', Science of the Total Environment, Vol 755, Part 1, 10 February 2021, 142732.

¹³ EPA, 'Plastics: Attitudes and behaviours in Ireland 2019-2022' (June 2022) <https://www.epa.ie/publications/circular-economy/resources/EPA_PlasticsReport2022_web.pdf>.

Such growing concern gives rise to risks as well as opportunities for companies publicly associated with the topic, such as supermarket groups. Whilst companies may find themselves under increasing pressure to take action to address their environmental impacts, they may also seek to take advantage of consumer interest in the topic to market products based on sustainability credentials. In many cases, consumers will actively seek out products that have a lower environmental footprint. As noted by PwC, 41% of Irish consumers are prepared to pay a premium for sustainable products.¹⁴

Provided such claims are relevant, clear and substantiated, there is no difference between this and any other legitimate approach to product marketing. However, awareness is growing that environmental claims are too frequently used in a misleading manner - so-called ‘greenwashing’¹⁵ – harming both consumer and competition interests.

Common plastic-related product claims that have been criticised as ‘greenwashing’ under certain circumstances, include those relating to the following characteristics:

- ‘Recyclability’. In the United States, there have been several challenges to companies describing plastic packaging as ‘recyclable’ when in practice, local infrastructure able to effectively recycle such plastics is limited or absent.¹⁶
- ‘Plant-based’ or ‘bio’ plastics (plastics manufactured using plant oils rather than fossil fuels). The environmental performance of such plastics is not necessarily any better than conventional plastics, since intensive agriculture often used to produce the raw material gives rise to a number of adverse environmental impacts.
- ‘Biodegradability’. Such claims have been criticised because, in general, biodegradable plastics will only biodegrade in specific controlled conditions, which may be unlikely to be met in practice – or – as in the case of the present report, they have been demonstrated to be inaccurate.¹⁷

Whilst this report relates to one such example of how plastic-related sustainability claims may mislead consumers, we note that such claims are rife and bear the characteristics of a systemic issue. A 2021 study conducted by Brussels-based NGO ECOS found that as much as half of common claims relating to plastics were potentially misleading.¹⁸

The negative impacts of greenwashing go beyond consequences for individual consumers. Through misleading claims about environmental performance, companies disseminate messages about environmental challenges and how they can be solved that may serve their own short-term commercial interests but which are not grounded in science, delaying and distracting from the critical steps needed to address environmental issues such as the plastics crisis. In the

¹⁴ PwC, ‘Irish Retail & Consumer Report, Investing in Experience’ (2019) <<https://www.pwc.ie/publications/2019/irish-retail-consumer-report-investing-in-experience.pdf>>.

¹⁵ Environmental law NGO, ClientEarth describes greenwashing as the use of “advertising and public messaging” by a company “to appear more climate friendly and environmentally sustainable than it really is”. See more at: <<https://www.clientearth.org/what-we-do/priorities/greenwashing/>>.

¹⁶ For example, First Amended Complaint, *Smith v. Keurig Green Mountain, Inc.*, No. 18-cv-06690 (N.D. Cal. Dec. 21, 2018), ECF No. 20 and Complaint, *Swartz, et al. v. Coca-Cola Co., et al.*, No. 21-cv-04643 (N.D. Cal. June 16, 2021), ECF No. 1.

¹⁷ See, section 5 of this report.

¹⁸ Saabira Chaudhuri, “Plastic straws that quickly biodegrade in the ocean? Not quite, scientists say”, Wall Street Journal (March 2021).

words of UN Secretary-General António Guterres, ‘The world is in a race against time. We cannot afford slow movers, fake movers or any form of greenwashing’.¹⁹

2. Introduction

Tea is a staple product for a majority of households in Ireland.²⁰ With an average brewing time of around 3 minutes and estimated Irish consumption per tea-drinker of up to five cups per day,²¹ the number of teabags disposed of after brief use is significant.

Dr. Alicia Mateos-Cárdenas of the School of Biological, Earth and Environmental Sciences at University College Cork has published a peer-reviewed scientific study on the biodegradability of teabags in the open environment, finding that the *Tesco Finest Green Jasmin Pyramid Tea - 15S 30G*, which are labelled as “biodegradable”, were still completely intact after 12 months of having been buried 20cm deep in Irish garden soil.²²



Figure 1: Product image as advertised on Tesco.ie website.²³



Figure 2: Image of a ‘Tesco Finest Green Jasmin Pyramid Tea 15S 30G’ teabag, made of the bioplastic polylactic acid (PLA), being recovered completely intact after 12 months in Irish garden soil.

Therefore, as established in section 5 of this report, these teabags do not meet any reasonable expectation customers may have about the environmental performance of the product. This contributes to harmful and persistent confusion amongst customers²⁴ (and possibly traders)

¹⁹ United Nations, ‘“We cannot afford greenwashing”: Guterres highlights key role of Net-Zero experts’ (27 April 2022) <<https://news.un.org/en/story/2022/04/1117062>>.

²⁰ <<https://www.irishtimes.com/news/health/time-for-a-cuppa-sure-why-not-1.1068934>> accessed 3 November 2022.

²¹ <<https://www.irishmirror.ie/news/irish-news/seven-facts-you-didnt-know-14028393>> accessed 7 November 2022.

²² Mateos-Cárdenas, A. ‘Fate of petroleum-based and plant-based teabags exposed to environmental soil conditions for one year’ (2022) *Frontiers in bioengineering and biotechnology*, 1579 <https://doi.org/10.3389/fbioe.2022.966685>.

²³ <https://www.tesco.ie/groceries/en-IE/products/278776974?selectedUrl=https%3A%2F%2Fdigitalcontent.api.tesco.com%2Fv2%2Fmedia%2Fghs%2F7632c12e-a5f1-43db-8410-3212349fd1f8%2Fc5e22af8-46c0-4d8c-a2b5-5bf6e7198911_720245358.jpeg%3Fh%3D540%26w%3D540> accessed 31 January 2023.

²⁴ Purkiss et al. ‘The Big Compost Experiment: Using citizen science to assess the impact and effectiveness of biodegradable and compostable plastics in UK home composting’ (03 November 2022) <<https://www.frontiersin.org/articles/10.3389/frsus.2022.942724/full>> accessed 14 November 2022; <https://www.theguardian.com/environment/2022/nov/03/greenwash-home-compostable-plastics-dont-work-aoe> accessed 7 November 2022.

about the meaning and implications of the terms “biodegradable” and “bioplastic”.²⁵ This confusion, supported by the clear instruction on the packaging (see image below) that these “teabags biodegrade into compost”, leads to the disposal of non-degradable products in the (home) compost bin²⁶ or the open environment causing additional litter problems.²⁷ For this reason, it is already entirely prohibited to label any packaging as “biodegradable” in Belgium.²⁸



Figure 3: Image of the side of ‘Tesco’s Finest Flavoured (Peppermint Leaves) 15 Pyramid Bags’, purchased 26th of January 2023.

Furthermore, as customers are becoming increasingly conscious of the environment and the impacts associated with their purchases,²⁹ mislabelled (or “greenwashed”) products gain an

²⁵ The urgent need for awareness-raising campaigns has also been recognized by the European Environmental Agency, see key message 3 ‘Biodegradable and compostable plastics – challenges and opportunities’ (2020) <https://www.eea.europa.eu/publications/biodegradable-and-compostable-plastics> accessed 9 February 2023.

²⁶ The contamination of compostable waste collection by plastics is a recognised concern, see further Percy Foster and Munoo Prasad ‘Development of Quality Standards for Compost and Digestate in Ireland’ Environmental Protection Agency Report No.375 (2021) pgs. 32, 56 available at https://www.epa.ie/publications/research/waste/Research_Report_375.pdf accessed 9 February 2023 and European Environmental Agency ‘Biodegradable and compostable plastics – challenges and opportunities’ (2020) <https://www.eea.europa.eu/publications/biodegradable-and-compostable-plastics> accessed 9 February 2023.

²⁷ SAPEA Science Advice for Policy by European Academies. ‘Biodegradability of plastics in the open environment’ (2020) doi:10.26356/biodegradabilityplastics, pg. 15; Biodegradable and compostable materials, federal public service for Health, Food Chain Safety and Environment <https://www.health.belgium.be/en/environment/placing-products-market/biodegradable-and-compostable-materials> accessed 3 November 2022.

²⁸ Art. 5 Royal Decree Arrêté royal établissant des norms de produits pour la denomination de matériaux compostables et biodégradables (9 September 2008) https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/19090747/kb.pdf accessed 3 November 2022; European Bioplastics e.V., “Claims on biodegradability and compostability on products & packaging” https://docs.european-bioplastics.org/publications/Claims_on_biodegradability_and_compostability_on_products_and_packaging_210108.pdf accessed 3 November 2022.

²⁹ Do Customers Really Care About Your Environmental Impact? November 2018 < <https://www.forbes.com/sites/forbesnycouncil/2018/11/21/do-customers-really-care-about-your-environmental-impact/>> accessed 7 November 2022; https://climate-pact.europa.eu/news/greenwashing-your-guide-telling-fact-fiction-when-it-comes-corporate-claims-2022-06-30_en accessed 7 November 2022.

unwarranted competitive advantage,³⁰ whilst undermining the valuable effort of producers genuinely enhancing their products and helping Ireland move towards a circular economy.³¹

In the case at hand, Tesco, as one of the top 3 food distributors³² operating 153 stores across the country,³³ is aware of the problems regarding recyclability and (bio)degradability of PLA (a type of bioplastic) as it bans it for use in its own ‘Packaging Preferred Material Guidelines’.³⁴ Furthermore, a customer has already made the superstore aware of the non-degradability of the *Tesco Finest Peppermint Leaves Tea - 15S 30G* under domestic composting conditions in Tesco’s online-shop review section more than a year ago.³⁵ Nevertheless, Tesco continues to label its own *Tesco Finest Tea* product line as “biodegradable”. Therefore, this is not a singular misunderstanding between customer and trader but demonstrates a serious lack of due diligence in assessing environmental claims, possibly occurring across many areas which reflect practices on environmental claims attached to other products and types of plastic packaging. In addition, this problem is not limited to Tesco. As another recent peer-reviewed study has shown, 60% of the products labelled as ‘home compostable’ do not disintegrate within a reasonably expected time period.³⁶

The systematic nature of the problem and the importance of substantial change in the way green claims are assessed is underlined by the increasing efforts of the EU Commission to enhance the regulatory framework by proposing amendments to the Unfair Commercial Practices Act which has already lead to increased vigilance on the part of the legal community in Ireland.³⁷ Furthermore, multiple EU Member States have already begun taking action in combating greenwashing through their national Consumer Protection Agencies; The Netherlands Authority for Consumers and Markets (ACM) has launched investigations regarding misleading (“greenwashing”) claims against the energy, dairy products and clothing sector³⁸ and the Danish Consumer Ombudsman felt compelled to publish guidelines on the use of

³⁰ <https://www.theguardian.com/environment/2022/nov/03/greenwash-home-compostable-plastics-dont-work-aoe> accessed 7 November 2022.

³¹ The Taxonomy Regulation (Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment [2020] OJ L198/13) defines ‘circular economy’ in article 2(9) as ‘an economic system whereby the value of products, materials and other resources in the economy is maintained for as long as possible, enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use, minimising waste and the release of hazardous substances at all stages of their life cycle, including through the application of the waste hierarchy’.

³² < <https://www.statista.com/statistics/534106/grocery-market-share-ireland/> > accessed 7 November.

³³ < <https://tescoireland.ie/news/2022/tesco-25-years-of-impact/> > accessed 7 November.

³⁴ Tesco preferred materials, Version B04, Date 080419 <https://www.tescopl.com/media/475835/tesco-preferred-materials-list-april-2019.pdf> accessed 3 November 2022; UK Packaging Preferred Materials & Formats Guidelines 2022 – Own Label and Branded, Version PM04, Date 250222 < <https://www.tescopl.com/media/757460/uk-preferred-materials-formats-guidelines-2022.pdf> > accessed 3 November 2022.

³⁵ <https://www.tesco.ie/groceries/en-IE/products/278777046?preservedReferrer=https://www.ecosia.org> accessed 3 November 2022.

³⁶ Purkiss et al. ‘The Big Compost Experiment: Using citizen science to assess the impact and effectiveness of biodegradable and compostable plastics in UK home composting’ (03 November 2022) <<https://www.frontiersin.org/articles/10.3389/frsus.2022.942724/full>> accessed 14 November 2022.

³⁷ Doug McMahon: Greenwashing – which adverts get hosed down? (Irish Legal News, 1 November 2022) <https://www.irishlegal.com/articles/doug-mcmahon-greenwashing-which-adverts-get-hosed-down> accessed 3 November 2022.

³⁸ <https://www.acm.nl/en/publications/acm-launches-investigations-misleading-sustainability-claims-three-sectors> accessed 28 January 2023.

environmental and ethical assertions.³⁹ Therefore, we believe that it is in the CCPC's best interest to investigate this systemic issue without further delay.

The rise in popularity of retailers using 'greenwashing' tactics is making it increasingly difficult for customers to make informed purchasing decisions.⁴⁰ The resolution of this problem falls within the CCPC's second strategic goal set out in the Strategy Statement (2021-2023),⁴¹ as well as the EU Commission's new Circular Economy Action Plan.⁴² By taking action against Tesco's misleading practices, the CCPC will undoubtedly have a strong influence over the marketing and advertising practices of Irish retailers, both large and small, and it will raise consumer awareness on the ever-prevalent issue of 'greenwashing'. Finally, there are few identifiable resource risks for the CCPC in tackling this issue as the evidence is fully provided by Dr. Alicia Mateos-Cárdenas's peer-reviewed study.⁴³

3. The CCPC's Prioritisation Principles:

As per the CCPC website, the Commission deals with consumer contacts based on its 'prioritisation principles' in order to bring the most benefit to consumers, businesses and the economy.⁴⁴ In this section, we aim to highlight why exercising its discretion and acting on our report will help the CCPC achieve its mission.

- (1) **Principle 1- Level of economic and/or physical harm:** The level of economic harm results from the fact that Tesco is one of Ireland's leading retailers, with over 153 stores located throughout the country. By labelling their products as "biodegradable", Tesco is gaining a competitive advantage by misleading consumers as to the true nature of their products and the effects these products have on the environment. In light of the current shift towards a circular economy, it is particularly worrying that a company of this size and influence is demonstrating a severe lack of due diligence in assessing its environmental claims. While this report relates exclusively to *Tesco's Finest Green Jasmine Teabags*, it is indeed possible that Tesco has made other claims regarding biodegradability of its products which would fail the test of biodegradability outlined in section 5 of this report. A quick search of the term "biodegradable" on Tesco's website reveals 24 results, excluding products that do not contain the term "biodegradable" in their product name e.g. *Tesco Finest Jasmine Teabags*. As a result, it is difficult to truly capture the vast range of products which Tesco advertises as "biodegradable", and the extent of the credibility which can be attributed to these claims.

At least equally worrying is the level of environmental harm caused. It is surprising and problematic to learn that some manufacturers deem plastic as the preferable material for a single-use short-term product. As pointed out in section 1, the accumulation of plastic in

³⁹ <https://www.magnussonlaw.com/news/combating-greenwashing-in-denmark-new-guidance-from-the-consumer-ombudsman/> accessed 28 January 2023.

⁴⁰ The online Open Public Consultation in advance of the proposal of the EU Commission for an amendment of the Unfair Commercial Practices Directive, COM (2022) 143 final, 2022/0092 (COD) 30.33.2022, 8,17.

⁴¹ <https://www.ccpc.ie/business/wp-content/uploads/sites/3/2020/12/CCPC-Strategy-Statement-2021-2023.pdf> 11, accessed 7 November 2022.

⁴² European Commission, COM (2020) 98 final, 11.3.2020, "A new Circular Economy Action Plan for a cleaner and more competitive Europe" 5.

⁴³ Mateos-Cárdenas, A. 'Fate of petroleum-based and plant-based teabags exposed to environmental soil conditions for one year' (2022) *Frontiers in bioengineering and biotechnology*, 1579 <https://doi.org/10.3389/fbioe.2022.966685>.

⁴⁴ Competition and Consumer Protection Commission, 'How we decide to take action' (18 March 2021) <<https://www.ccpc.ie/consumers/about/decide-take-action/>> accessed 28 January 2023.

the environment leads to significant, long lasting harm for nature, wildlife and human health. In this case, the assumption that tea bags would degrade in the domestic environment is especially harmful as negative effects of (micro)plastics have been found in a range of soil organisms, as well as on plant and crop growth. Nano- and microplastic fragments showed toxicity in earthworms and nematodes, which has resulted in a decrease in growth, hindering of reproductive success or affecting survival.⁴⁵ Likewise, plant roots can uptake nanoplastics which can then be transferred through their vascular system to the leaves.⁴⁶ Several studies have shown that micro and nano-plastic exposures can have negative effects on plant germination and/or plant growth.⁴⁷

Recently, more studies have started to test the toxicity of plant-based bioplastics such as PLA, as they become more widely used in different consumer applications. Although no studies to date have tested the toxicity of tea bags, robust conclusions can be drawn from other scientific literature on the impacts of bioplastics on soil biota. Bioplastics can delay the germination of seeds as well as inhibit or stimulate plant growth, due to stress.⁴⁸ Also, earthworms exposed to PLA debris, mixed with composts, were able to ingest PLA microplastics and this had a negative effect on mortality at relatively low concentrations.⁴⁹ Further to this, a recent Communication from the EU Commission underlines that prevention of soil contamination is central to the EU soil strategy.⁵⁰

- (2) **Principle 2- Likely impact of the CCPC's action:** The CCPC has, in the past, expressed concerns about the issue of greenwashing through its newsletters.⁵¹ By taking action against Tesco for falsely labelling its products as “biodegradable”, the Commission will be seen to be taking an active role in addressing this crucial issue. In the light of Tesco's presence as an Irish market leader, the Commission's actions would go beyond this particular claim and send a message to other retailers that any sort of biodegradability claim must be robust. We encourage the Commission to follow through on its commitments to tackle unsubstantiated environmental claims.
- (3) **Principle 3- Strategic significance:** The issue of tackling greenwashing has become a key goal at EU policy level, highlighted by proposed amendments of the Unfair Commercial Practices Directive. The CCPC's mission is to make markets work better for consumers and businesses,⁵² but this is not possible when large retailers, such as Tesco,

⁴⁵ Ji, Z., et al. 'Effects of pristine microplastics and nanoplastics on soil invertebrates: A systematic review and meta-analysis of available data.' (2021) *Science of the Total Environment*, 788, 147784. <https://doi.org/10.1016/j.scitotenv.2021.147784>

⁴⁶ Li, L., et al. 'Effective uptake of submicrometre plastics by crop plants via a crack-entry mode.' (2020) 3(11), *Nature sustainability*, 929-937. <https://doi.org/10.1038/s41893-020-0567-9>

⁴⁷ Mateos-Cárdenas, A., et al. 'Adsorption, uptake and toxicity of micro-and nanoplastics: Effects on terrestrial plants and aquatic macrophytes' (2021) *Environmental Pollution*, 284, 117183. <https://doi.org/10.1016/j.envpol.2021.117183>

⁴⁸ Liwarska-Bizukojc, E. 'Effect of (bio) plastics on soil environment: A review' (2021) *Science of The Total Environment*, 795, 148889. <https://doi.org/10.1016/j.scitotenv.2021.148889>

⁴⁹ Huerta-Lwanga, E., et al. 'Is the polylactic acid fiber in green compost a risk for *Lumbricus terrestris* and *Triticum aestivum*?' (2021) 13(5), *Polymers*, 703. <https://doi.org/10.3390/polym13050703>

⁵⁰ European Commission COM(2022) 682 final p. 2 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

⁵¹ Competition and Consumer Protection Commission, 'How can I make sure my 'eco' buys are genuine?' (1 June 2022) <<https://www.ccpc.ie/consumers/2022/06/01/how-can-i-make-sure-my-eco-buys-are-genuine/>> accessed 28 January 2023.

⁵² Competition and Consumer Protection Commission, 'About Us' <<https://www.ccpc.ie/business/about/about-us/>> accessed 28 January 2023.

are making unsubstantiated and false environmental claims in order to confer upon themselves a competitive advantage. By taking action against these big retailers, the Commission will be acting in accordance with its missions and priorities as well as sending a much needed signal to all companies across Ireland. It is important for consumers to see that the CCPC is taking active steps to combat greenwashing so as to ensure that consumer confidence in environmental claims can be maintained. Otherwise, customers are likely to get discouraged from taking an active part in this country's move towards a circular economy.

- (4) **Principle 4- Risks, resources and costs:** This report places the CCPC in a fortunate position as all required evidence is presented herein in a coherent manner, alongside an account of the relevant legislation. The CCPC will not have to incur additional costs in investigating Tesco's biodegradability claims, as Dr. Mateos-Cárdenas' peer-reviewed field study establishes that Tesco's biodegradability claims are unsubstantiated. The CCPC needs only to utilise its relevant powers, which will undoubtedly have the effect of dissuading other retailers from following Tesco's lead.

4. The product at issue

This report is supported by the peer-reviewed findings of Dr. Alicia Mateos-Cárdenas, Postdoctoral Researcher at the School of Biological, Earth and Environmental Sciences, University College Cork.⁵³ The findings of Dr. Mateos-Cárdenas concern the fate of petroleum-based and plant-based tea bags exposed to environmental soil conditions for a period of one year.⁵⁴

The aim of Dr. Mateos-Cárdenas's experiment was to test and compare the degradation of tea bags of different brands commonly found in Irish retail outlets. A range of tea brands that offer their products in tea bags were carefully chosen on the basis of popularity in the Irish market and in order to select a range of materials, covering both petroleum-based and plant-based products.⁵⁵ Tea bags from a total of eight different brands were purchased from three different supermarkets in Cork City during November 2020.⁵⁶ *Tesco Finest Green Jasmin Pyramid Tea – 15S 30G* was amongst the products used in this field study.

In total, four soil degradation experiments were set up for a duration of 3 weeks, 3.5, 6 and 12 months. Surface changes, polymeric composition and dry weight were measured before and after each time point. To investigate the process of degradation over time, individual tea bags were buried in soil at approximately 20 cm depth using 36-hole seedling trays placed randomly in grass-free garden soil.⁵⁷ Tea contents were removed from all tea bags prior to any tests by cutting a small hole in the top corner. A single empty tea bag was placed in each hole. Therefore, four replicates (four samples per tea bag brand, one per hole) were run per tray and timepoint. As a control, brown paper bags and plastic bags were cut and buried individually.⁵⁸

⁵³ Mateos-Cárdenas, A. 'Fate of petroleum-based and plant-based teabags exposed to environmental soil conditions for one year' (2022) *Frontiers in bioengineering and biotechnology*, 1579. <https://doi.org/10.3389/fbioe.2022.966685>.

⁵⁴ *Ibid*, pg. 2.

⁵⁵ *Ibid*, pg. 2.

⁵⁶ *Ibid*, pg. 2.

⁵⁷ *Ibid*, pg. 2.

⁵⁸ *Ibid*, pg. 2.

Each tray was completely buried for 3 weeks (Tray 1), 2.5 months (Tray 2), 6 months (Tray 3), and 12 months (Tray 4) to allow real environmental degradation processes to take place. Therefore, during this time (November 2020 –November 2021), the samples were exposed to authentic Irish conditions. According to data gathered by the Irish meteorological Service, Met Éireann, at Cork Airport (situated 8km from the experiment location), the samples were exposed to an annual average of 110.97 ± 19.96 mm of total rainfall, an annual average of $9.89 \pm 1.12^{\circ}\text{C}$ temperature and an annual average $9.67 \pm 1.27^{\circ}\text{C}$ 10 cm soil temperature at 9:00 a.m. UTC.⁵⁹

One of the main findings of the study shows that, after 12 months in soil, tea bags made entirely of PLA (bioplastic), which were marked as completely biodegradable, were found completely intact in the soil.⁶⁰ The tea bag concerned is *Tesco Finest Green Jasmin Pyramid Tea – 15S 30G*.

The below figures complement the above findings by showing images of the absence of biodegradation of such tea bags for at least the whole duration of the study (Figures 1 and 2) and the dry weight of these tea bags which, contrary to all the others, remain constant overtime as a sign of no degradation (Figure 3).⁶¹

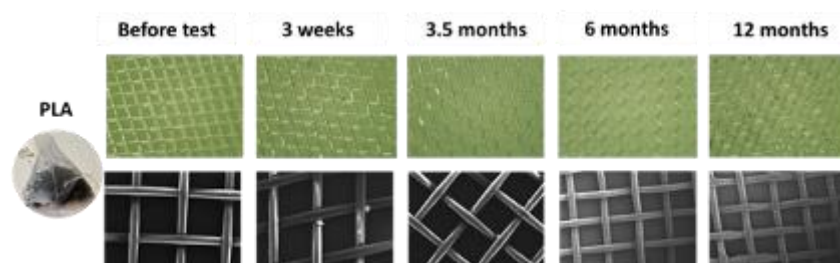


Figure 4. Light microscopy (top) and scanning electron microscopy (SEM) (bottom) photos of a section of the PLA tea bags overtime.⁶²



Figure 5. Image of a *Tesco Finest Green Jasmin Pyramid Tea 15S 30G* teabag, made of the bioplastic PLA, being recovered completely intact after 12 months in soil.

⁵⁹ Ibid, pg. 2.

⁶⁰ Ibid, pg. 4.

⁶¹ Ibid, pgs. 5 & 6.

⁶² Ibid, pg. 5.

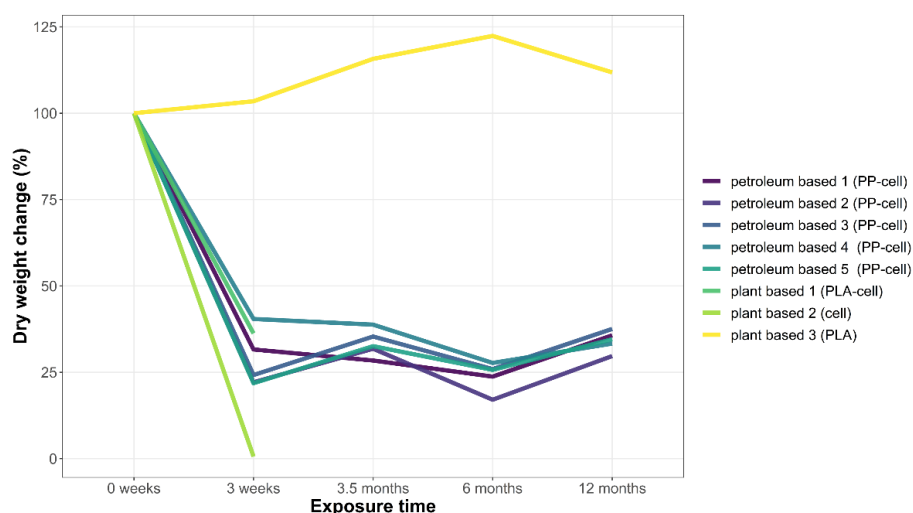


Figure 6. Dry weight change (%) of teabags over time. In this study, *Tesco Finest Green Jasmin Pyramid Tea 15S 30G* teabags (yellow line) were the only ones in which their dry weight was observed to remain relatively constant overtime, indicating no biodegradation of its material.⁶³

In light of the evidence presented above, and the common understanding of “biodegradability” as outlined in Section 5 of this report, the CCPC is provided with direct and convincing evidence that Tesco’s claim of biodegradability for the relevant product is not only false, but also misleading, unsubstantiated and contrary to Irish and EU consumer protection legislation.

5. Defining “biodegradability”

Currently, there is no EU or Irish legislation on standards for bioplastics and other bio-based products. Nevertheless, there is a common understanding, and a reasonable expectation by consumers, that short-term single-use products labelled as “biodegradable” should not persist in the environment for any significant amount of time.

To determine a reasonable timeframe and degradation process, a variety of standards on biodegradable plastics issued by authoritative international, regional and national standardisation organisations⁶⁴ have been analysed and are made available in appendix I of this report. Summarising these standards, it may be concluded that the concept of ‘biodegradability’ comprises of 2 characteristics: (1) the microbial conversion of all its organic constituents to carbon dioxide (CO₂) (or carbon dioxide and methane in conditions where oxygen is not present), new microbial biomass and mineral salts, (2) within a timescale short enough not to lead to lasting harm or accumulation in the open environment.

Determining ‘a timescale short enough not to lead to lasting harm or accumulation in the open environment’:

In the case of single-use teabags, taking into account the existing standards as well as the purpose of the product,⁶⁵ a reasonable consumer would not expect the product to still be intact

⁶³ Ibid, pg. 6.

⁶⁴ European Bioplastics e.V. Fact Sheet Bioplastics – Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022; European Environment Agency ‘Biodegradable and compostable plastics – challenges and opportunities’ (2020) <https://www.eea.europa.eu/publications/biodegradable-and-compostable-plastics> accessed 9 February 2023.

⁶⁵ See Appendix I for further details.

in the soil after 12 months, as underlined by the online consumer review on Tesco’s website.⁶⁶ Additionally, as the teabag did not show any sign of disintegration, there is reason to believe that it will persist for much longer in the environment. Assuming that an average consumer drinks two cups of tea per day, this would already lead to the accumulation of over 700 teabags in the (home) compost bin or in the garden soil for more than a year. Therefore, in terms of short-term single-use daily products, the reasonable timescale for biodegradability would have to be an absolute limit of one year.⁶⁷ In reality, teabags labelled as ‘biodegradable’ should only take a couple of weeks or months to biodegrade- demonstrated by Dr. Alicia Mateos-Cárdenas’ study-, but ideally shorter than one year. The only sort of plastic products which are intended to last in the soil for a period in excess of 12 months are those designed to be used in agricultural practices where it is important for the plastics to remain stable for a long period of time.

Lastly, it should be noted that the European Commission considers it necessary to ‘always specify the receiving open environment for which [plastics labelled as “biodegradable”] are intended and the required timeframe for their biodegrading, in terms of weeks, months or years’ to avoid misleading consumers.⁶⁸ It even states that ‘claims, including in the form of labels, should not be made on the biodegradation of litter-prone products’.⁶⁹ This is something with which Tesco has failed to comply, as demonstrated by this report.

In light of the above, the marketing of any teabag as ‘biodegradable’, even though it does not show any signs of disintegration within a year in garden soil, constitutes a misleading commercial practice.

6. Current Legal Regime

The concept of ‘greenwashing’ is not explicitly referred to within our consumer protection laws. Despite this, there are avenues under the current Irish legislative regime which provide consumers with the means to tackle false or misleading claims, as well as false or misleading advertisements made by traders engaging in commercial practices.

Protection against misleading claims- Consumer Protection Act 2007:

The most important piece of Irish legislation which directly addresses the issue of greenwashing is the Consumer Protection Act (CPA) 2007, which gives effect to the 2005 EU Unfair Commercial Practices Directive (Directive No. 2005/29/EC). While the term “greenwashing” itself is not explicitly referenced in the CPA, it prohibits “misleading” practices, under which ‘greenwashing’ claims fall.

Relevant Definitions:

A “commercial practice” is defined in s.2(1) of the 2007 Act as ‘any conduct (whether an act or omission), course of conduct or representation by the trader in relation to a consumer transaction, including any such conduct or representation made or engaged in before, during or

⁶⁶ Even though the review relates to another flavour (Peppermint Leaves), the expectation regarding the tea bag is the same https://www.tesco.ie/groceries/en-IE/products/278777046?selectedUrl=https://digitalcontent.api.tesco.com/v2/media/ghs/e20e1ef0-1543-4f6c-8d89-2aed9df1e578/24e13f5e-0fb0-4df9-b0c9-3382ef62dd39_667135509.jpeg?h=540&w=540 accessed 1 February 2023.

⁶⁷ See Appendix I for more details.

⁶⁸ European Commission COM(2022) 682 final p. 11 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

⁶⁹ European Commission COM(2022) 682 final p. 11 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

after the consumer transaction’.⁷⁰ The commercial practice at issue involves Tesco’s act of including the term “biodegradable” on the packaging of its Tesco Finest teabags.

Alongside this, s.2(1) defines “goods” as ‘real or personal property of any nature or description’, including ‘(h) any description of interest (present or future, vested or contingent)...’. There is no doubt that the relevant products - i.e. *Tesco Finest Teabags*- fall within this broad definition.

Prohibition of “misleading commercial practices”:

S.42 of the CPA 2007 prohibits misleading commercial practices.⁷¹ According to section 43, ‘a commercial practice is misleading if it includes the provision of false information in relation to any matter set out in subsection (3) and that information would be likely to cause the average consumer to make a transactional decision that the average person would not otherwise make’.⁷² The matters set out in s.43(3) include false information relating to the main characteristics of a product, including ‘(v) the results to be expected from it’, ‘(viii) its composition, ingredients, components or accessories’, and ‘(xiii) the results and material features of tests or checks carried out on the product’. S.47 provides that a trader who engages in any misleading commercial practice in s.43 commits an offence.

As described above, Tesco engaged in a misleading commercial practice by falsely describing its *Tesco Green Jasmin Pyramid Teabags* as “biodegradable”. This false description relates to one of the main characteristics of the product, including the results expected from it (i.e. biodegradability), and the composition or components of the product (i.e. that it is composed of a material which is biodegradable in nature). As noted in the beginning of this report, this practice is especially harmful because many Irish consumers want to reduce their environmental impact, which is made increasingly hard when constantly faced with ‘greenwashing’ claims. Consumers think about how to recycle or correctly discard their daily products and feel frustrated when traders, including Tesco, make false claims:



Figure 7: Consumer Complaint on Tesco.ie website⁷³

Even though the teabags which are the subject of this review are of a different flavour, they are from the same product line as the *Tesco Finest Green Jasmin Pyramid Tea - 15S 30G* and the

⁷⁰ Consumer Protection Act 2007, s 2(1).

⁷¹ Ibid, s 42.

⁷² Ibid, s 43.

⁷³ https://www.tesco.ie/groceries/en-IE/products/278777046?selectedUrl=https%3A%2F%2Fdigitalcontent.api.tesco.com%2Fv2%2Fmedia%2Fghs%2Fe20e1ef0-1543-4f6c-8d89-2aed9df1e578%2F24e13f5c-0fb0-4df9-b0c9-3382ef62dd39_667135509.jpeg%3Fh%3D540%26w%3D540 accessed 28 January 2023.

impact on the consumer is the same. More so, it raises further concern that the entire line of *Tesco Finest* teabags are not biodegradable, despite Tesco's claims to the contrary.⁷⁴

To sum up, out of multiple tea packages in supermarket shelves, a product which suggests it will leave no trace or harm to the environment will sound preferable to today's consumer. Therefore, this practice is likely to cause the average consumer to make a transactional decision that the average person would not otherwise make. By engaging in this misleading commercial practice, Tesco committed an offence pursuant to s.47 of the 2007 Act.⁷⁵

Protection against false or misleading advertisements- ASAI:

The code of the Advertising Standards Authority for Ireland (ASAI), known as the *Code of Standards for Advertising and Marketing Communications in Ireland*, provides that advertisements and promotions must be "legal, decent, honest and truthful".⁷⁶ S.15 of the Code distinguishes between two different types of environmental claims made by advertisers: absolute and qualified claims.⁷⁷ For the purposes of this report, the claim made by Tesco is an "absolute" environmental claim which, according to the Code, should be 'supported by a high level of substantiation' and should not be 'used without qualification unless advertisers can provide substantiation that their product causes no environmental damage'.⁷⁸

Tesco's claim of biodegradability is not supported by a high level of substantiation as Tesco does not include any details on its packaging or website about how the conclusion was reached that the relevant teabags are biodegradable. Instead, it appears as though the term was carelessly included on the product's packaging to give the impression that the product will have no effect on the environment. To add to this, Tesco is not in a position to substantiate that this product causes no environmental damage as the teabags have been proven not to biodegrade.⁷⁹ Since the products do not biodegrade, encouraging consumers to dispose of them in the natural environment by labelling them as "biodegradable" will undoubtedly have adverse effects on the environment.

Consumer products must be "as described"- Sales of Goods and Supply of Services Act 1980:

It is also notable that the claim of biodegradability made by Tesco of its *Green Jasmin Pyramid Tea* is also in breach of the Sale of Goods and Supply of Services Act 1980 which requires that products be 'in conformity with the contract'. This implies that the products must be 'as described' so as to match any description given in an advert or other information provided by the seller at the time of sale, including information provided to the consumer by means of the product's packaging.

⁷⁴ While this review relates to a different flavour of 'Tesco Finest teabags' than the one which subject to this report (i.e. the jasmine flavoured teabags), a recent analysis by Dr. Alicia Mateos-Cárdenas shows that both products are made from the same material. This is indicative that the entire 'Tesco Finest Teabags' line is made from PLA.

⁷⁵ Ibid, s 47.

⁷⁶ Advertising Standards Authority of Ireland, 'ASAI Code 7th edition' (effective from March 2016) section 3, principle 3.2 < <https://www.asai.ie/asaicode/section-3-general-rules/> > accessed 28 January 2023.

⁷⁷ Ibid, section 15, principles 15.2 & 15.3.

⁷⁸ Ibid, section 15.2.

⁷⁹ Mateos-Cárdenas, A. (2022). 'Fate of petroleum-based and plant-based teabags exposed to environmental soil conditions for one year' *Frontiers in bioengineering and biotechnology*, 1579. <https://doi.org/10.3389/fbioe.2022.966685>

7. Our request to the CCPC

Section 10(1) of the Competition and Consumer Protection Act, 2014 details the functions of the Commission. This section states that the Commission shall have the following functions: (1) to promote and protect the interests and welfare of consumers,⁸⁰ (2) to carry out an investigation, either on its own initiative or in response to a complaint made to it by any person, into any suspected breach of the relevant statutory provisions, that may be occurring or has occurred,⁸¹ (3) to enforce the relevant statutory provisions,⁸² and (4) to encourage compliance with the relevant statutory provisions, which may include the publication of notices containing practical guidance as to how those provisions may be complied with.⁸³

In light of these provisions, we request that the CCPC acts in accordance with its statutory functions by taking the following action:

- The Commission should, in the light of its obligation to protect consumer interests and to carry out investigations, seek clarifications from Tesco on: (a) what basis the claim of biodegradability was made; and (b) what failure of due diligence led to the making of this misleading claim. We believe it is in both the Commission's interest, as well as the public interest, to understand what went wrong here, systemically.
- In light of its role in enforcing the relevant statutory provisions, the Commission should request that Tesco remove the term "biodegradable" from the packaging of its product *Tesco Finest Green Jasmine Pyramid Tea - 15S 30G*, as it amounts to "greenwashing" and it gives Tesco an unfair competitive advantage. Should the Commission fail to do this, it will be acting contrary to its own mission which is 'to make markets work better for consumers and businesses'.⁸⁴
- The Commission should publish a notice containing practical guidance for companies when it comes to making environmental claims to ensure that such claims are substantiated and that they do not amount to acts of "greenwashing".

While the CCPC considers our report, we intend to engage with the Consumer Association of Ireland with a view to introducing our report into its monthly publication *Consumer Choice*. On top of this, we intend to engage with the media about Tesco's misleading environmental claims.

We understand that the Commission has, in the past, released numerous newsletters alerting consumers about the issue of "greenwashing". We commend the Commission for its continuous efforts to tackle this persistent issue by raising consumer awareness. We hope now, in the light of our report, that the Commission might take practical steps to tackle this clear example of "greenwashing", which poses a risk to Ireland's commitment to foster a circular economy. This issue does not merely relate to teabags. It is contrary to the whole consumer protection *acquis* to stand idly by as traders made unsubstantiated environmental claims, which not only cause environmental harm, but which negatively affect consumer trust in these companies and their products.

⁸⁰ Competition and Consumer Protection Act 2014, s 10(b).

⁸¹ Ibid, s (1)(c).

⁸² Ibid, s 1(d).

⁸³ Ibid, s 1(e).

⁸⁴ Competition and Consumer Protection Commission 'About Us' <<https://www.ccpc.ie/business/about/about-us/>> accessed 28 January 2023.

Appendix I

The purpose of this appendix is to demonstrate that although there is no Irish, EU or international legislation on standards for bioplastics and other bio-based products, authoritative international, regional and national standardisation organisations have issued a variety of standards on biodegradable plastics⁸⁵, with none of which the *Tesco Finest Jasmine Teabags - 15S 30G* would comply.

Title	Description
<u>Biodegradability</u>	
Standards for biodegradability in soil: EN 17033, Vinçotte “Bio products - degradation in soil”	EN 17033 is only applicable for agricultural applications like mulch film in which the lifecycle and purpose of the bioplastic is meant to last in the environment but also demands at least 90% degradation in two years at preferably 25 degrees. ⁸⁶ The (former) ⁸⁷ Vinçotte standard adapts the industrial norms EN 13432/EN14995 for a degradation process in soil, also requiring at least 90% biodegradation in two years at ambient temperatures. ⁸⁸
Labels for biodegradability in soil: OK biodegradable soil/TÜV Austria Soil, DIN-geprüft biodegradable in soil	The label OK biodegradable soil/TÜV Austria soil is awarded for products in compliance with the “bio products - degradation in soil” scheme. ⁸⁹ The DIN-geprüft biodegradable requires accordance with the (since withdrawn) CEN/TR 15822. ⁹⁰
SAPEA Report: ‘Biodegradability of plastics in the open environment’ (2020)	In a recent report published by Science Advice for Policy by European Academies (SAPEA), the term “plastic biodegradation” is defined in light of the relevant scientific evidence as follows: “Biodegradation of plastic is understood as the microbial conversion of all its organic constituents to carbon dioxide (CO ₂) (or carbon dioxide and methane in conditions where oxygen is not present), new microbial biomass and mineral salts, within a timescale short enough not to lead to lasting harm or accumulation in the open environment”. ⁹¹ According to SAPEA, the

⁸⁵ European Bioplastics e.V. Fact Sheet Bioplastics – Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022; European Environment Agency ‘Biodegradable and compostable plastics – challenges and opportunities’ (2020) <https://www.eea.europa.eu/publications/biodegradable-and-compostable-plastics> accessed 9 February 2023.

⁸⁶ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

⁸⁷ Vinçotte Certifications has been purchased by TÜV Austria see < <https://www.nature-pack.com/vincotte-certifications-purchased-by-tuv-austria-group/>> accessed 9 February 2023; < <https://www.tuv-at.be/green-marks/>> accessed 9 February 2023.

⁸⁸ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

⁸⁹ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 9 February 2023.

⁹⁰ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

⁹¹ European Commission, Directorate-General for Research and Innovation, *Biodegradability of plastics in the open environment : executive summary*, Publications Office, 2020, <https://data.europa.eu/doi/10.2777/66315>

	breakdown of the plastic into small units is a required and necessary, but by itself insufficient, step to claim plastic biodegradation.⁹² In the context of this SAPEA report, plastic biodegradation is considered a desirable process that ensures that the plastic used in specific applications does not persist after its use in the open environment.⁹³ The definition of plastic biodegradation provided above reflects this view; the definition clearly delineates ‘biodegradation’ from purely ‘biodegradation’ processes.
Composting	
Standards for industrial composting and anaerobic digestion: EN 13432, EN 14995, ISO 18606 and ISO 17988	The European standards EN 13432 (limited to packaging) and EN 14995 (general) on requirements for recovery through biodegradation and compostability demand at least 90% disintegration after twelve weeks, 90% biodegradation (CO ₂ evolution) in six months, and include tests on ecotoxicity and heavy metal content. The same applies to packaging standard ISO 18606 “Packaging and the environment - Organic recycling” and the general ISO 17088 “Specifications for compostable plastics”. ⁹⁴
Labels for industrially compostable products: Cré Compostable Certification, OK Compost/TÜV Austria Industrial, DIN-geprüft Industrial Compostable, CIC Compostable, Seedling Logo	The Cré Compostable, ⁹⁵ OK Compost label/TÜV Austria Industrial ⁹⁶ and the DIN-geprüft industrial compostable label ⁹⁷ are based on the EN 13432 standard, while the Seedling Australia Logo is based on the Australian standard AS 4736, which is similar to the EN 13432 standard but additionally requires a worm test. ⁹⁸
Standards for home composting: AS 5810, OK compost home certification scheme, NF T 51-800, EN 17427	For now, there is no general international standard for home compostability, so only the few existing national ones can be referred to: ⁹⁹ The Belgian OK compost home certification scheme and the French standard NF T 51-800 “Plastics - Specifications for plastics suitable for home composting” require at least 90 % degradation in 12 months at ambient temperature. ¹⁰⁰ Similarly, the Australian norm

⁹² Ibid, pg. 35.

⁹³ Ibid, pg. 36.

⁹⁴ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

⁹⁵ <https://www.compostable.ie/how-it-works/> accessed 8 February 2023.

⁹⁶ <<https://www.tuv-at.be/green-marks/>> accessed 9 February 2023.

⁹⁷ <<https://www.ecolabelindex.com/ecolabel/ok-compost>> accessed 14 November 2022;

<<https://www.dincertco.de/din-certco/en/main-navigation/products-and-services/certification-of-products/environmental-field/industrial-compostable-products/>> accessed 14 November 2022.

⁹⁸ <<https://www.adventpac.com/resources/australian-compostability-standards>> accessed 14 November 2022.

⁹⁹ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

¹⁰⁰ European Bioplastics e.V. Fact Sheet Bioplastics - Industry standards & labels https://docs.european-bioplastics.org/2016/publications/fs/EUBP_fs_standards.pdf accessed 14 November 2022.

	AS 5810 “Biodegradable plastics - biodegradable plastics suitable for home composting” requires a minimum of 90% biodegradation in 12 months, but additionally demands no toxic effects to compost, plants and earthworms and more than 50% organic material used in the product.¹⁰¹ On EU level, the European standard for plastic bags suitable for treatment in well-managed home composting installations EN 17427 refers to a home composting cycle of at least 12 months¹⁰² but there is no European home composting standard for all other types of products.¹⁰³
Labels for home compostability: OK Compost HOME/ TÜV Austria Home¹⁰⁴, DIN-geprüft Home and Garden Compostable,	The OK Compost Home/TÜV Austria Home label proves to be of little use for determining a reasonable expectations on home compostability as the TÜV Austria website only clarifies that the OK compost HOME label “is not based on one standard but is the basis for several standards”, such as the Australian AS 5810 and the French NF T 51800.¹⁰⁵ Other websites state that the OK Compost HOME is based on EN 14995 and EN 13432 requirements¹⁰⁶, which is at least confusing since those are the industrial standards (see above). What the actual requirements are for the awarding of this label remain unclear. This adds to the difficulties consumers face when trying to understand what ‘biodegradable’ means and whether or not bioplastics can be thrown into home compost. The DIN-geprüft Home and Garden compostable is based on the NF T 51-800.¹⁰⁷

From the above standards, the only ‘definition’ that refers directly to the term ‘biodegradable’ and that can be regarded as applicable to teabags is the definition introduced in the SAPEA report. It is also noteworthy that this Scientific Group has been tasked by the European Commission to conduct a study that serves as the basis for further policy development.¹⁰⁸ As such, for the benefit of this report “[b]iodegradation of plastic is understood as the microbial conversion of all its organic constituents to carbon dioxide (CO₂) (or carbon dioxide and methane in conditions where oxygen is not present), new microbial biomass and mineral salts,

¹⁰¹ <<https://www.adventpac.com/resources/australian-compostability-standards>> accessed 14 November 2022.

¹⁰² <<https://cdn.standards.iteh.ai/samples/68226/58340217524841f9984e61338c6549a3/SIST-EN-17427-2022.pdf>> accessed 9 February 2023.

¹⁰³ European Commission COM(2022) 682 final p. 3 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

¹⁰⁴ <<https://www.tuv-at.be/green-marks/>> accessed 9 February 2023.

¹⁰⁵ <<https://www.tuv-at.be/home/>>, <<https://www.tuv-at.be/green-marks/certifications/ok-compost-seedling/>> accessed 14 November 2022; see also <<https://bestpackagesolutions.net/article/what-is-ok-compost-certification-i00054i1.html>> accessed 14 November 2022 and <<https://hellotera.com/tuv-ok-compost-certification/>> accessed 14 November 2022.

¹⁰⁶ <<https://www.ekowarehouse.com/certification/ok-compost-home>> accessed 14 November 2022; <<https://www.weber-packaging.de/ok-compost-home/>> accessed 14 November 2022.

¹⁰⁷ <<https://www.dincertco.de/din-certco/en/main-navigation/products-and-services/certification-of-products/environmental-field/products-made-of-compostable-materials-for-home-and-garden-composting/>> accessed 14 November 2022.

¹⁰⁸ European Commission COM(2022) 682 final p. 8 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

within a timescale short enough not to lead to lasting harm or accumulation in the open environment”¹⁰⁹.

To determine the reasonable expectation any customer would have regarding the timescale for biodegradation, the existing standards must be taken into account, as well as the purpose and use of the relevant product and the performance of comparable products.

- The EN 17033 and Vinçotte “Bio-products- degradation in soil” allow for biodegradation within two years, but EN 17033 exclusively applies to agricultural applications like mulch film whose whole product purpose depends on stability in the open environment for an extended period of time. Read in conjunction, it would be absurd to declare the Vinçotte standard with parallel requirements applicable to teabags, whose useful purpose ends after approximately 3 minutes.¹¹⁰
- All standards regarding industrial composting require significant degradation within 6 months.
- The general standards regarding home composting require significant degradation within 12 months. There is only one divergence; the EU home composting standard applying to carrier bags (EN 17427) which considers a timeframe of at least 12 month. The fact that this has been explicitly limited to carrier bags and that the EU Commission acknowledges that there is no standard for home composting¹¹¹ demonstrates that EN 17427 is not applicable to other products. Therefore, the existing standards suggest a reasonable expectation of a maximum of 12 months.

In conclusion, taking into account that the other teabags examined in Dr. Mateos-Cárdenas’ study¹¹² which were labelled as “biodegradable” showed significant degradation from as little as 3 weeks and had completely degraded after 3.5 months, the conclusion is justified that a consumer should reasonably expect their teabags to biodegrade within a maximum period of 12 months, and arguably much less.

¹⁰⁹ European Commission, Directorate-General for Research and Innovation, *Biodegradability of plastics in the open environment : executive summary*, Publications Office, 2020, <https://data.europa.eu/doi/10.2777/66315>

¹¹⁰ The European Commission goes even further implying that the use of biodegradable plastics has to be limited to applications where a renunciation of plastics is not feasible COM(2022) 682 final p. 8 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

¹¹¹ European Commission COM(2022) 682 final p. 3 https://environment.ec.europa.eu/system/files/2022-12/COM_2022_682_1_EN_ACT_part1_v4.pdf accessed 9 February 2023.

¹¹² Mateos-Cárdenas, A. (2022). ‘Fate of petroleum-based and plant-based teabags exposed to environmental soil conditions for one year’ *Frontiers in bioengineering and biotechnology*, 1579. <https://doi.org/10.3389/fbioe.2022.966685>