Origin Green IRELAND

The Origin Green Ambassadors Global Insights Reports 2021

SUSTAINABLE DIETS: A KEY TO FOOD SYSTEM TRANSFORMATION

Jude Bredin &
Róisín Murphy

BORD BIA
IRISH FOOD BOARD

Origin Green Ambassador Programme

Never has sustainability been so top of mind and globally important, and it is this convergence that has opened some important discussions among the global food industry. Bord Bia's Origin Green Ambassador programme is designed to open and facilitate these conversations and the role of Irish sustainability initiatives in export markets.

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In this series of global insights reports, the Ambassadors bring you their insights on some of the most pressing sustainability issues and opportunities facing our industry.

Jude Bredin

Jude's first placement was with Sodexo in London where he managed their food waste prevention programme rollout and introduced a new food waste app. He also worked with the WWF as a partner to implement a sustainable diets project across university campuses. He spent his last 2 placements with Mars in the UK as a Sustainable Sourcing Specialist, managing the execution of the dairy sustainable sourcing strategy with key suppliers. Jude also managed the coordination of internal stakeholders in a global GHG data collection project.

www.bordbia.info/ucd-2021

Róisín Murphy

Róisín's first placement was with Nestlé in Switzerland as a Sustainability Analyst where she developed a strategic global roadmap for net zero dairy and a calculation model to predict cost/payback for on-farm carbon reduction interventions. Her second placement was with the Hilton Food Group in the UK as a Sustainability Specialist, working on decarbonisation roadmaps for beef suppliers and communication framework on the role of animal proteins in sustainable diets. Róisín's final placement was with Tesco UK as a Responsible Sourcing Specialist defining a sourcing strategy for 'better' meat and dairy.

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Introduction

Sustainable diets are a key lever in transforming our food system toward one that ensures nutritious affordable food, restores and protects nature, and is beneficial for human and planetary health now and into the future. The need for this transition is urgent as we look to feed a growing global population within the limits of our planetary resources[1]. It is predicted that 70% more food will be needed to meet demand[2]; accessibility and affordability will be key considerations, as most growth will be in developing countries.

The negative impacts of our current food production systems are well documented.[3] Food systems account for 30% of all Green House Gas (GHG) emissions and are the number one driver of biodiversity loss, according to a 2021 Chatham House report.[4] Despite currently producing more food than ever, the number of hungry and malnourished people in the world continues to grow and at the same time, global obesity levels continue to rise[5] – so malnourishment at both ends of the spectrum is a burgeoning problem.

The transition to sustainable diets presents many challenges for food companies but it also provides a platform of value-generating opportunities to improve the health of both consumers and the planet while creating new value across the supply chain. Sustainable foods systems are predicted to generate trillions of dollars, through the development of more resourceful supply chains with reduced inefficiencies.[6]

In this report, we will provide an overview of industry and policy action that is underpinning the shift to sustainable diets. We will focus on three keys areas that Irish companies can leverage to assess and understand their opportunities within this evolution; balancing human and planetary health, the expansion of the protein menu and the critical role of consumer engagement.

1 Planetary Boundaries, https://www.stockholmresilience.org/research/planetary-boundaries.html

2 http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Investment.pdf

3 Environmental impacts of food production, https://ourworldindata.org/environmental-impacts-of-food

4 https://www.chathamhouse.org/2021/02/food-system-impacts-biodiversity-loss

5 https://globalnutritionreport.org/reports/2020-global-nutrition-report/

6 Actions to transform food systems under climate change. https://ccafs.cgiar.org/resources/publications/actions-transform-food-systems-under-climate-change

Challenges to the transition to Sustainable Diets

Exactly what do we mean by the term 'sustainable diet'? The UN Food & Agriculture Organization (FAO) defines it as: "Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimising natural and human resources." [7]

Within a sustainable diet, we must balance numerous variables and dimensions of diet, which may not be compatible, to achieve nutritional adequacy, economic affordability and cultural acceptance while ensuring all systems respect the environment and ecosystems.[8] Currently, there is limited advice on how to select parameters or use the available data in models that will result in the most sustainable dietary advice across all dimensions.

To date, the focus has been on reducing the environmental impacts in food production. Increasingly, policy now puts an emphasis on sustainable consumption as a key pillar in transitioning to sustainable food systems. The UN Food Systems Summit 2021[9] highlighted this shift as a key action track and the EU Farm to Fork Strategy[10] has also highlighted sustainable food consumption as a strategic pillar. The EU ambition is to make the EU food system a global standard for sustainability.

7 FAO, 2010, Sustainable Diets and Biodiversity Directions and solutions for policy, research and action. http://www.fao.org/3/i3004e/i3004e00.htm

8 Mathematical Optimization to Explore Tomorrow's Sustainable Diets: A Narrative Review Adv. Nutr., 9 (2018), pp. 602-616 Accessed at:

9 United Nations, 2021 Action Tacks, https://www.un.org/en/food-systems-summit/action-tracks,

10 EU Farm to Fork Strategy https://ec.europa.eu/food/farm2fork_en,

A key recommendation for a more sustainable diet is one that contains less animal-sourced foods and more plant-based foods, conferring both environmental and human health benefits.[11] [12] [13] [14] According to a recent study from Oxford University, while the carbon footprint of animal-based foods differ depending on the production system, in almost all cases, the environmental impact of plant-based foods is less than the lowest-scoring animal production system.[15]

A key challenge to the reduction of animal products is the cultural and nutritional significance it has in diets globally, as well as the economic importance of animal farming in rural communities. The replacement of animal proteins with alternative proteins will result in a significant decrease in carbon emissions in diets. Achieving the recommended level of reduction, as advised by the EAT Lancet Report, is challenging, particularly as this relies on changing consumer purchasing behaviour. Consumers are using their diet to reflect their lifestyle choices and values. A recent IGD report[16] indicated that while 66% of consumers say they are making changes to make their diets healthier, there is clearly confusion about what this means, with consumers tending to overestimate how balanced their diet is.

11 Eating for 2 degrees. New and updated Livewell Plates. Summary report, revised edition. Available: https://www.wwf.org.uk/what-we-do/livewell,

12 Chatham House, 2021, https://www.chathamhouse.org/2021/02/food-system-impacts-biodiversity-loss

13 The EAT-Lancet Commission. Can we feed a future population of 10 billion people a healthy diet within planetary boundaries? https://eatforum.org/eat-lancetcommission/

14 Committee on Climate Change, 2019. Net Zero. The UK's contribution to stopping global warming. Available: https://www.theccc.org.uk/publication/net-zero-the-uks-contributiontostopping-global-warming/

15 Reducing food's environmental impacts through producers and consumers, Science (2018), https://science.sciencemag.org/content/360/6392/987,

16 IDG, 2021, Appetite for Change

There is also recognition that the reduction of animal-sourced foods should not come at the expense of human health, particularly in low income countries where lack of dietary diversity increases the importance of nutrient-rich animal foods as a source of protein and micronutrients.

It is also worth noting that studies investigating the carbon footprint of different dietary patterns, as opposed to studies comparing the carbon footprints of individual foods, have conflicting results on which consumption patterns yield the lowest overall carbon footprint. An Irish study, (Hyland et al. 2017), concluded that a culturally sustainable diet which included daily intakes of animal products and low intakes of processed foods had a lower carbon footprint than a diet that was considered nutritionally sustainable, i.e. 'flexitarian' style diet.[17]

Similarly, an Australian study found that diets with less processed foods have lower carbon footprints.[18] The 2017 Global Burden of Disease study also found that diets high in sodium and processed foods and low in grains and vegetables, were the main causes of diet-related disease and illness.[19]

Therefore, to understand the impacts of dietary changes, there is a need to consider what trade-offs are necessary to create a balance between diets that support human health and the environmental impacts of those diets. In 2018, there were only eight[20] countries worldwide with national dietary guidelines reflecting both the environmental and health implications of food. This lack of regulatory guidance increases the challenges for companies in defining where their products fit in a sustainable diet.

Economic growth is associated with increased consumption levels of animal products, so considering where population growth is occurring globally, there is an intensified need to develop production systems with reduced environmental impacts. The narrative used to describe sustainable diets is constantly evolving, the WWF are advocating a ***Planet Based Diet Approach***[21] while retailers such as Tesco are using the lens of ***Less and Better***.

17 The climatic impact of food consumption in a representative sample of Irish adults and implications for food and nutrition policy. Available: http://dx.doi.org.ucd.idm.oclc.org/10.1017/S1368980016002573

18 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3916862/

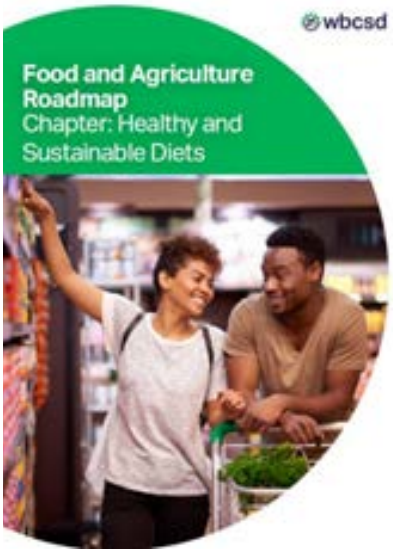
19 Measuring global health: motivation and evolution of the Global Burden of Disease Study. The Lancet, 390(2017), 1460-1464. https://pubmed.ncbi.nlm.nih.gov/28919120/

20 Sustainable and Healthy Diets: Reviewing existing dietary guidelines and identifying gaps for future action https://www.wbcsd.org/Programs/Food-and-Nature/Food-Land-Use/FReSH/Resources/Sustainable-and-Healthy-Diets

21 https://planetbaseddiets.panda.org/

How industry is embracing the transition to Sustainable Diets

Governments play a key role in facilitating the transition towards more sustainable diets. It is critical that policy and regulation create a balance between demand for more sustainable food and the ability of producers to adapt their systems to provide this. Investment in a just transition means that the technology, infrastructure, knowledge, skills and wellbeing of all those in the food value chain are considered, (Henderson, 2020).[22] At a global level, governments must announce clear recommendations and national dietary guidelines, which consider both health and environmental impacts of food.



NGOs are playing a leading role in generating pre-competitive science and roadmaps that companies can use to navigate this transition. At the end of 2020, the World Business Council for Sustainable Development **(WBCSD)** launched the Food and Agriculture Roadmap – Chapter on healthy and sustainable diets,[23] which lays out transformational targets, key action areas, and solutions urgently required to transform food systems to achieve environmental sustainability, equitable livelihoods, and healthy and sustainable diets for all. **The Eating Better Alliance**[24] brings together 60 civil society organisations to develop and accelerate action for less and better meat and dairy for health, environment, animal welfare and social justice.

Both academia and industry have acknowledged the need for radical reduction in the environmental impacts of food production. Research assessing the practical implications of system change and focusing on the development of better systems, as well as novel proteins and alternative foods are emerging from leading academic institutes such as Oxford University; Wageningen University, Teagasc and Meat Technology Ireland.

22 Reimaging Capitalism in a World on Fire, Henderson Rebecca, New York

23 https://www.wbcsd.org/Programs/Food-and-Nature/Food-Land-Use/FReSH/Resources/Food-Agriculture-Roadmap-Chapter-on-Healthy-and-Sustainable-Diets

24 https://www.eating-better.org/

Food companies are expanding their traditional offerings to cater for consumer demand for products they perceive as healthier for both them and the environment. Partnerships are key to this expansion and we see cross-industry collaborations and technology driving innovation.

Their response to delivering more sustainable diet options can be summarized in two points:

1. Developing alternative protein options to replace traditional animal-based foods.
2. Developing supply chains that produce animal proteins with enhanced nutrient density and reduced environmental impacts.

Leading global food companies have made public commitments to reduce their carbon and environmental emissions dramatically over the next 30 years. Plant-based proteins offer an opportunity to help build more sustainable food systems and importantly are an exciting growth opportunity to meet consumer demands for foods with lower environmental impacts. The alternative protein market offers huge opportunity for growth – in 2021 Unilever forecast €1 Billion in sales from plant-based meat & dairy alternatives by 2027.

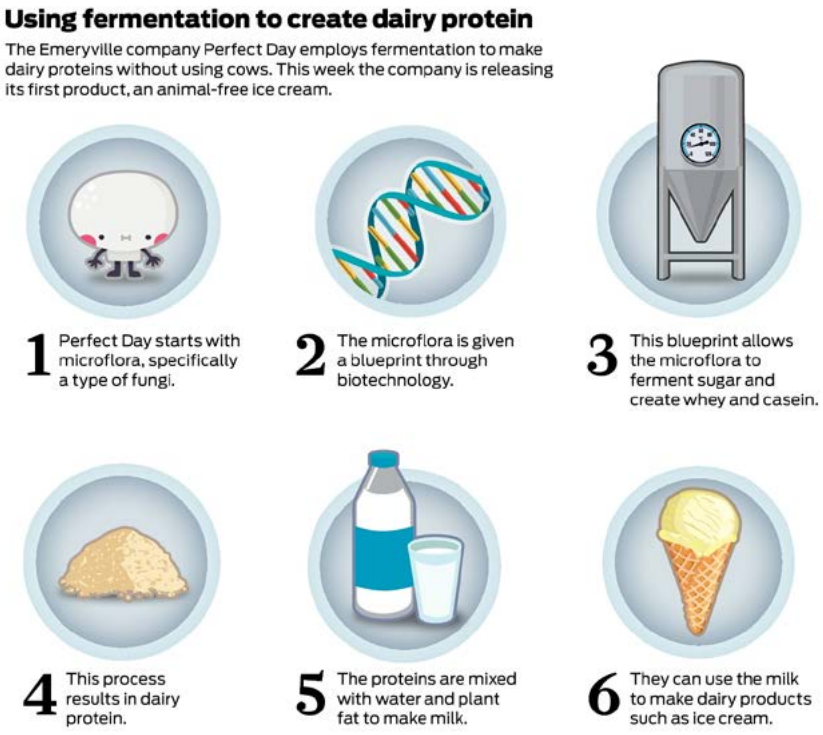
Global food corporations are responding to the sustainable diets challenge by aligning their future strategic growth plans with plant-based and alternative protein solutions. **Kerry Group** is developing solutions for their customers to optimise the sensory experience of plant-based and alternative proteins to equal real meat in terms of nutrition, taste, colour, and value.[25]

The increased association by consumers with non-animal foods as being healthier has led food companies, with traditional animal-based offerings, to develop alternative menu options to allow consumers to choose. In February 2021, **Beyond Meat** and **McDonald's** signed a 3-year global strategic partnership that will see further development of their plant-based menu options; McPlant. It is clear from this development that the world's largest beef burger restaurant chain recognises the growing trend for meat-free alternatives. Under the agreement, Beyond Meat and McDonald's will also explore co-developing options such as plant-based chicken, pork, and eggs for the McPlant range. At the same time, **YUM Brands** announced a similar agreement, looking at innovative new menu choices such as plant-based pizza toppings, chicken alternatives and taco fillings, for its collection of brand restaurants including KFC, Pizza Hut & Taco Bell.

25 https://www.kerrygroup.com/investors/investor-centre/agm/Kerry-Group-Annual-Report-2020.pdf

Advanced technologies are enabling the development of cell-grown meats, fermented proteins and even 3D printed animal proteins,[26] demonstrating an ability to produce animal foods without animals. While these protein alternatives are currently still out of reach based on cost, they could play an important role in sustainable food systems within the next ten years and are particularly attractive options for countries who have low food security.

Perfect Day Ice-Cream, a company founded in Cork, has developed a product identical to dairy protein in taste, texture and nutritional value.[27] The lab-grown product uses plant yeast and fermentation process to create a protein genetically identical to dairy protein. This ingredient can now be used to replace the traditional dairy protein that goes into making ice-cream and the Perfect Day sales pitch is that you no longer need the cow, or the associated emissions. This is very different from the current milk alternatives and substitutes on the market.



26 https://www.redefinemeat.com/

27 https://www.foodnavigator.com/Article/2021/01/28/Perfect-Day-gives-its-dairy-aisle-predictions-for-2030#

Retailers are responding to the consumer and NGO demands for more sustainable diets with public commitments to increase sales of plant-based products. In 2020, **Tesco UK** set a sales target to increases sales of plant-based alternatives by 300%[28]; **Albert Heijn** also committed to doubling their plant-based offering.[29] Social media and mobile apps are increasingly being used by consumer-facing brands and companies to engage consumers and demonstrate their own commitments to meeting the demand for more sustainable food. **Tesco** have a target to create a "Sustainable Shopping Basket," in conjunction with the **WWF**, which would provide metrics on the environmental impacts of products across 20 different categories, including consumer favourites such as burgers, sausages and readymeals. A key metric to the success of the project will be ensuring that products remain affordable for the end consumer. As a first step, in January 2021 Tesco published a report, co-authored with the British Dietetic Association, outlining how consumers should adapt their diets for improved health and a lower environmental impact.[30]

Retailers are entering partnerships with environmental organisations to accelerate their journey, through knowledge sharing and practical research to develop more sustainable food production. For example, **Sainsburys** are working with the Rivers Trust to improve water quality and **Sodexo**, the global food service company, have partnered with the WWF to reduce their environment impact while offering end consumers sustainable food choices.. Their "Low-Carbon" menu offerings seek to increase the number of sustainable proteins it offers as well as increasing access to plant-based food options. Education, raising awareness and point-of-sale information are used to encourage consumer choice. They have set a global target that 30% of all meals sold will be plant-based by 2025.

28 https://www.tescoplc.com/news/2020/tesco-commits-to-300-sales-increase-in-meat-alternatives/

29 https://vegconomist.com/food-and-beverage/dutch-supermarket-chain-albert-heijn-doubles-its-vegan-offerings-in-an-effort-to-meet-demand-in-the-netherlands/

30 Tesco, 2021 A balanced Diet for a Better Future https://www.tescoplc.com/media/756844/a-balanced-diet-for-a-better-future.pdf

31 https://wwfint.awsassets.panda.org/downloads/wwf_position_on_healthy_and_sustainable_diets.pdf

Partnerships and advanced technology are driving the development of better supply chains to produce animal proteins with enhanced nutrient density and low environmental impacts. While the progress on environmentally friendly production systems are well documented, there is also increasing research in how to naturally improve the nutrient content of animal foods. For example, **Meat Technology Ireland** is examining if the addition of Vitamin D to animal feed would increase the nutrient content of that vitamin in the final meat or dairy product in the human diet.[32] **Devenish Nutrition** are also exploring the supplementation of chicken feed with omega 3 to achieve poultry and eggs with higher omega 3 content – this would result in increased human population intakes of omega 3, which is needed.[33]

Consumer engagement is critical in the transition to sustainable diets and is important to recognise the reliance on changing current consumer purchasing behaviours[34] and consumption habits. Encouraging consumers to choose more sustainable foods is a challenge that many companies are facing. The **World Resource Institute** are supporting businesses by making sustainable menu options more appealing to consumers. Changing how dishes are described on a menu can increase sales, and research shows that labelling dishes vegan or vegetarian is off-putting for a lot of consumers. Point of sale language and labelling really can influence consumer behaviour and purchasing decisions.

A good example of creating demand through consumer engagement is **Carrefour**[35], the French supermarket, who wanted to source sustainably-produced avocados, which would ultimately be more expensive to consumers. To communicate why these avocados, despite the increased price, were a better choice for consumers, Carrefour looked to engage with them on the process of creating demand for this product. The product development team worked with consumer input to design a new guacamole recipe, using the sustainably-produced avocados. With consumers on board as to the true value of the product, including visibility on the trade-off of price, the company saw a six-fold increase in sales.

32 Kevin D Cashman, Siobhan M O'Sullivan, Karen Galvin, Michelle Ryan, Contribution of Vitamin D2 and D3 and Their Respective 25-Hydroxy Metabolites to the Total Vitamin D Content of Beef and Lamb, Current Developments in Nutrition, Volume 4, Issue 7, July 2020, nzaa112, https://doi.org/10.1093/cdn/nzaa112

33 https://us.devenishnutrition.com/press-releases/150/worlds-first-naturally-enriched-omega-3-chicken-and-eggs-with-proven-health-claims

34 https://www.wri.org/blog/2019/02/qa-how-cuban-name-change-boosted-paneras-soup-sales

35 https://www.carrefour.com/sites/default/files/2020-07/Carrefour_RA2019_EN_280520.pdf

Recommendations

The transition to sustainable diets is well underway and being able to communicate how your products contribute to a sustainable diet, from both a health and environmental perspective, will be essential. Companies could consider the following elements;

Communication and engagement: Companies need to be talking about how / why their products contribute to a healthy diet from a human health and environmental perspective. Global demand for animal protein is growing. There is a need to demonstrate how Ireland is the best place to produce these products, based on natural resources, in comparison to other geographical locations. Utilising our available data to provide proof points in B2B communication, and in engaging consumers, will be beneficial, particularly as modifying consumer behaviours is a key challenge in the transition to sustainable diets.

Focus on reducing food emissions from production and consumption: Understandably, nutritionally dense animal proteins have a place in a sustainable diet, but they need to be sourced from low carbon, regenerative production systems. Understanding the trade-offs between nutrient density of foods and their environmental impacts is key to understanding how they fit into a sustainable diet. With retailer focus on engagement and delivering foods that are better for health and the environment, understanding the true value of your product will be key.

Embracing innovative thinking and technology: Across the value chain, technology is a key enabler in both the transition to more sustainable production practices and the development of completely new and novel products. Technology and social media are bridging the knowledge gap between producers and consumers, with apps providing excellent touch points to build consumer understanding and empower them to use their food choices to eat more sustainably. Collaborative thinking around new product development and understanding how the technologies such as fermentation and nutrient management can be utilised to improve your own supply chain and product offerings will be important strands.

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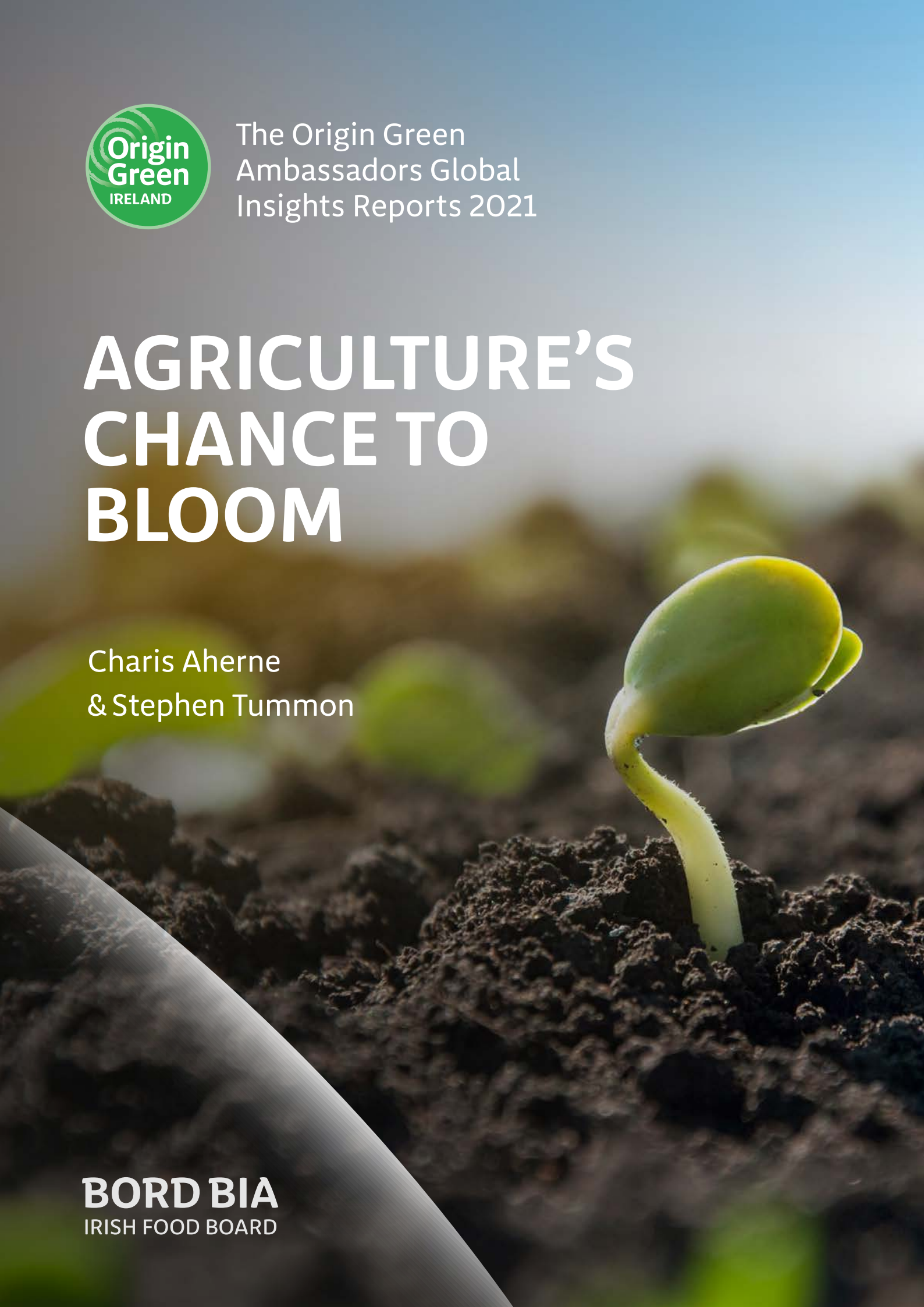
AGRICULTURE'S CHANCE TO BLOOM

Charis Aherne
& Stephen Tummon



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Charis Aherne

Charis spent her first placement working with McDonald's Global team in the UK as Sustainable Sourcing Lead developing a climate action toolkit for their suppliers, leading their communications committee for The European Roundtable for Sustainable Beef and managing their Carbon Disclosure Project account. Her second placement was with Starbucks in the UK as Sustainability Specialist where she led the UK supply chain team to implement a full strategic roadmap. Charis joined the SAI Platform for her final placement as Dairy Working Group Officer, benchmarking national dairy programmes to global standards.

https://www.bordbia.info/ucd-2021/

Stephen Tummon

Stephen spent two placements with Unilever's Sustainable Sourcing team based in the UK. He worked with internal stakeholders from the LCA and procurement teams to identify carbon reduction measures and engaged priority suppliers on critical raw materials to begin carbon reduction measures for Unilever's path to Net Zero by 2039. He led the trialing of a tool for the monitoring, reporting, and measuring of Scope 1 and 2 emissions for SME suppliers preparing a summary for various internal stakeholders. He was part of the team that wrote Unilever's Regenerative Agriculture Code for agricultural suppliers. Stephen's last placement was in Spinney's in Dubai leading sustainability projects for this high-end retailer across their 85 stores in UAE.

https://www.bordbia.info/ucd-2021/

Global Challenge

Global Agriculture is in crisis. Soil health is collapsing, biodiversity faces the sixth mass extinction and crop yields are plateauing. Against this crisis there is a rising clarion call for Regenerative Agriculture. But what is Regenerative Agriculture, and why is it gaining such prominence?[1]

Humanity has prospered immensely in recent decades, but the means by which we have achieved such prosperity has come at a devastating cost to soil health and biodiversity[2]. Healthy soil is essential for food security and is the basis of healthy food production systems.[3] Rapid human population growth coupled with increasing consumption has given rise to unprecedented pressure to intensify agricultural production. The current intensification of farming practices and subsequent overreliance on chemical fertilisers is already resulting in unsustainable soil degradation.[4] Fertiliser has significant associated greenhouse gas (GHG) emissions, while simultaneously depleting the natural capacity of soil and its essential nutrients and minerals. Collectively, we have failed to sustainably manage the planet's agricultural resources.

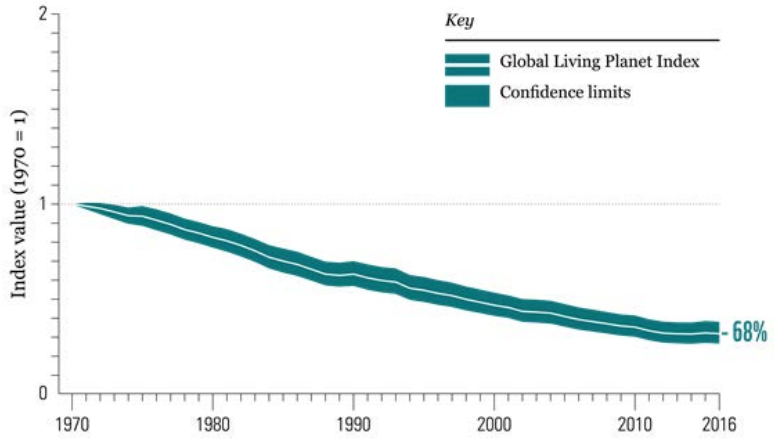

Figure 1: https://livingplanetindex.org/projects?main_page_project=AboutTheIndex&home_flag=1

1 "(PDF) Regenerative agriculture – the soil is the base - ResearchGate." 21 Mar. 2021, https://www.researchgate.net publication/343488958_Regenerative_agriculture_-_the_soil_is_the_base. Accessed 30 Mar. 2021.

2 "Final Report - The Economics of Biodiversity: The Dasgupta Review ...." Accessed February 25, 2021. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review.

3 "FAO on Twitter: "Did you know soil is a living resource, home to ...." 5 Dec. 2020, https://twitter.com/fao/status/1335178363242164224. Accessed 1 Mar. 2021.

4 "Soil and the intensification of agriculture for global food security ...." https://www.sciencedirect.com/science/article/pii/S0160412019315855. Accessed 25 Feb. 2021.

In the past 150 years half of the globe's topsoil has been lost[5] and furthermore the remaining half has reduced organic matter, diminishing soil quality and its productive capacity. In 2014 the UN Food & Agriculture Organization (FAO) reported that the world only had 60 harvests left if current practices are not changed.[6] In addition to this, biodiversity is being lost at an alarming rate. The World Wildlife Fund (WWF) released a study in 2020 highlighting that population sizes of many animal species have dropped on average by 68% in the past 50 years[7]. With agriculture using over one-third of the global land surface[8], and more acutely 67% in Ireland[9], there is rising pressure on the agriculture sector to address this situation and prevent further loss.

Regenerative agriculture has an opportunity to remedy this by concentrating on soil health and organic matter in a productive agricultural system that prioritises a thriving ecosystem which can reduce fertiliser inputs. Biodiversity provides functioning ecosystems that supply oxygen, clean air and water, pollination of plants, pest control, wastewater treatment and many ecosystem services.

Source: (NRCS Oregon, Flickr/Creative Commons)

5 "What is Erosion? Effects of Soil Erosion and Land Degradation." https://www.worldwildlife.org/threats/soil-erosion-and-degradation. Accessed 26 Mar. 2021.

6 "Detail | 2015 International Year of Soils." 6 Jul. 2015, http://www.fao.org/soils-2015/events/detail/en/c/338738/. Accessed 26 Mar. 2021.

7 "LIVING PLANET REPORT 2020 - ZSL." https://f.hubspotusercontent20.net/hubfs/4783129/LPR/PDFs/ENGLISH-FULL.pdf. Accessed 26 Mar. 2021.

8 "Land use in agriculture by the numbers | Sustainable Food and ...." 7 May. 2020, http://www.fao.org/sustainability/news/detail/en/c/1274219/. Accessed 26 Mar. 2021.

9 "Land and Soil :: Environmental Protection Agency, Ireland." https://www.epa.ie/irelandsenvironment/landandsoil/. Accessed 22 Mar. 2021.

10 "Importance of biodiversity | Australia State of the Environment Report." https://soe.environment.gov.au/theme/biodiversity/topic/2016/importance-biodiversity. Accessed 26 Mar. 2021.

Relevance to Irish Industry

Agriculture uses over two-thirds of the national land cover in Ireland[11] and, in 2019, was responsible for 35.3% of Ireland's GHG emissions[12].

Ireland as a nation has made a commitment of Net Zero emissions by 2050, with targets of a 7% decrease in emissions annually from 2021 to 2030. The stark reality is that in 2020, agricultural emissions grew by 0.4%, which the EPA has attributed to the increased usage of fuel and nitrogen fertiliser[13]. In the 12 months to October 2020, fertiliser usage in Ireland increased by 3%.[14] [15]
So agriculture is well below the target of a 7% annual decrease set in the Programme for Government. And Ireland has committed to a 51% overall reduction over the next decade.[16]

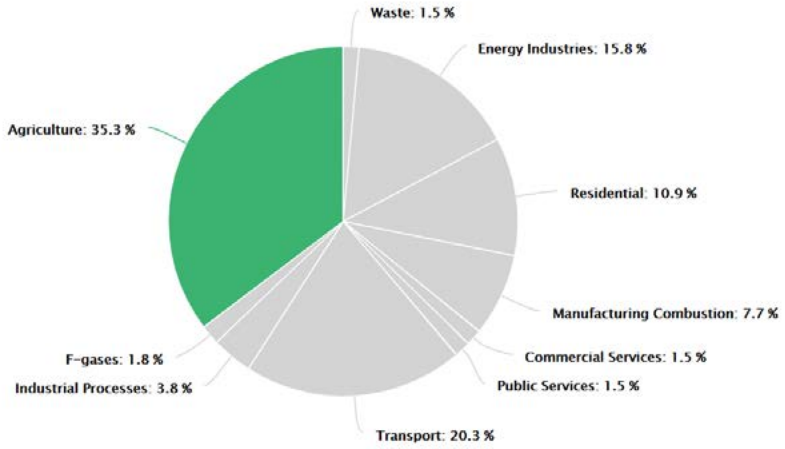

Figure 2: https://www.epa.ie/ghg/agriculture/

11 "Land and Soil :: Environmental Protection Agency, Ireland." https://www.epa.ie/irelandsenvironment/landandsoil/. Accessed 22 Mar. 2021.

12 "Agriculture :: Environmental Protection Agency, Ireland." Accessed February 25, 2021. https://www.epa.ie/ghg/agriculture/.

13 "Carbon emissions from agriculture stable in 2020 – EPA 29 January ...." Accessed February 25, 2021. https://www.farmersjournal.ie/carbon-emissions-from-agriculture-stable-in-2020-epa-599090.

14 "Agriculture :: Environmental Protection Agency, Ireland." https://www.epa.ie/ghg/agriculture/. Accessed 22 Mar. 2021.

15 "Agriculture :: Environmental Protection Agency, Ireland." https://www.epa.ie/ghg/agriculture/. Accessed 22 Mar. 2021.

16 "Carbon emissions from agriculture stable in 2020 – EPA 29 January ...." Accessed February 25, 2021. https://www.farmersjournal.ie/carbon-emissions-from-agriculture-stable-in-2020-epa-599090.

With increasing pressure from the public on agriculture's environmental impact, all steps must be taken to reduce environmental impact. Ireland's agricultural industry is predominantly based on its natural ability to produce grass. However, the industry is currently relying on synthetic fertilisers to reach the increased demand for grass growth required for increased milk and beef production.

Since the milk quota was abolished in 2015, milk production has risen by 50%[17], as has the demand for grass. This is alongside the Foodwise 2025 report, which has set ambitious targets for further growth in primary production and exports. Fertilisers are now a significant contributor to Ireland's agricultural emissions. A Bord Bia report found 17% of the dairy sector's emissions come from fertiliser application, with the consequential ammonia loss contributing directly to the decreased quality of Ireland's water[18].

The nutrient runoff from these fertilisers into rivers has decreased water quality, with severe consequences on local biodiversity. Such effects have led to the EU Farm to Fork Strategy calling on countries to reduce fertiliser input by 20% by 2030[19]. Soil health, water quality and biodiversity are intrinsically linked, and regenerative agricultural practices provide solutions to improve and address all of these with a holistic approach.

Regenerative agriculture is a method of farming that leads to decreased emissions, less nitrogen fertiliser use and an increase in biodiversity on farms. By implementing agricultural regenerative practices, Ireland can protect itself from biodiversity collapse, protect itself from public (or B2B customer) scrutiny on climate change, and protect the long-term food supply.

17 "See how dairy cow numbers have changed since quotas were ...." 9 Nov. 2019, https://www.agriland.ie/farming-news/see-how-dairy-cow-numbers-have-changed-since-quotas-were-abolished/. Accessed 18 Mar. 2021.

18 "pubs/reports/water/waterqua/Water Quality in 2019 ... - EPA.ie." https://www.epa.ie/pubs/reports/water/waterqua/Water%20Quality%20in%202019%20-%20infographic.pdf. Accessed 1 Mar. 2021.

19 "From Farm to Fork - European Commission - europa.eu." https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/farm-fork_en. Accessed 22 Mar. 2021.

What is Regenerative Agriculture?

Regenerative agriculture is an approach to farming that looks to answer these challenges. For this paper, we will use a definition of regenerative agriculture from Wageningen University, which defines it as:

> *"an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple provisioning, regulating and supporting services, with the objective that this will enhance not only the environment but also the social and economic dimensions of sustainable food production"*[20]

The five core principles of regenerative agriculture that define this practice are:

1. Minimise soil disturbance
2. Maximise crop diversity
3. Keep the soil covered
4. Maintain living root year-round
5. Integrate livestock

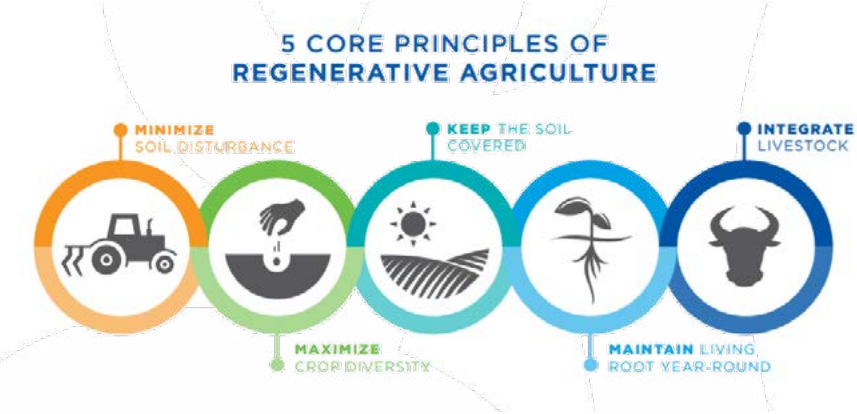

Figure 3: https://onpasture.com/2020/11/02/what-are-the-principles-of-regenerative-ag/[21]

20 "(PDF) Regenerative agriculture – the soil is the base - ResearchGate." Accessed February 25, 2021. https://www.researchgate.net/publication/343488958_Regenerative_agriculture_-_the_soil_is_the_base.

21 Figure 3: https://onpasture.com/2020/11/02/what-are-the-principles-of-regenerative-ag/

All of these focus on the rhizosphere, which is the region of soil directly influenced by root secretions and associated soil microorganisms.[22] Ensuring a healthy rhizosphere promotes plant growth whilst improving resilience against flood and drought. In Ireland, grass is the critical source of animal feed. Practices such as minimum tillage or direct drilling prevent soil inversion and promote these crucial root systems whilst keeping the soil covered. This type of soil cultivation reduces soil disturbance and soil erosion, aligning with three of the five principles. Establishing a complex root system brings resilience to the grass and can increase biological activity, including earthworms. It also improves nutrient capture, reducing runoff into the local waterways – all these work towards an improved rhizosphere and, therefore, soil quality.

Crop diversity promotes nutrient capture within the soil, and the introduction of multi-species grass cover is working towards this. This is an example of how regenerative agriculture and biodiversity can work together. Increasing crop diversity brings benefits to the soil nutrients while also providing a more varied environment to boost local biodiversity.

Studies on UCD Lyons farms have shown that increasing the number of swards enhances biomass production even when fertiliser input is decreased by 60%.[23] Animals raised on multispecies swards with fertiliser input reduction of 45% were found to grow and reach slaughter weight quicker than animals raised on perennial grass. They also required fewer anthelmintic treatments.[24] The labour and inputs cost savings implications of this are obvious and very significant.

22 "Rhizosphere - an overview | ScienceDirect Topics." https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/rhizosphere. Accessed 18 Mar. 2021.

23 "The effect of grazing versus cutting on dry matter production of …." 31 Jul. 2019, https://onlinelibrary.wiley.com/doi/abs/10.1111/gfs.12440. Accessed 25 Feb. 2021.

24 "(PDF) Grazing multispecies swards improves ewe and lamb …." 20 Dec. 2018,

Teagasc research has shown that a 6-species sward with 150kg of nitrogen (N)/ha applied has yielded more per year than both ryegrass swards with 300kg of N/ha applied per year.[25] It produced more than both ryegrass crops when the drought hit and the multi-species sward, once it received water, had a much quicker and stronger recovery.

Livestock is the fifth principle in the regenerative agriculture system. The benefits of keeping livestock come as part of mob grazing. This method refers to keeping large numbers of cattle on a small land area and moving them frequently, allowing a rest period for the pasture to become fully mature and restore itself between each grazing. This system has similarities to rotational grazing and strip grazing. However, it differs by having increased stocking density whilst providing longer rest breaks on the pasture in between. Emulating the vast herds of bison, mob grazing encourages the grass plants to complete their entire lifecycle, increases root system development, improves overall sunlight capture, and increases the land's productivity. Mob-grazed cattle trample significant quantities of forage into the soil surface, feeding the microorganisms and other soil life, growing soil organic matter.[26]

Adaptive multi-paddock grazing is a regenerative farming technique currently being trialled by McDonald's and FAI Farms to research the benefits of mob grazing and other regenerative agriculture principles and how to adapt it into the UK and Ireland beef farming systems. This is done as a nature-based, holistic approach by having a more adaptive system that responds to challenges as they arrive with soil health as a primary focus. This also highlights how the principle of this is that regenerative agriculture is not prescriptive, and therefore it is a practice of determining the best approach for each farmer and their land.[27]

https://www.faifarms.com/mcdonalds-fai-demonstrating-commercial-regenerative-beef-farming/

25 "Multi-species swards outperform ryegrass monocultures - Agriland.ie." Accessed February 25, 2021. https://www.agriland.ie/farming-news/multi-specie-swards-outperform-ryegrass-monocultures/.

26 "Mob Grazing - The Campaign for Real Farming." Accessed February 25, 2021. http://www.campaignforrealfarming.org/wp-content/uploads/2012/11/Mob-Grazing.pdf.

27 "McDonald's UK and Ireland & FAI: Demonstrating ... - FAI Farms." https://www.faifarms.com/mcdonalds-fai-demonstrating-commercial-regenerative-beef-farming/. Accessed 25 Feb. 2021.

Biodiversity:

Biodiversity, defined as the variety of plant and animal life in a particular habitat, enables nature to be productive, resilient and adaptable. Diversity in the natural world increases nature's resilience to shocks.

A crucial part of Europe's Green Deal is the EU's biodiversity strategy for 2030. This aims to increase biodiversity, protect nature, and reverse the degradation of ecosystems to put Europe's biodiversity on the path to ecological recovery by 2030.[28] Our National Policy is set out in Ireland's National Biodiversity Action Plan 2017-21. But an interim review of the implementation of the National Action Plan published in February 2020 states that the challenges involved in protecting Ireland's habitats and species are now more severe than ever and require urgent action.[29]

The All Ireland Pollinator Plan[30], which was updated in Spring 2021, has six new objectives to help make Ireland more pollinator-friendly, to assist in restoring biodiversity. These are focusing on; making farm, public and private land pollinator friendly, the honeybee strategy, conserving rare pollinators and the coordination of the plan. For objective one, making farmland pollinator friendly there are five specific sub-targets to achieve this:

1. Increase the amount of farmland that is managed in a pollinator-friendly way
2. Encourage the sustainable use of agricultural pesticides (insecticides, fungicides, and herbicides)
3. Provide clear information and training on pollinators to the farming community
4. Raise awareness and celebrate pollinator diversity on farmland
5. Track changes in pollinators on farmland

28 "EU Biodiversity strategy for 2030 | European Commission." https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/eu-biodiversity-strategy-2030_en. Accessed 25 Feb. 2021.

29 "Interim Review of the Implementation of the National Biodiversity ...." https://www.npws.ie/interim-review-implementation-national-biodiversity-action-plan-2017-2021. Accessed 25 Feb. 2021.

30 "All-Ireland Pollinator Plan." https://pollinators.ie/. Accessed 25 Feb. 2021.

Industry Response

Globally:

Across the world, both governments and organisations are responding to the dual challenges of soil depletion and biodiversity collapse. While most large organisations are implementing the principles of regenerative agriculture, the expectations among them differ.

Danone has been leading the charge for regenerative agriculture, partnering with the international soil carbon initiative 4p1000 and a founding member of the One Planet Business for Biodiversity coalition (OP2B). Danone has stated that enhancing soil organic matter will help sequester more carbon and mitigate climate change. They use practices such as limiting chemical inputs, rotating crops, reducing tillage and using crop residues as compost.[31] Danone has even started communicating with its consumers; an example of this can be seen below.

Figure 4: https://www.happyfamilyorganics.com/farmed-for-our-future/

31 "Regenerative agriculture - Danone." https://www.danone.com/impact/planet/regenerative-agriculture.html. Accessed 25 Feb. 2021.

Unilever is also implementing regenerative practices with the ambition of increasing local biodiversity, restoring soil health, and preserving water as these benefits are undisputed. However, following research released by The World Resource Institute, which is questioning the carbon sequestering abilities of regenerative agriculture, Unilever does not depend on these practices to sequester carbon. The World Resource Institute has released two articles examining the power of regenerative agriculture to mitigate climate change.[32] [33] While we might not know yet if carbon sequestration will be verifiable and utilised, other the other benefits of regenerative agriculture undisputed.

Danone, in December 2020, announced they were going to expand their regenerative agricultural programme across more dairy farms in the US. Currently, their programme covers 82,000 acres. They have planted cover crops on 64% of acres and practised reduced or no-till on 77%. Results showed that 93% of the fields in the programme had a positive soil conditioning index value. So far, they have claimed to have reduced more than 80,000 tons of carbon and sequestered 20,000 tons through regenerative soil practices.

Farm to Fork Strategy

The EU has launched its Farm to Fork Strategy to improve the environment on which agriculture depends. The strategy aims to make food systems fair, healthy and environmentally friendly. It identified the need for an accelerated transition to more sustainable food systems with positive impacts on biodiversity and the environment. A legislative framework will be proposed to support the implementation of the strategy. The EU will take action on two significant fronts. First, a target to reduce nutrient loss by at least 50% while ensuring no deterioration in soil fertility, aims to reduce fertiliser use by at least 20% by 2030. Secondly, targets will be implemented to reduce the overall use of chemical and hazardous pesticides by 50% by 2030.[34]

32 "Regenerative agriculture - Danone." https://www.danone.com/impact/planet/regenerative-agriculture.html. Accessed 25 Feb. 2021.

33 "Regenerative Agriculture Practices | World Resources Institute." 12 May. 2020, https://www.wri.org/blog/2020/05/regenerative-agriculture-climate-change. Accessed 25 Feb. 2021.

34 "From Farm to Fork - European Commission - europa.eu." https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/farm-fork_en. Accessed 22 Mar. 2021.

Ireland

A group of European Innovation Partnerships (EIPs) have come together in Ireland to focus on environmentally engaged farming.[35] An example of one of these schemes is the B Project. This promotes Biodiversity within farming and financially rewards farmers for dedicating part of their farm to biodiversity regeneration.[36]

A Bord Bia report looking at Carbon Footprint Leaders (CFL) in the Sustainable Dairy Assurance Scheme (SDAS) showed leaders had reduced their carbon footprint by 18% while also increasing their milk production by 50%. The CFL had also reduced their fertiliser input by 42% on farms since 2014. They have increased their stocking rates by 22%. At the same time, 75% of them complete soil tests on 100% of the farm area.

It is clear that a low Carbon Footprint of below 0.9 links to having the highest number of grazing days and lowest concentrate input per cow. Although the report focuses only on dairy farms in Ireland, the results suggests a link between regenerative farming and a lower carbon footprint.

The Agricultural Sustainability Support and Advisory Programme (ASSAP) is a government/industry collaborative initiative that began in 2018 and will run until the end of 2021. The programme offers free support and advisory services intending to improve water quality through working with farmers. Within Ireland, members of the GLAS scheme can receive subsidies for implementing cover cropping.[37]

ASSAP Farming for Water Quality

35 "Ireland | EIPs make the case for a better CAP ... - ARC2020." 7 Sept. 2020, https://www.arc2020.eu/eip-ireland-cap/. Accessed 19 Mar. 2021.

36 "The Bride Project: Biodiversity Regeneration in a Dairying ...." https://www.thebrideproject.ie/. Accessed 19 Mar. 2021.

37 "GLAS - gov.ie." 7 Feb. 2020, https://www.gov.ie/en/service/9133a5-green-low-carbon-agri-environment-scheme-glas/. Accessed 25 Feb. 2021.

Currently, there is a race on to build the world's first carbon-neutral dairy herd.[38] One company in this race is Carbery. They are seeking to utilise multi-species swards for carbon capture, and biodiversity on farms is being increased to reduce reliance on pesticide and fertiliser inputs.[39]

Due to the dependency on grass in Ireland, grassland management systems are critical to future-proofing the business. Teagasc has made recommendations to address cost-effectively reducing GHG emissions in farming via a Marginal Abatement Cost Curve (MACC).[40] Below are some of these recommended steps and ones that Irish farms have already taken, which have also improved their soil health.

- Low emission slurry spreading technologies
- Correct timing for slurry spreading
- Promote the use of Protected Nitrogen
- Application of lime
- Regular soil testing
- Introducing clover and other multi-species pasture
- Regular measuring of grass cover
- Usage of min-till or direct drilling soil cultivation methods
- Paddock Rotation
- Roadways

38 "The Race is on to Build the World's First Carbon-Neutral Dairy ...." 15 Jan. 2021, https://www.dairyherd.com/news/business/race-build-worlds-first-carbon-neutral-dairy. Accessed 1 Mar. 2021..

39 "Farm Zero C – BiOrbic, Bioeconomy SFI Research Centre.." https://biorbic.com/farm-zero-c/. Accessed 25 Feb. 2021.

40 "Return of the MACC - Teagasc." https://www.teagasc.ie/media/website/publications/2018/11-Return-of-the-MACC.pdf. Accessed 19 Mar. 2021.

Key Takeaways

Regenerative agriculture and biodiversity are essential for the future of the Irish industry. With a role in the EU's Green Deal, Ireland must shift from our reliance on fertiliser and monoculture farming towards more regenerative and biodiversity-friendly methods. In order for Ireland to reach its (non-negotiable) Climate Commitments, the carbon footprint of farms simply must decrease. Regenerative agriculture can help this by reducing fertiliser, and by working towards carbon sequestration, while simultaneously increasing biodiversity.

source: https://euraxess.ec.europa.eu/worldwide/north-america/european-green-deal-call-%E2%82%AC1-billion-investment-boost-green-and-digital

There are already various projects in place that can be used to begin, or accelerate, the transition:

- BRIDE Project: Have payments for farmers for the biodiversity project
- RBaps: Reward payment scheme for farmers who increase biodiversity. The amount of money paid reflects the quality of wildlife that is delivered to their farmland.
- Teagasc: advice on how to choose and plant multi-species swards

Multi-species Sward

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Origin Green IRELAND

The Origin Green Ambassadors Global Insights Reports 2021

THE VALUE IN WASTE

Robyn Page-Cowman
& Pauline McKeon

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Origin Green Ambassador Programme

Never has sustainability been so top of mind and globally important, and it is this convergence that has opened some important discussions among the global food industry. Bord Bia's Origin Green Ambassador programme is designed to open and facilitate these conversations and the role of Irish sustainability initiatives in export markets.

Created in 2013 with the Michael Smurfit Graduate Business School, this programme has at its heart two interlinked pillars: one focused on education in the sphere of Business Sustainability, and the other on partnership with major international food companies. The format of this 23 month programme towards an MSc in Business Sustainability ensures that high quality executives are placed in many of the leading Global Food & Drink companies, hot housing their skills while engaging on live sustainability projects. Working to embed sustainability best practices, strategic planning, refine policies and bring new thinking to their placements.

The Ambassadors are the connection between Ireland's Origin Green programme and its associated partner organisations who are world leaders in the global food industry. Over two years, modules focus on accelerating growth, sharpening business strategies, and anticipating change in an ever transient global economy. In partnering with major international food firms, these ambassadors can then build on an awareness of established Irish initiatives across key target markets.

In this series of global insights reports, the Ambassadors bring you their insights on some of the most pressing sustainability issues and opportunities facing our industry.

Robyn Page - Cowman

Robyn had her first placement working for Waitrose in their London HQ were she developed and delivered their food waste and surplus strategy. Her last two 2 placements were with Danone in London, developing carbon neutral roadmaps, developing insights and recommendations on circular innovations for their brands and developing their communication position for their Regenerative Agriculture & Biodiversity strategy.

https://www.bordbia.info/ucd-2021/

Pauline McKeon

Pauline spent her first placement in Amazon in London as Sustainability Advisor to the Packaging Manager for Amazon own brand. Her second and third placements were with Sainsbury's London working as part of their sustainability team on water stewardship, leading water conversation for COP26 "Water is the New Carbon", livestock carbon action plans and net zero pillars.

https://www.bordbia.info/ucd-2021/

Introduction

Living in lockdown made many consumers connect with the food they had and the food waste they were creating. A study by WRAP in the UK found consumers reduced waste due to having more time to prepare and plan meals, but also because more were feeling an acute sense of food 'insecurity'. The pandemic drove constraints in our food supply chain resulting in a lack of availability. We also saw a spike in poverty levels where due to the pandemic's impact on our economies. In Ireland, FoodCloud reported a 70% increase in the number of people seeking food support from March to June in 2020. As a result, businesses, consumers, investors and governments are more engaged with the business case behind reducing food waste - especially as this increases profitability where food waste costs the Irish industry €2 billion a year post-farm gate, and Irish consumers up to €1,000 according to the EPA. Moreover, food waste has the potential to open up huge commercial prospects for the Agrifood sector through the circular economy principles and innovation this unlocks in our waste streams.

The burning platform: What is food waste?

Food becomes waste when it is no longer deemed edible for human consumption, due to the "decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers" **(FAO)**. The problem is that we are wasting too much food; a full third of all the food we produce globally ends as waste and much of this wasted despite still being edible for human consumption **(FAO)**.

- Production of food which goes to waste requires 1.4 billion hectares of land globally; equivalent to 28% of the world's agricultural area – or 200 Irelands **(EPA)**.

- Food waste is responsible for 6% of global greenhouse gas emissions (GHGs) which cause climate change **(Our World in Data)**. If global food waste was a country, it would be the world's third largest emitter, after the US and China. **(FAO)**

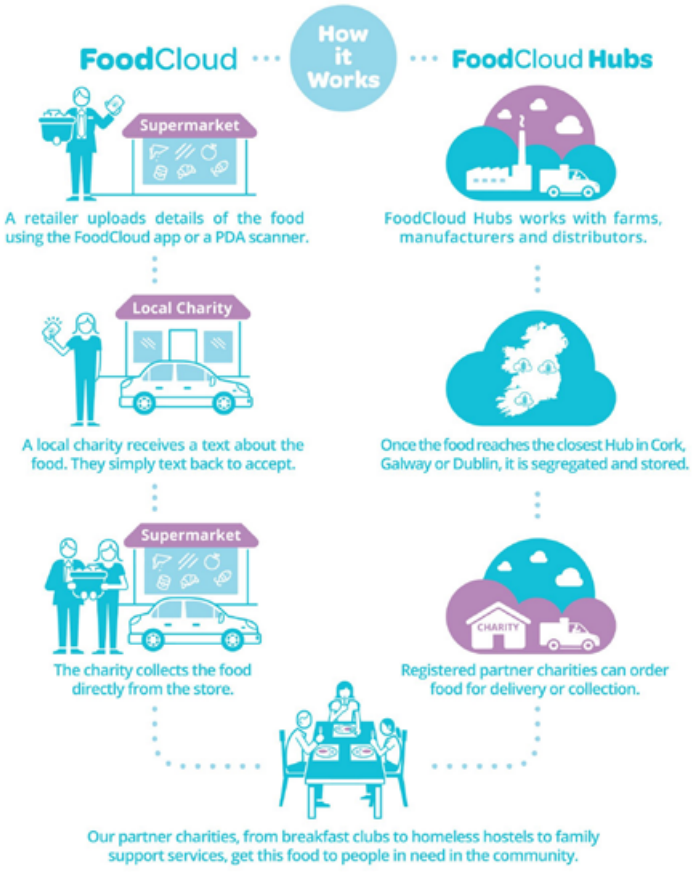
- A study in 2018 found that food production accounts for 26% of GHGs and 24% of these emissions come from food that is lost in supply chains or wasted by consumers **(Our World in Data)**.

- Despite all this food wastage, 8.9% of world's population are food insecure (i.e. don't have access to three meals a day) including 9.1%, or 1 in 11 people, in Ireland **(Foodcloud)**.

- Finally, food waste costs. EPA Ireland estimates food waste costs the Irish industry €2Bn a year (post farmgate) and Irish households between €700 and a €1,000 every year. **(EPA)**

How can business address food waste?

The UN's Sustainable Development Goal (SDG) 12.3 outlines a global commitment to "halve food waste by 2030." This target recommends businesses follow the food waste material hierarchy to ensure all edible food stays in the human supply chain and to responsibly dispose of food waste i.e. avoid landfill. The Irish Government and EPA have aligned with this, and as Origin Green members, you will be tracking food waste under the UN's International Food Waste & Loss Protocol methodology (FAO). Foodcloud is the largest food redistribution charity in Ireland. Any food which is edible should be donated as surplus to Foodcloud to help reduce food waste. If your business has a global footprint, Foodcloud can connect you with their global food-banking partners.



Source https://www.origingreen.ie/who-is-involved/partners/foodcloud/

Insights: Leadership in Food Waste globally

Businesses, investors, governments and consumers are increasingly concerned with and engaged by the environmental, social and profit impact of wasting food.

1. Tesco is a global leader in its food waste reduction plans; they are helping coordinate industry action and alignment to the UN Sustainable Development Goal (SDG) 12.3 through the UK's waste, resource and action programme (WRAP)'s Courtauld Agreement and the Global Consumer Goods Forum **(ESG Clarity)**. In 2020, Tesco worked with over 70 of its key suppliers globally to publicly report on their food waste data and actions to reach the UN SDG 12.3 **(Resource)**. TescoAnd Tesco has also worked with WRAP and the UK government to pass legislation making the reporting of food waste mandatory for all UK food businesses by end of 2021 **(Resource)**.

2. Fund managers and investors are increasingly concerned with how food waste reduces profitability. 1 billion tonnes of food are wasted per year – equivalent to $1trillion in economic losses. Businesses are being asked to track their food waste reduction data and targets within their environmental, social and governance metrics for shareholders **(ESG Clarity)**.

3. President Xi Jinping spoke in August 2020 outlining the "shocking and distressing" levels of food waste in China post-pandemic, and the risk this posed to China's future food security. "Waste is shameful and thriftiness is honourable." Local authorities immediately implemented food waste reduction programmes as part of 'Operation Empty Plate'; legislation was implemented in December 2020 recommending large fines for businesses that enable or promote wasting food **(Guardian, 2020)**.

https://sdgs.un.org/goals/goal12

Key innovations globally on food waste:

1. Industry Alignment

The UK's Waste Resources Action Programme (WRAP) and United Against Food Waste Netherlands are two industry-wide initiatives coordinating action on food waste from all retailers in these countries, requiring reporting from suppliers and collaborating with them on food waste innovations **(UNEP, 2021)**. As of 2021, the UK is the only country on track to reach the UN's target by 2030, with 27% a reduction in food waste **(WRAP, Courtauld Report 2020)**. Australia, Japan, Austria, Belgium, Denmark, Kenya and NZ have specific food waste reporting legislation for retail **(UNEP, 2021)**.

All UK retailers and over 250 food businesses are signatories of WRAP's Courtauld Agreement – to reach the UN SDG 12.3 **(WRAP)**. WRAP's Food Waste Reduction Roadmap **(WRAP)** provides open resources on food waste reduction - and Irish businesses can work with UK retailers and customers through WRAP's farm to fork whole supply chain analysis projects on food waste.
In 2020, 45 businesses publicly reported data, demonstrating WRAP's food waste reduction resources helped save them collectively £300million of food **(WRAP)**.

In 2020, WRAP's Meat in a Net Zero World report established a strategic task-force and KPIs for the meat supply chain to address the 380,000 tonnes per year of meat which is wasted; one KPI commitment will measure mortality as a factor of food waste **(WRAP)**.

https://archive.wrap.org.uk/food-waste-reduction-roadmap

2. Consumer

Albert Heijn uses AI to add dynamic pricing based on products at their best before dates to encourage consumer purchasing. **(Albert Heijn)**.
Mimica adds a 'sensory' touch to this AI technology: consumers touch a label on the packon pack which visually shows if the product is still edible. **(Mimica)**.

3. Brand

Rubies in the Rubble turns surplus from farm into new products – for example Ketchup using tomatoes and surplus pears as a substitute for sugar. These products essentially make profit from waste or produce that is paid for by retailers in their supplier contracts, but are left on farm fields and not sold to consumers due to tight retailer specifications on produce. Rubies' is nationally listed in Ocado, Waitrose, Morrisons and Sainsbury's. **(Rubies)**.

4. Policy

By 2023, the UK and EU want to make segregated recycling mandatory. This will make food waste data reporting mandatory in the UK by 2023, and the EU is hoping to install deposit return schemes across member states by 2030. South Korea reviewed their waste disposal in the 1990s. By 2006, it was illegal to send food waste to landfills, therefore citizens were required to separate waste into designated 'deposit return scheme' bins. Today, South Korea recycles 95% of food waste. **(HuffPost)**

How is the Irish Agri-Food industry currently addressing food waste?

Food waste has accelerated on the global agenda post-pandemic, either because we saw food still being wasted while food insecurity increased, or because stay at home orders and limits on food availability drove greater consumer awareness of the cost of food waste.

The EPA's National Attitudes Survey in September 2020 found 3 in 5 Irish consumers now actively think about food waste – and 47% of Irish consumers state the financial loss of food that is bought but left uneaten is their biggest concern. 89% of people feel that consumers have a responsibility in preventing food waste **(EPA)**.

- In March 2021, WRAP led the industry's first 'Food Waste Action Week' due to increased consumer interest in reducing food waste with national media coverage, along with all retailers leading in-store and online activity.
- Food cloud's recent consumer-facing campaign mirrored this across Irish media. Both campaigns positively connected the tangible contribution individuals can make to the climate crisis through simple food waste reduction measures; e.g. writing a shopping list or storing food properly in the fridge.
- WRAP's campaign demonstrates the wider impact businesses can make through collaboratively working on a consumer-facing campaign with Foodcloud.

Source: https://wrap.org.uk/taking-action/citizen-behaviour-change/love-food-hate-waste/key-campaigns/food-waste-action-week

- Carrefour and Danone are two of many brands to partner with Too Good To Go (TGTG) – a start-up aiming to help consumers reduce food waste. In retail, the TGTG uses smartphones to identify unsold food baskets at low prices for consumers **(Carrefour)**. With FMCGs, TGTG helps demystify date labelling confusion which drives 10% of Europe's food waste, through their "Look Smell Taste Don't Waste" campaign and on pack labels **(Too Good To Go)**. In 2020, 68% of Irish consumers say they don't understand best before/use by date labelling, and that this causes them to waste food **(EPA)**.

- The Global Food Security Index report 2021 outlined how global food security is deteriorating. The Index measures 59 factors on the state of food affordability, availability, quality, safety and natural resources/ resilience in 113 countries. Finland came top for food security and Ireland second **(World Economic Forum)**. Increasingly, financial industry stakeholders are interested in how their asset groups are addressing ESG and there is an opportunity for Irish businesses to meet these expectations by addressing the social impact of food waste and food security. Foodcloud outlines that 1 in 11 people in Ireland experience food insecurity, and their technology platforms connect the charity sector with food businesses and retailers to redistribute food in Ireland, the UK and globally **(Foodcloud)**.

These examples highlight the value creation opportunities in food waste. The UN's Business Case for Reducing Food Loss and Waste **(UN)** found for every dollar invested in food waste and loss reduction, companies saved $14 in operating costs. Investor and lender markets increasingly want to quantify their portfolio resilience by referring to their ESG metrics. We both worked on ESG and TCFD projects on placement; and food waste is a popular data and investment point considered within ESG targets due to this potential 1400% return on investment. **(Advisorpedia)**

The opportunity: the circular economy

WRAP is a fascinating case study and a missed opportunity in Ireland. However, to address food waste, increase food security and create new innovations, Irish companies could lead in adopting a circular economy roadmap – i.e. move beyond 'zero waste' or linear food waste models.

The circular economy has three principles to address waste: Reuse, Recycle and Regenerate. This breaks the traditional linear model to waste: Take, Make, Waste – as seen in the food waste material hierarchy. Instead it looks to reuse products to design out waste, recycle to reduce pollution, and regenerate our natural systems through circular production.

The EPA reports that 55% of Ireland's food waste derives from manufacturing, processing and farms, and around 40% of Ireland's food wasted annually occurs at the processing level **(EPA, 2020)**. These waste streams are, in their raw format, inedible for human consumption, and processed responsibly under the food waste material hierarchy; i.e. they are redirected for animal feed or energy production via waste incineration.

The circular economy model calls this product 'biochemical feedstock', that is, ingredients either both edible or inedible which through biochemistry can be innovated or commercialised into new product, ingredients and other value streams, for both food and non-food markets. This process is called VALORISATION (Ellen Macarthur Foundation, Towards a Circular Economy **Report**). Supply chain waste provides higher valorisation opportunity because that produce is closest to the farm-gate, therefore has a highest nutrient value, is less likely to be processed and is not yet 'mixed' with other waste materials/ packaging/etc (Circular Investment Opportunities **Report**).

Circuléire is Ireland's new circular economy platform for the manufacturing industry. They estimate that a circular economy model could yield €2.32billion per year for the Irish economy, not just filling the estimated €2billion cost of food waste, but creating further value every year for the Irish economy. This value is created because materials are constantly reused under the circular economy **(Circuléire)**. A number of Origin Green members are key strategic partners of Circuléire's food and drinks pillar, along with the EPA, Ireland's Department of Environment, Climate & Communications, the Department of Agriculture & Food, as well as the EIT Climate KIC group **(Circuléire)**.

https://circuleire.ie/circular-economy-knowledge-library/

https://www.epa.ie/

Valorisation:

The term valorisation is defined as the process of reusing, recycling or composting waste materials and converting them into more useful products including materials, chemicals, fuels or other sources of energy. There is great unrealised potential in the high volumes of discarded food waste and by-products that flow from our farms, processing sites and manufacturing facilities. According to the Ellen MacArthur Foundation in the current Take, Make, Waste, linear system, less than 2% of these valuable nutrients are put to productive use (**Ellen MacArthur**, 2020). Herein lies an opportunity to find commercial value in "waste" and create whole new products to enter new markets.

Source: https://www.researchgate.net/figure/The-linear-economy-The-take-make-and-waste-approach-of-production_fig2_323809440

Meade Potatoes, an Origin Green Member, provides a great example of how to go beyond the 'zero waste' target towards a circular economy:

- Meade Potatoes challenged themselves to go beyond being a "Zero Waste Facility." Before developing their surplus starch product, Meade were classified as a "zero-food-waste facility" using all surplus as livestock feed and distributing to community foodbanks like FoodCloud. They set out to find higher food value, alternative markets for their surplus. Identifying a gap in the foodservice/catering market for premium quality peeled and chipped potatoes, Meade invested in a peeling line. The by-product from the peeling process was initially fed to beef cattle, as were all surplus-to-requirement potatoes. However, the new installation of a starch extractor uses all these potatoes, giving Meade their food-grade starch to be sold on the open market or used in complementary products.

- Meade's example demonstrates how analysing your supply chain and waste streams can create markets from product and waste that you already own.

Environmental Benefits

Not only is waste valorisation an opportunity to grow your business, it's also a cost-effective way of meeting your ESG commitments on waste reduction and reduced environmental impacts. Valorising your waste is viewed positively by customers who are looking for supplier initiatives and products that help them meet their sustainability commitments from food waste to reducing their carbon footprint.

Scale

The final benefit of waste valorisation to your business is the ability to address waste within your remit of the supply chain. While on-farm waste may only allow for incremental changes due to supply chain complexities, valorising your direct waste streams is within reach and can help you meet your ESG commitments from the social to the environmental via emissions reductions and food waste reductions. Within your own facilities you can make these changes at scale.

As highlighted by Ellen MacArthur, globally, waste valorisation remains a largely untapped opportunity; maintaining a linear approach to waste. For instance, the food waste material hierarchy still looks at moving waste down the waste supply chain.

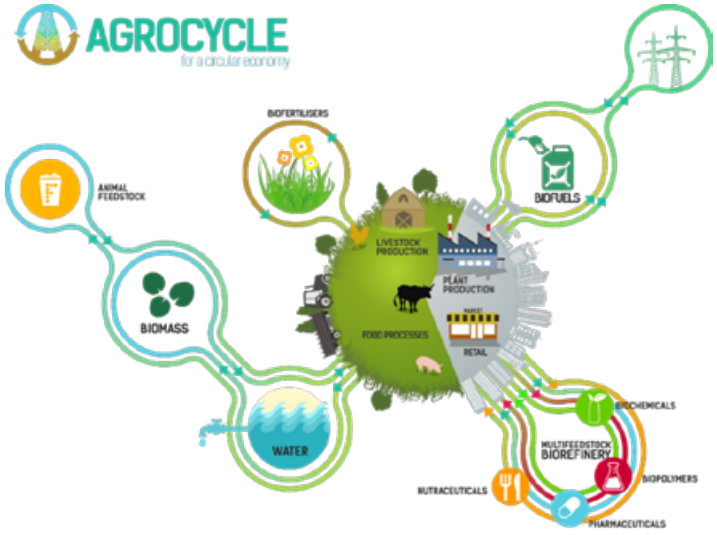
Waste in the Irish Agri-Food supply chain provides new value streams for our industry. For example:

- **Dunyie Foods:** exploring 'co-products' from farm waste streams - from food to energy from livestock **(Dunyie Foods)** - to develop new tools for farmers to help reduce both their financial and environmental costs, such as an innovative silage clamp cover made from vegetable puree which add feeds value and replaces costly plastic sheeting. There is also a novel way to help pig farmers comply with legislative requirements to provide animals with manipulable material while reducing financial and environmental costs. Additionally, a carbon credit voucher scheme is in development for users of low-carbon co-products **(Dunyie Foods)**.

- **Arla:** Arla's UK operations use waste from its own farms to power its vehicles and help the UK farming sector reach its net zero goal for 2040. The process also creates nutrient rich, natural fertiliser which Arla farmers can put back on to farms **(Arla)**.

- **Biorefinery Glas:** is supporting farmer diversification into the circular bioeconomy via small scale farmer-led green biorefineries. This EU-led project is a first step towards changing the role of farmers in the bioeconomy, from suppliers of biomass to producers of finished and semi-finished products. The biorefinery approach converts freshly harvested grass into a range of products, including: an optimised cattle feed fibre, a non-GMO protein concentrate feed and a grass whey for fertiliser or bioenergy applications (Biorefinery Glas, 2020).

- REFLOW turning wastewater into sludge then into ash to use as fertiliser. This EU-led study is developing and demonstrating processes for the recovery and reuse of phosphorus products from dairy processing waste (DPW), to establish their fertiliser value and optimum application rates.



Source: https://www.cibe-europe.eu/agrocycle

The Ellen MacArthur Foundation coined this model and released a report in 2019 which predicted that by 2050, the circular economy model can unlock overall benefits worth $2.7trillion a year. In January 2020, Blackrock, the world's largest asset management and investor group, launched a $900million investment fund with the Ellen MacArthur Foundation to support companies which met Blackrock's ESG criteria who wanted to explore the circular economy (edie).

Current uptake of the circular economy is concerningly low with the Circularity Gap's 2021 Report revealing our world is only 8.6% circular – a decrease from 9.1% in 2019 (Circularity Gap Report, 2021 Report). This outlines a gap the Irish Agri-Food industry could help fill for investors and innovation.

Our key recommendations for the Irish Agri-Food industry

Reuse, Recycle, Regenerate creates the greatest opportunity for businesses to reduce waste through creating new value streams via new product development, enhancing brand reputation with consumers and investors, enhancing food security programmes, and accessing new market innovation opportunities.

We have presented you three key insights on food waste reduction and circular economy adoption.

1. Commit to UN SDG 12.3 and track food waste using the food waste and loss protocol.

2. Where surplus (i.e. food that is edible) exists, connect with Foodcloud to redistribute all surplus to the human supply chain and, where your business footprint exists in other markets, use Foodcloud's network to redistribute to local food banks.

FoodCloud

3. Adopt the circular economy principles of Reuse, Reduce, Recycle and Regenerate. Where your company can fully use all waste streams to design out waste and pollution, adopt reuse models, and do this to regenerate our natural systems; i.e. through circular production, agriculture, industries and economies.

ZERO WASTE

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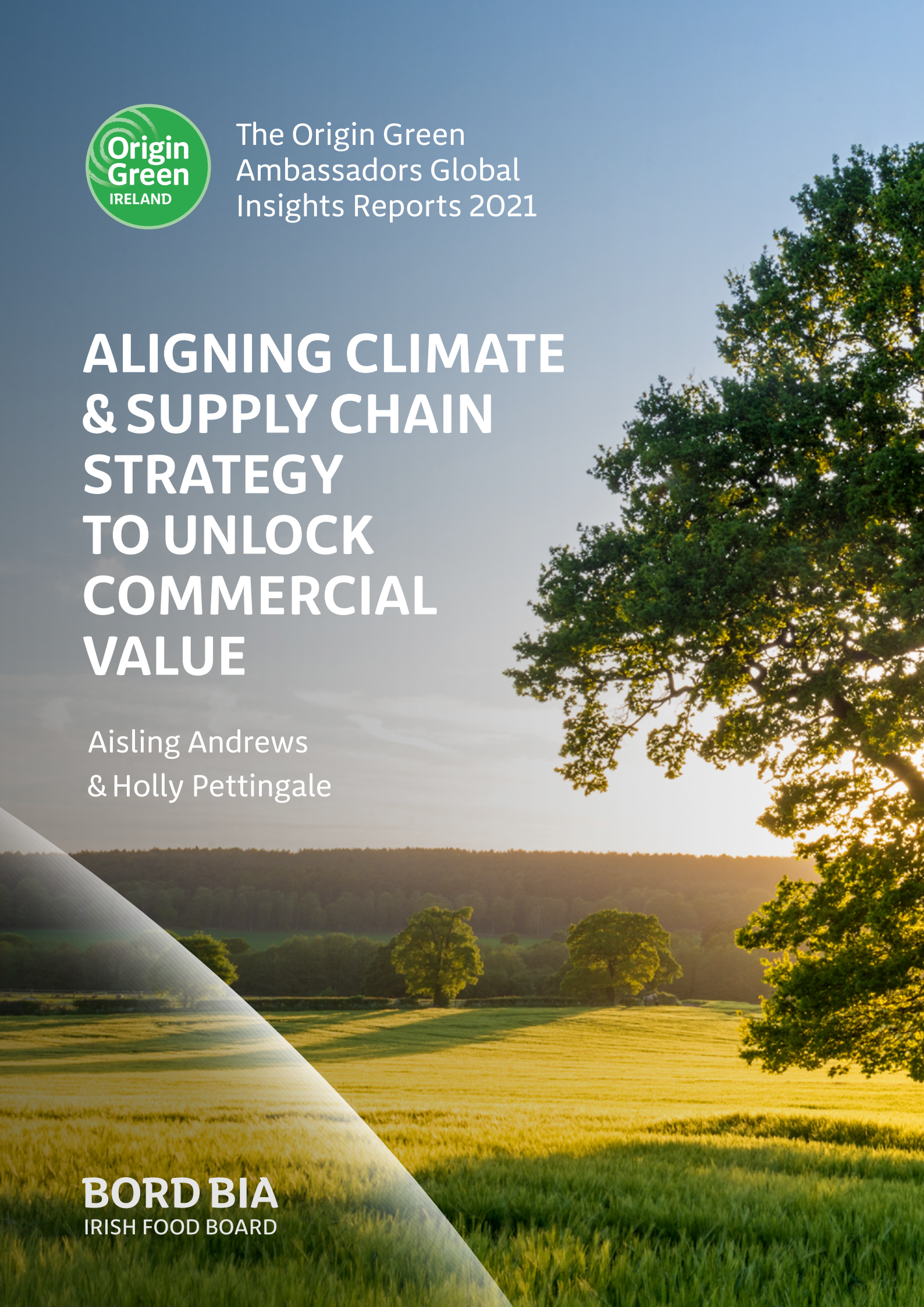


The Origin Green Ambassadors Global Insights Reports 2021

ALIGNING CLIMATE & SUPPLY CHAIN STRATEGY TO UNLOCK COMMERCIAL VALUE

Aisling Andrews
& Holly Pettingale

BORD BIA
IRISH FOOD BOARD

Origin Green Ambassador Programme

Never has sustainability been so top of mind and globally important, and it is this convergence that has opened some important discussions among the global food industry. Bord Bia's Origin Green Ambassador programme is designed to open and facilitate these conversations and the role of Irish sustainability initiatives in export markets.

Created in 2013 with the Michael Smurfit Graduate Business School, this programme has at its heart two interlinked pillars: one focused on education in the sphere of Business Sustainability, and the other on partnership with major international food companies. The format of this 23 month programme towards an MSc in Business Sustainability ensures that high quality executives are placed in many of the leading Global Food & Drink companies, hot housing their skills while engaging on live sustainability projects. Working to embed sustainability best practices, strategic planning, refine policies and bring new thinking to their placements.

The Ambassadors are the connection between Ireland's Origin Green programme and its associated partner organisations who are world leaders in the global food industry. Over two years, modules focus on accelerating growth, sharpening business strategies, and anticipating change in an ever transient global economy. In partnering with major international food firms, these ambassadors can then build on an awareness of established Irish initiatives across key target markets.

In this series of global insights reports, the Ambassadors bring you their insights on some of the most pressing sustainability issues and opportunities facing our industry.

Aisling Andrews

Aisling's first placement was in Canada with the Liquor Control Board of Ontario where she supported the rollout of their first sustainability strategy and led the development of business wide KPIs and impact reporting. Her final two placements were with McDonalds in a dual role across the UK and Ireland and the Global Impact Team. Here Aisling supported the design of a new sustainability framework across restaurants, offices and the supply chain. She also led CDP supplier engagement on Climate and Forest action and supported the development of decarbonization strategies at market and global level.

https://www.bordbia.info/ucd-2021/

Holly Pettingale

Holly's first placement was with Sainsbury's in London where she led the development of their scope 3 strategy and represented the company at industry roundtables and events. She also provided expertise on various projects including the development of a dairy sustainability framework. Her final 2 placements were with Barry Callebaut, Zürich working on climate and deforestation across their ingredient portfolio. This included the development of sustainable product offerings and acting as the sustainability lead for the D'Orsogna brand, responsible for the delivery of their sustainability strategy.

https://www.bordbia.info/ucd-2021/

Introduction

According to a recently published report from CDP[1], the world's largest environmental disclosure system, environmental risks to supply chains are predicted to cost companies up to $120 billion over the next five years with manufacturing, food and beverage, and agriculture highlighted as industries most likely to incur potential cost increases.

Pressure on industry to move quickly and credibly to address the climate crisis has increased in line with the rise in countries including the UK, France and, recently, Ireland writing their Net Zero targets into law. Companies wanting to future-proof their business must now prioritise embedding climate risk and decarbonisation into their long-term strategy. This will require bold decisions that go beyond sustainable practices to building entire business models around planet and people commitments, not just profit. While this will be challenging, it will also provide a unique opportunity for supply chain transformation and innovation to solve problems and drive growth.

In this report, we will focus on the increase in corporate decarbonisation commitments, particularly those in the Agri-Food sector and what a shift toward a Net Zero economy might look like for Irish industry. We also discuss how businesses can rise to meet the challenge through embedding climate thinking into business operations and the opportunities that exist to unlock greater commercial value with customers and consumers.

Source of Image: https://www.cdp.net/en/research/global-reports/transparency-to-transformation

1 CDP.net. 2021. Transparency to Transformation: A Chain Reaction. [Online] Available at: <https://www.cdp.net/en/research/global-reports/transparency-to-transformation> [Accessed 12 March 2021].

The Burning Platform:

Source: Global Citizen. Available at: https://www.globalcitizen.org/en/action/quiz-cop26-why-it-matters-for-the-climate-crisis/

Leading bodies including the Intergovernmental Panel on Climate Change (IPCC)[2] and the UN[3] have clearly signalled that the actions taken between now and 2030 are crucial to avoid the worst impacts of climate change. Current consensus is that we must halve emissions by 2030, while reaching a net-zero position by 2050[4]. Businesses looking to address and capitalise on these challenges are prioritising the decarbonisation of their current business practices while also tackling systemic issues and emissions within their supply chains.

The actions companies take today will reflect how resilient their business is to mounting climate risks. It can also impact commercial success as investors are shifting their money toward those placing the net zero economy at the centre of business decisions[5]. Consumers too are shown to be spending more mindfully by placing company and brand actions under greater scrutiny[6].

2 IPCC. Global Warming of 1.5 °C —. [online] Available at: <https://www.ipcc.ch/sr15> [Accessed 12 March 2021].

3 United Nations, 2019. Only 11 Years Left to Prevent Irreversible Damage from Climate Change, Speakers Warn during General Assembly High-Level Meeting. Available at: <https://www.un.org/press/en/2019/ga12131.doc.htm>

4 IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp. (Page 12 – Available at <https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf>

5 Larry Fink CEO Letter | BlackRock, 2021. Available at: <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter> [Accessed 12 March 2021].

6 Behaviour & Attitudes, 2021. Sign of the Times 2021 (p. 47). B&A SOTT 2021. Available at: https://banda.ie/wp-content/uploads/J.202460-SOTT-2021-Online-version.pdf [Accessed 12 March 2021].

The Climate Commitment Landscape:

In the drive for serious and effective climate action, the pressure is currently on all businesses to address their carbon footprint in a meaningful way by identifying the emissions associated with their entire value chains' activities. Put simply, a company looking to credibly act on climate change needs to accurately measure their greenhouse gas (GHG) emissions across all levels of the supply chain, set quantifiable targets, and enact strategies to reduce these emissions through a science-based approach.

Developing a science-based approach to measuring and managing GHG emissions is the best way for a company to manage risk and robustly address the climate emergency. Emissions reduction targets are generally defined as science-based if they are made in line with the current reduction requirements to keep global warming below 2°C, an ambition that is transitioning toward a 1.5°C requirement. For over 1,000 businesses globally, including six Irish food and beverage companies, this has involved signing up to the Science Based Targets initiative (SBTi) to publicly commit to emissions reductions in line with climate science.

As of March 2021, 61 of Ireland's largest companies have also signed up to the Business in the Community Ireland[7] 'Low Carbon Pledge' to set science-based targets across their entire footprint accounting for direct emissions from operations (Scope 1), emissions from energy usage (Scope 2), and indirect emissions from upstream and downstream activities in their supply chain (Scope 3)[8].

Given that supply chain emissions are approximately 5.5 times higher than the average company's direct emissions, it is vital that any climate commitments being made by companies today are inclusive of Scope 3[9].

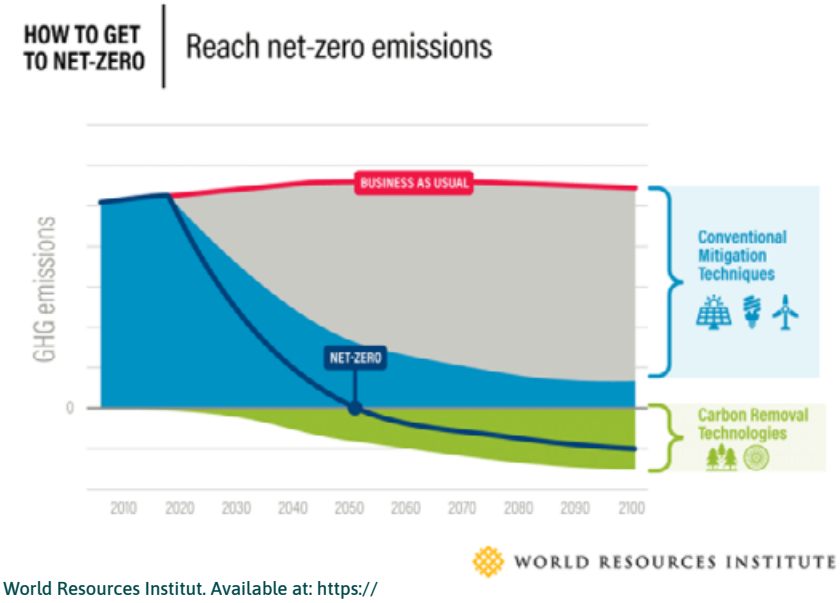
While setting targets founded in science should be the minimum for all companies looking to develop their climate and supply chain strategy, the most prominent emerging climate commitment is that of Net Zero.

7 The Low Carbon Pledge, 2021. The Low Carbon Pledge. Business Action on Climate. Available at: <https://www.bitc.ie/the-leaders-group-on-sustainability/low-carbon-pledge/> [Accessed 12 March 2021].

8 Cdp.net. Supply chains hold the key to one gigaton of emissions savings, finds new report - CDP. [online] Available at: <https://www.cdp.net/en/articles/media/supply-chains-hold-the-key-to-one-gigaton-of-emissions-savings-finds-new-report> [Accessed 12 March 2021].

9 GHG Protocol, 2019. Overview of GHG Protocol scopes and emissions across the value chain. Available at: <https://www.ghgprotocol.org/sites/default/files/ghgp/standards_supporting/Diagram%20of%20scopes%20and%20emissions%20across%20the%20value%20chain.pdf>

At its most basic, Net Zero is achieved when the GHG emissions an organisation produces are no more than the emissions they remove from the atmosphere. To reach this position requires significant abatement of GHG emissions from switching to renewable energy, along with eliminating deforestation in your supply chain, plus investment in scalable emissions reduction technologies. Emissions that remain unabated, or 'residual emissions' as they are often referred, will then need to be neutralised with the equivalent volume of long-term carbon removals before the net-zero emissions target is reached. These removals will likely require a combination of nature-based solutions, such as carbon sequestration, as well as technological solutions through carbon capture and storage. The cost and access barriers to the scale of technology required further emphasises the importance for companies of prioritising emissions removals and reductions within their value chain.



Source: World Resources Institut. Available at: https://www.wri.org/blog/2019/09/what-does-net-zero-emissions-mean-6-common-questions-answered

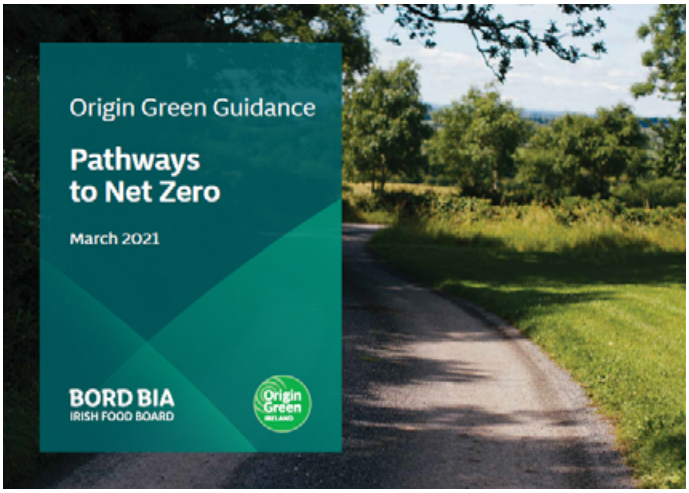
Retailers such as Sainsbury's, Tesco and SuperValu along with manufacturers Unilever and Nestlé have already made public statements on their Net Zero ambitions, with boundaries ranging from own operations to Scope 3 inclusive.

Due to the inconsistencies in corporate commitments, The Science Based Targets initiative (SBTi) is currently in the process of developing the first global standard for setting Net Zero Corporate Targets, aligned with the latest climate science that limits warming to 1.5°C[10].

Understanding the different climate commitments and what is right for your business is key to setting a climate goal that is appropriately ambitious, transparent and authentic.

Climate terminology, and in particular Net Zero, is undeniably complex but it is important to find a way to cut through the technical language to better articulate your company's climate commitments for greater engagement with the wider business and with your customers. Organisations such as the Carbon Trust and World Resources Institute provide information on developing and communicating Net Zero targets.

For information on defining and measuring your scopes and emissions, read the new **Origin Green Pathways to Net Zero Document** which sets out clear guidelines for those who are embarking on their climate journey[11].



10 Carrillo Pineda, A., Chang, A. and Faria, P., 2021. Foundations for science-based net-zero target setting in the corporate sector. Version 1.0. [online] CDP on behalf of Science Based Targets Initiative. Available at: <https://sciencebasedtargets.org/resources/legacy/2020/09/foundations-for-net-zero-full-paper.pdf> [Accessed 12 March 2021].

11 Bord Bia, 2021. Pathways to Net Zero. Available at: <https://www.origingreen.ie/globalassets/origin-green/og-publications/origin-green---pathways-to-net-zero---guidance-document.pdf> [Accessed 12 March 2021].

The global drive toward Net Zero will have a positive knock-on effect across all sectors - as policy change and financial investments grow we will likely see the development of scalable and affordable technologies as well as a decrease in national inventories of emissions. However, with the surge in Net Zero ambitions, it is also likely that the current offset market will not be large enough to neutralise increasing emissions pledges. Demand could outweigh supply and as a result it is probable that the cost of high quality offsets will significantly rise in the coming years.

Companies looking to minimise exposure to an increasingly costly carbon market are prioritising 'insetting' solutions. Insetting projects are meaningful carbon projects which offset the carbon emissions of an organisation through projects within their own value chain[12]. Collaborating with suppliers and customers to solve shared supply chain issues also enables the sharing of learnings and programme costs, while creating a host of co-benefits for the ecosystems and communities in which an organisation, its suppliers and customers operate.

Nespresso Agroforestry Insetting Project

12 Pur Projet, What is Insetting. [online]. Available at: <https://www.purprojet.com/presentation-what-is-insetting/>

Embedding Climate-Centric Culture across your business:

While a business may not be on a Net Zero journey yet, it is likely a number of the companies and retailers they supply into are and so it is crucial that businesses understand their carbon footprint, its impact on their customer's Scope 3 emissions and incorporate this into the development of a robust climate and supply chain strategy.

Once developed, this strategy should be communicated and understood business-wide. For example, making sales teams aware of their company's climate strategy can improve their ability to articulate how these ambitions help meet a customer's expectations. It is equally important that procurement teams and policies are aligned to the company's climate targets. As part of the Microsoft commitment to be Carbon Negative by 2030 they have made carbon reduction an explicit part of their supply chain procurement process.

Embedding climate-centric thinking across an organisation supports the development of a more sustainable business model which incorporates planetary and social commitments alongside profit and performance planning. PepsiCo has incorporated climate risk into their business continuity plans as part of their ambition to achieve net-zero emissions by 2040. Embedding climate data into business decisions in New Product Development (NPD), R&D and Procurement helps ensure their growth plans align with their emissions reduction objectives. One such initiative is Pepsico's 'Sustainable from the Start' product development philosophy, to prioritise climate action into NPD.

Other initiatives include cascading action with strategic suppliers to improve the decarbonisation and resiliency of supply chains. Setting an internal price for carbon is another way companies can incorporate climate risk and a climate mindset into business thinking and operations. Creating an internal carbon price puts a monetary value on emissions, which a company can then factor into investment decisions. Companies currently in favour of carbon pricing policies include Unilever, Nestlé and Carrefour, who are all members of the Carbon Pricing Leadership Coalition.

Unlocking Value in the Supply Chain:

A robust climate strategy presents an opportunity to unlock value within the supply chain by identifying risks, leveraging data to improve storytelling, creating new markets for products previously viewed as waste, and collaborating to strengthen customer relationships and solve shared problems.

Conducting climate risk assessments allows an organisation to foresee and prevent the weak links that can disrupt supply chains. Companies like Ben & Jerry's are using increased supply chain visibility to inform their insetting initiatives to deliver climate protection measures in communities where they source their agricultural commodities.

Effective risk assessment is determined by the quality of underlying data. Improving data capture and management along your supply chain is key to executing a successful climate strategy; however it can also significantly enhance a company's ability with storytelling. Data will be the new narrative in the fight against climate change and can improve corporate value propositions and investor appeal.

Climate strategy can also present an opportunity to create new markets for products previously viewed as waste. Repurposing food or bio waste can help an organisation to drive down its carbon footprint while saving costs. For all of its cosmetics, skincare brand Lleig uses 'ugly' fruits[13] that were discarded for purely aesthetic reasons.

And finally collaboration is another way to unlock value in the supply chain. Partnerships with suppliers or customers to address systemic climate challenges can help build trust and solve issues through shared resources. An initiative between Cargill, Target and McDonald's, in association with The Nature Conservancy, works with farmers in their shared beef supply shed to improve soil health and store carbon[14].

13 Hahn, J., 2021. Júlia Roca Vera turns food waste into skincare. [online] Dezeen. Available at: <https://www.dezeen.com/2021/02/15/julia-roca-vera-turns-food-waste-into-skincare/>

14 The Nature Conservancy. 2021. Soil Health Project Seeks Central Nebraska Farmers. [online] Available at: <https://www.nature.org/en-us/about-us/where-we-work/united-states/nebraska/stories-in-nebraska/soil-carbon-project/> [Accessed 12 March 2021].

Source: The Nature Conservancy. Available at: https://www.nature.org/en-us/about-us/where-we-work/united-states/nebraska/stories-in-nebraska/soil-carbon-project/

Unlocking Commercial Opportunities:

Translating a corporate carbon strategy into brand strategies can help to accelerate your journey towards Net Zero, while enhancing brand engagement. Unilever's Sustainable Living Brands, which consistently outperform their other brands have demonstrated the commercial power of brand level sustainability action[15].

A key first step in developing a brand sustainability strategy is to perform a materiality assessment to understand which sustainability issues present risks to supply chains and also which of them resonate with customers. If climate change scores highly on a brand's materiality assessment, developing projects with a climate lens can create increased brand engagement. Nestlé chose to do this with their Nespresso brand, setting a more ambitious deadline to be carbon neutral by 2022[16]. Nestlé identified water scarcity and deforestation as a real risk both to assured supply of coffee and to farmer welfare. By investing in tree-planting programmes, Nespresso protects local water supplies and prevents soil erosion from landslides to improve coffee yield while also absorbing carbon.

If a brand attracts more environmentally conscious customers, setting a more ambitious climate target for that brand could present further opportunity to establish the brand's sustainability credentials and generate greater engagement.

15 Unilever, 2019. Unilever's purpose-led brands outperform. Available at: <https://www.unilever.com/news/press-releases/2019/unilevers-purpose-led-brands-outperform.html> [Accessed 12 March 2021].

16 Nestlé, 2020. Every Cup of Nespresso Coffee will be Carbon Neutral by 2022. Available at: https://nestle-nespresso.com/news/every-cup-of-nespresso-coffee-will-be-carbon-neutral-by-2022 [Accessed 12 March 2021].

Leveraging climate goals for competitive advantage:

When undertaking any sustainability initiative in a corporate setting, a robust business case is key. How can an organisation create competitive advantage through an ambitious carbon strategy?

In a B2B context, purchasing organisations are increasingly looking to their suppliers to reduce emissions so they can hit their own ambitious scope 3 targets. Demonstrating leadership in this space and communicating clearly with customers can strengthen relationships with suppliers and may even qualify an organisation for preferred supplier status.

For consumer-facing organisations and brands, messaging is key to commercialising climate goals. It is important to engage branding and marketing teams so they understand how to translate corporate goals into brand strategies. Gregg's vegan sausage roll was so successful that all Gregg's staff shared a £7m bonus[17], and Brewdog have created a $2Bn business with their carbon negative beers[18]. These products demonstrate that by successfully communicating climate strategies, businesses can create clear commercial value.

Greggs shares soar as vegan sausage roll boosts profits
Source: The Telegraph UK (2019). https://www.telegraph.co.uk/business/2019/11/11/greggs-shares-soar-vegan-sausage-rolls-boosts-profits/

BrewDog goes Carbon Negative
Source: BrewDog. https://www.brewdog.com/tomorrow

17 Chapman, B., 2020. Greggs staff share £7m bonus after vegan sausage rolls boost baker's sales. Available at: <https://www.independent.co.uk/news/business/news/greggs-staff-bonus-vegan-sausage-roll-steak-bake-sales-a9274766.html> [Accessed 12 March 2021].

18 Brewdog, 2021. Brewdog is now carbon negative. Available at <https://www.brewdog.com/uk/tomorrow> [Accessed 12 March 2021].

Conclusion:

The corporate agenda is shifting. 88% of consumers want brands to help them live more sustainably[19] and in 2019 the US Business Roundtable[20] redefined the purpose of a firm to include an organisation's responsibilities to communities and the environment.

The increasing appetite for action on climate change alongside the growing legislative commitments to a Net Zero economy, presents a clear need for companies to align their climate and supply chain strategies to not only retain credibility and their license to operate, but to unlock commercial value.

In order to develop a leading climate strategy, it is important to understand the corporate climate commitment landscape and the associated technical terminology and translate it into an appropriate and ambitious goal for the organisation.

All your teams need to be supported in developing their climate knowledge, especially in sales and marketing, where action on climate change can be used as a differentiator when pitching to customers. Successfully attaining this goal can most effectively be achieved by embedding a climate-centric culture across the organisation, to ensure climate considerations are taken into account in key decision-making processes. Embedding climate-centric thinking across the organisation will accelerate an organisation towards climate goals while supporting the development of lower emissions products.

With an effective climate strategy in place an organisation can realise opportunities to unlock value within the supply chain and improve customer relationships by leveraging climate credentials. By creating new markets, appealing to sustainability-conscious consumers, turning waste products into a value stream, or collaborating with customers to strengthen relationships, every aspect of your climate strategy can be leveraged toward commercial success.

19 Townsend, S., 2018. 88% of Consumers Want You To Help Them Make A Difference. [online] Forbes. Available at: <https://www.forbes.com/sites/solitairetownsend/2018/11/21/consumers-want-you-to-help-them-make-a-difference/?sh=2e14668e6954> [Accessed 12 March 2021].

20 Business Roundtable, 2019. Business Roundtable Redefines the Purpose of a Corporation to Promote 'An Economy That Serves All Americans' Available at: <https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans> [Accessed 12 March 2021].

While climate action needs to focus on long-term solutions, it is important not to be distracted by 2040 and 2050, but instead to create impact and prioritise deep decarbonisation in your own practices and across your supply chain within the next 8 years. The time to act is now!

And finally, while a sustainability team can lead an organisation through this transition, Net Zero should not be viewed as a sustainability strategy alone, it is a business transformation strategy and for that to succeed, the entire organisation, including all its stakeholders, must be brought on this journey.

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The Origin Green Ambassadors Global Insights Reports 2021

PROTECTING TRADE THROUGH SUPPLY CHAIN TRANSPARENCY

Cáit Lynch &
Mairéad Comerford

BORD BIA
IRISH FOOD BOARD

Origin Green Ambassador Programme

Never has sustainability been so top of mind and globally important, and it is this convergence that has opened some important discussions among the global food industry. Bord Bia's Origin Green Ambassador programme is designed to open and facilitate these conversations and the role of Irish sustainability initiatives in export markets.

Created in 2013 with the Michael Smurfit Graduate Business School, this programme has at its heart two interlinked pillars: one focused on education in the sphere of Business Sustainability, and the other on partnership with major international food companies. The format of this 23 month programme towards an MSc in Business Sustainability ensures that high quality executives are placed in many of the leading Global Food & Drink companies, hot housing their skills while engaging on live sustainability projects. Working to embed sustainability best practices, strategic planning, refine policies and bring new thinking to their placements.

The Ambassadors are the connection between Ireland's Origin Green programme and its associated partner organisations who are world leaders in the global food industry. Over two years, modules focus on accelerating growth, sharpening business strategies, and anticipating change in an ever transient global economy. In partnering with major international food firms, these ambassadors can then build on an awareness of established Irish initiatives across key target markets.

In this series of global insights reports, the Ambassadors bring you their insights on some of the most pressing sustainability issues and opportunities facing our industry.

Cáit Lynch

Cáit's first placement was with Albert Heijn in The Netherlands working on risk assessment, supply chain transparency and responsible sourcing through their due diligence policy. Her second placement was with Danone UK & Ireland as Sustainability and Social Innovation Projects Manager working on the implementation of Danone's sustainability strategy, biodiversity roadmap development and employee engagement projects. Cáit's final placement was with OSI Europe. Here she led the redesign of OSI's sustainability benchmark for beef suppliers and coordinated the region's sustainability communications.

https://www.bordbia.info/ucd-2021/

Mairéad Comerford

Mairéad spent her first placement with Britvic in the UK where she created a water stewardship strategy for the company, worked with suppliers to map their water risk and helped calculate Britvic's carbon footprint for their Science Based Targets submission. Her final two placements were with Nestlé in Switzerland. There she worked on building strategic roadmaps for lower carbon and net zero emissions dairy farms across Nestlé's 27 milk markets and creating the fresh milk carbon footprint. She also worked with the Recipe and Product Development Taskforce creating Nestlé's 2.0 climate impact, ingredient comparison tool.

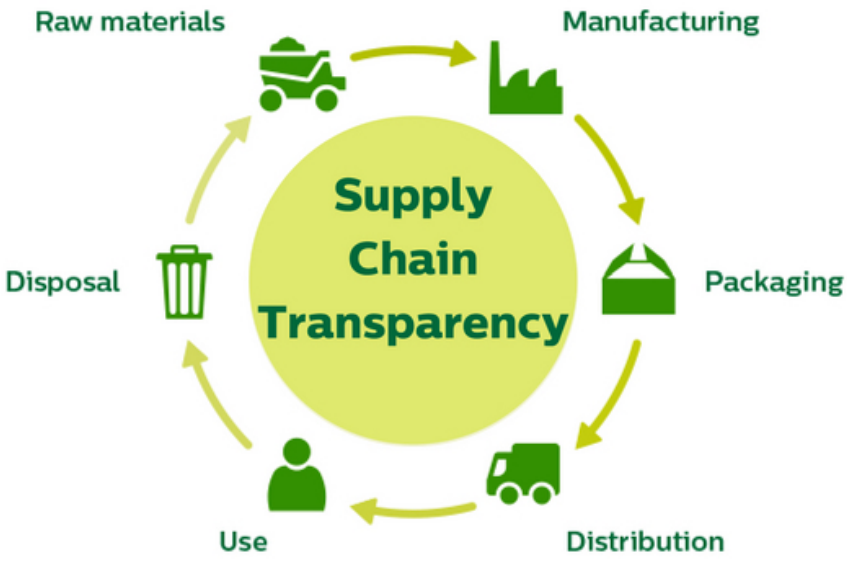
https://www.bordbia.info/ucd-2021/

Introduction

The concept of supply chain transparency was virtually unknown 15 years ago, yet today it commands the attention of mid- and senior-level managers across a broad spectrum of companies and industries. [1]

This report explores how neglecting to meet demands for transparency can have major reputational, legal and even business disruption risks and how Irish food companies should be proactively protecting trade through supply chain transparency.

There is increasing global pressure on companies to disclose supply chain information. This is often instigated through environmental and social abuses uncovered in chains, further driven by global legislation and growing sustainable investing. Previously accepted levels of supply chain transparency are no longer sufficient. The trend is moving from compliance to full disclosure.



Source: https://www.innovationservices.philips.com/app/uploads/2018/02/supply-chain-transparency.png

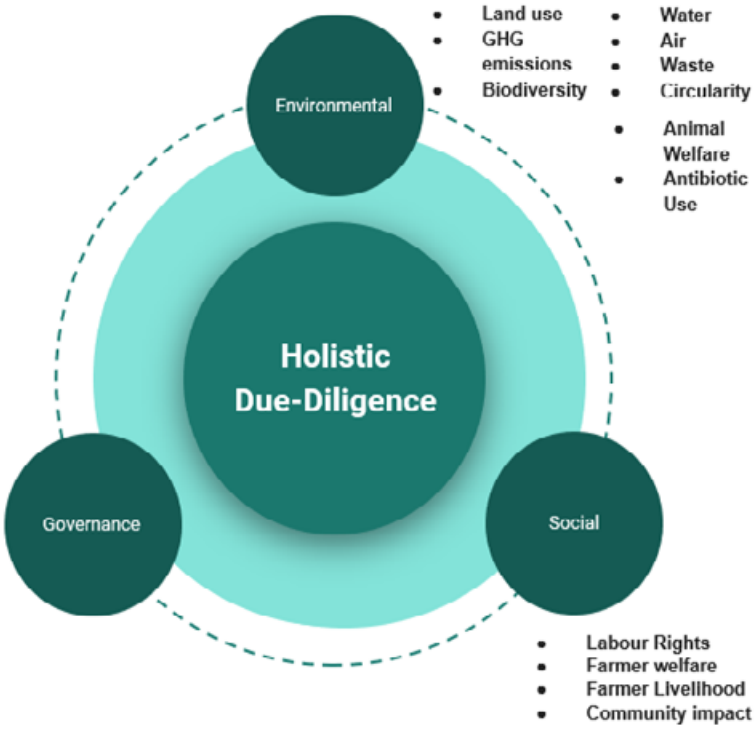
1 Bateman, A., and Bonanni, L. (2019). What Supply Chain Transparency Really Means. Harvard Business Review.

Supply Chain Transparency and Due Diligence

In a transparent supply chain, a company has complete upstream visibility and shares this both internally and externally.[2]

Supply chain due diligence is the process by which businesses identify, prevent, mitigate and account for their adverse impacts throughout their operations and business relationships.[3]

This report considers a holistic approach to supply chain transparency and due diligence with consideration to environment, society and governance.



Source - Lynch & Comerford, 2021

2 Bateman, A., and Bonanni, L. (2019). What Supply Chain Transparency Really Means. Harvard Business Review.

3 Triponel, A., and Wolberg, M. (2020, December 3). Triponel Consulting. Retrieved from Referendum or no referendum: human rights due diligence isn't going away for Swiss companies: https://triponelconsulting.com/2020/12/03/human-rights-due-diligence-isnt-going-away-for-swiss-companies/

Increased Global Pressure

Media

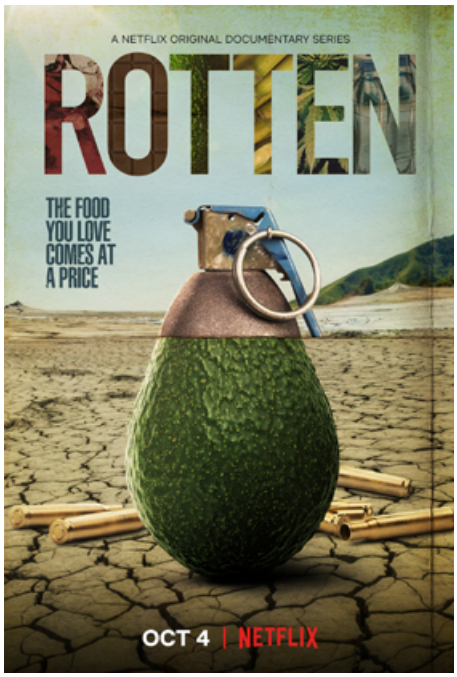
In the media, concealed human-rights and environmental abuses have become topics of investigatory series calling for increased transparency and better practices, increasing consumer awareness. There are many examples of this, such as the Rotten series exposing food supply chain corruptions, forced labour in tomato picking in Italy, the avocado industry's water scarcity and cartel linkages, Nespresso named in child labour exposés and employee welfare in the food industry during Covid-19.

Activists & NGOs

Activist NGOs, such as GreenPeace, Extinction Rebellion and Wakker Dier, have been gaining a lot of media attention through strong, emotive campaigns.

NGOs have also been scoring companies and brands on environmental and social impacts, such as OXFAM's Behind the Brands campaign. Notably, publicly available information on the sourcing policies and commitments are assessed, highlighting the need for both transparency and disclosure in companies' supply chains.

Other ratings include sector-specific such as cocoa rankings and the WWF palm oil scorecard, and issue-specific ratings such as the Know The Chain forced labour Assessment.



Source: https://www.imdb.com/

Investors

In his 2021 letter to CEO's, Larry Fink, CEO of Blackrock, reconfirms that Environmental, Social & Governance (ESG) issues are more relevant than ever for investors, highlighting the 96% increase in sustainable investing since 2019 (from $147Bn to $288Bn).

BlackRock was an early participant in the Taskforce on Climate-related Financial Disclosures (TCFD) and is an advocate for its adoption as a non-financial reporting framework.[4] TCFD reporting is set to become mandatory in the UK by 2025.

Since the pandemic hit, much research has indicated that the 'S' in ESG has gained importance for investors and greater attention is now given to companies' treatment of workers. However, it is important that environmental and social issues are viewed interconnectedly rather than independently of one another. This is reiterated in Fink's letter where he states, "Improved data and disclosures will help us better understand the deep interdependence between environmental and social issues."[5]

COVID-19

Covid-19 has further exposed the vulnerabilities and fragilities in global supply chains. Given abuses highlighted by the pandemic, the recovery phase is likely to reinforce the trend of increased regulation.[6] One of the struggles that came with the pandemic was the social-distancing measures for plant employees, where questions arose around whether companies were doing enough to protect staff.

4 BlackRock. (2020, January). BlackRock Investment Stewardship's approach to engagement on the TCFD and the SASB aligned reporting. Retrieved from https://www.blackrock.com/corporate/literature/publication/blk-commentary-tcfd-sasb-aligned-reporting.pdf

5 Fink, L. (2020, January). Larry Fink's 2021 letter to CEOs. Retrieved from BlackRock: https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter

6 UN PRI. (2020). Sustainable and Inclusive COVID-19 Recovery and Reform.

Ratings Risks

European countries have traditionally been considered low-risk in terms of human rights issues, but the UK BooHoo scandal is further proof that issues of negligence are happening closer to home and ESG ratings are starting to consider this. Infringements within supply chains can happen anywhere, even in traditionally 'low-risk' countries. As a result of allegations against BooHoo, the company is facing a possible US import ban.

Customers

In a recent study, global investor network FAIRR warned that big food companies are at risk of missing their publicly committed climate targets due to their suppliers' lack of progress, focusing particularly on meat and dairy providers.[7] This urges food giants to look down their chains and put pressure on their suppliers to follow suit.

Consumers

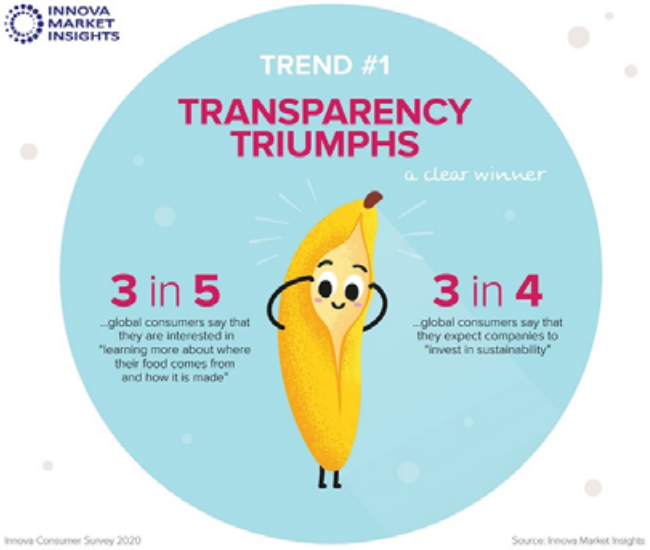
Consumers are using their purchasing power to demand more from brands.

Source: https://www.edie.net/news/7/In-numbers--The-growing-global-consumer-demand-for-corporate-transparency/ [8]

7 Askew, K. (2020, November 12). Is Nestlé and McDonald's climate ambition 'undermined' by 'plodding' meat and dairy suppliers? Retrieved from Food Navigator: https://www.foodnavigator.com/Article/2020/11/12/Is-Nestle-and-McDonald-s-climate-ambition-undermined-by-plodding-meat-and-dairy-suppliers#

8 Edie. (2018, October 30). In numbers: The growing consumer demand for corporate transparency. Retrieved from Edie: https://www.edie.net/news/7/In-numbers--The-growing-global-consumer-demand-for-corporate-transparency/

Transparency is Innova Market Insights' top trend for 2021. Their global research reveals 60% of global consumers are interested in learning about where foods come from.[9]



As a result of more engagement, retailers and brands are offering more consumer-facing mobile apps. Examples include:

coop	ICA	Orkla	TESCO WWF	Refresco
App that shows customers roughly how much CO2 to produce a product 	App that allows customers to see the impact of their purchase 	Customers pay with carbon dioxide equivalents and their prices are based on their climate impact 	The aim is to halve the environmental impact of the average UK shopping basket. 	Albert Heijn uses blockchain technology so consumers can trace their orange juice back to the producer. 

Picture Sources: Contagious, 2020; MDPI, 2020; New Food Magazine, 2020; Tesco, 2019; Albert Heijn, 2018.

9 Ferrer, B. (2020, October 20). Transparency triumphs in Innova Market Insights' Top Trends for 2021. Retrieved from Food Ingredients First: https://www.foodingredientsfirst.com/news/transparency-triumphs-in-innova-market-insights-top-trends-for-2021.html

Reputation and Brand Image

According to a study by the World Economic Forum, on average more than 25% of a company's market value is directly attributable to reputation. Abuse in supply chains, at any stage through either direct or indirect suppliers, can have huge impacts on brands' reputation.

source: https://en.wikipedia.org/wiki/World_Economic_Forum

Government & Legislation

Heightened awareness, pressure and fallout from major scandals have all led to an increased legislative framework on transparency and responsible sourcing. Information disclosure is commonly used as a regulatory tool to influence corporations' behaviour. Transparency can provoke learning and encourage positive institutional change by empowering private watchdogs to monitor and pressure business leaders to alter harmful behaviour and encourage accountability.[10] Once legislation comes into force in one country, a ripple effect is created across many others.

10 Doorey, D. (2011). The Transparent Supply Chain: from Resistance to Implementation at Nike and Levi-Strauss. Journal of Business Ethics, 587–603.

Environmental Legislation

UK

The upcoming Environmental bill will have a noteworthy impact on Irish suppliers and Ireland's €4.3Bn of food exports to the UK. One of the leading new measures necessitates greater due diligence from businesses. It will be illegal for businesses operating in the UK to use key commodities if they have not been produced in line with local laws protecting forests and other natural ecosystems.[11]

All large businesses selling in the UK will be required to provide evidence that the forest risk commodities they source from around the world come from deforestation-free suppliers or provide a valid reason why they are unable to do so. Soy, palm oil, cocoa, beef, leather, rubber, wood and paper are all classed as forest risk.[12]

USA

President Biden announced that, under his administration, public companies will be required to disclose climate risks and greenhouse gas emissions in their operations and supply chains.[13]

Human Rights Legislation

Globally, over 30 laws and initiatives relating to business and human rights have been introduced in the last decade. Included are the EU Directive 2014/95 on non-financial reporting, the UK Modern Slavery Act of 2015, Section 1502 of the US Dodd-Frank Act on conflict minerals, and the Dutch Child Labour Due Diligence law.

Regulatory conversations have been taking place worldwide on businesses' role in responsible supply chain behaviour.

11 Department for Environment, Food and Rural Affairs. (2020, November 11). Government sets out world-leading new measures to protect rainforests. Retrieved from Gov.uk: https://www.gov.uk/government/news/government-sets-out-world-leading-new-measures-to-protect-rainforests

12 Edie. (2020, November 11). Environment Bill: UK businesses to be banned from sourcing through deforesters overseas. Retrieved from Edie: https://www.edie.net/news/11/Environment-Bill--UK-businesses-to-be-banned-from-sourcing-through-deforesters-overseas/#:~:text=Environment%20Bill%3A%20UK%20businesses%20to%20be%20banned%20from%20sourcing%20through%20deforesters%20overseas,-11%20November%20

13 CIPS. (2020, December 2). Swiss reject tough law on supply chain due diligence. Retrieved from CIPS.org: https://www.cips.org/supply-management/news/2020/december/swiss-reject-tough-law-on-supply-chain-due-diligence/

European Union

This year, the EU will introduce mandatory human rights and environmental due diligence legislation. Companies will be required to carry out supply chain due diligence and publicly disclose results and steps taken to alleviate any human rights and environmental risks they uncover. Crucially, this legislation ensures that any victims will have access to resolution in EU courts which means companies can be held liable for negative environmental and social impacts.

"For businesses, we're creating a level playing field and legal clarity. For consumers, we're ensuring fair products. For workers, we're enhancing protection. For victims, we're improving access to justice. And for the environment, we're taking a step that is very long overdue." [14]

Germany

Under proposed legislation, firms would face fines for failing to carry out mandatory due diligence on human rights. [15]

The Netherlands

The Dutch Child Labour Due Diligence Act will come into force mid-2022, obligating all companies selling into that jurisdiction to perform due diligence on their supply chain. Companies must investigate if there is any reasonable suspicion that products in their supply chain have relied on child labour and create an action plan to tackle cases. Non-compliance results in fines and criminal penalties.

A proposal has also been put forward for a Responsible & Sustainable Entrepreneurship Act. The Bill obliges companies to comply with the internationally recognised OECD standards for corporate social responsibility and would be a "major step to protect human rights and the environment worldwide."

14 European Parliament. (2021). Companies should be held accountable for their actions, say MEPs. Retrieved from European Parliament: https://www.europarl.europa.eu/news/en/headlines/society/20210303STO99111/companies-should-be-held-accountable-for-their-actions-say-meps?xtor=AD-78-[Social_share_buttons]-[whatsapp]-[en]-[news]-[society]-[corporate-due-diligence-accountability-vdo-0321]

15 CIPS. (2020, December 2). Swiss reject tough law on supply chain due diligence. Retrieved from CIPS.org: https://www.cips.org/supply-management/news/2020/december/swiss-reject-tough-law-on-supply-chain-due-diligence/

What does this mean for the Irish food industry?

Some of Ireland's biggest export markets have implemented, or are planning to implement, legislation on environment, human rights and due diligence. It is essential to know what is happening in supply chains. If there are instances of human or environmental abuses, there is a real possibility of trade loss within some of our most lucrative markets. For example, all products sold in the UK will require due diligence to ensure there is no associated deforestation. This can be in any part of the supply chain. Soy in animal feed may be an area of particular interest to the Irish industry.

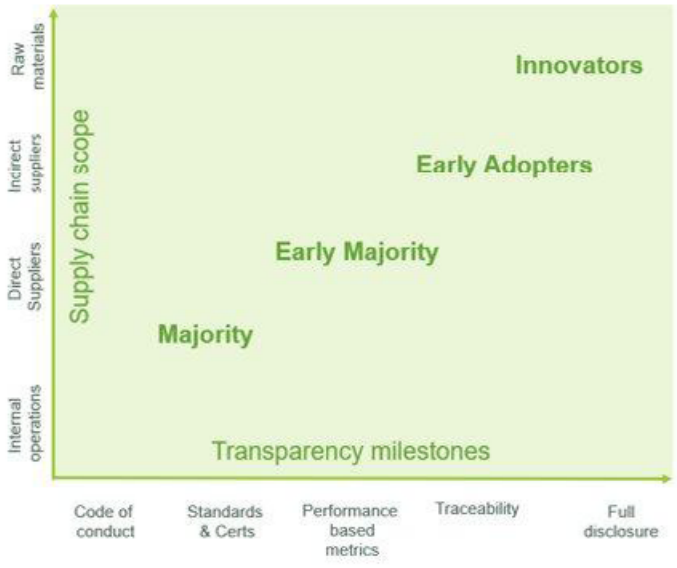
The Reporting Exchange – powered by the World Business Council for Sustainable Development (WBCSD) – is a comprehensive tool that maps out countries' ESG reporting requirements.

Recommendations

1. Identify current transparency stage

A first step is identifying where the company currently lies on the transparency matrix. Transparency can be measured along two dimensions: Supply chain scope (the depth of interaction in the supply chain) and milestones on the path to complete transparency.[16]

It is important to move beyond codes of conducts, standards and certification and toward full disclosure throughout the whole supply chain.



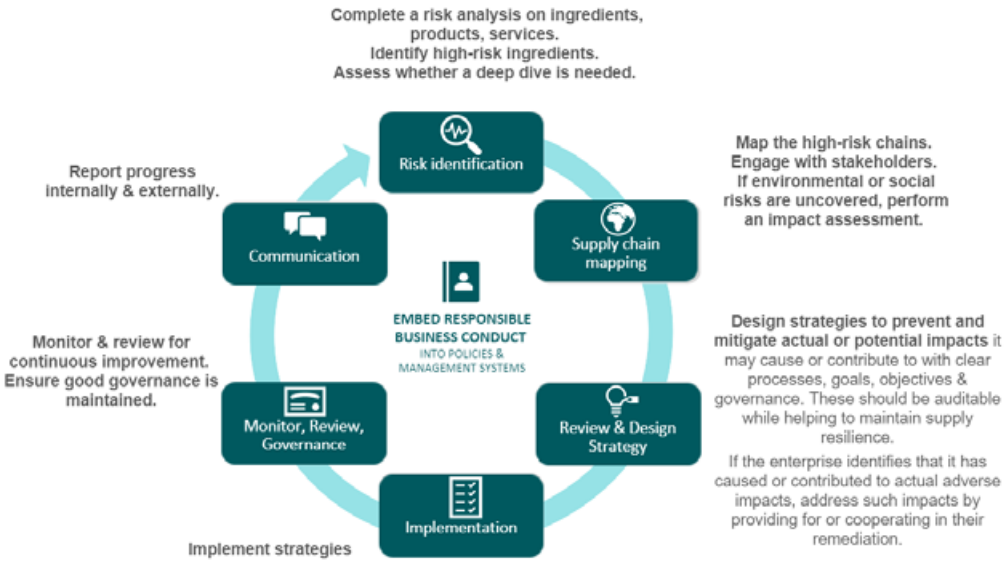
Source: Bateman, A., and Bonanni, L (HBR), 2019

16 Bateman, A., and Bonanni, L. (2019). What Supply Chain Transparency Really Means. Harvard Business Review.

2. Complete Due Diligence

Due diligence helps companies anticipate, prevent and mitigate against environmental, social and governance risks in supply chains. Effectively preventing adverse impacts may in turn help an enterprise maximise positive contributions to society, improve stakeholder relationships and protect its reputation.[17]

By analysing OECD[18] guidelines and industry best practices, a due diligence approach has been developed to show the main steps that can be taken to undergo this process.



Source - Lynch & Comerford, 2021

3. Origin Green Alignment

Supply chain transparency is part of the Raw Material Sourcing scope of the Origin Green charters, falling into both the social and environmental pillars. High levels of transparency can help contribute to gold member status.

17 OECD. (2013). OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas: Second Edition. OECD Publishing.

18 OECD. (2018). OECD Due Diligence Guidance for Responsible Business Conduct. Retrieved from OECD: https://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf

Industry Best Practice

Brand Growth Through Responsible Sourcing

In 2006, the global consumer tea market was peaking as a highly competitive business. Tea had become commoditised, with consumers unable to differentiate between brands on quality or taste and so big brands were in a spiralling price war with prices half what they had been in the 1990s.[19]

In a unique move, Unilever committed to sourcing 100% sustainably grown tea, requiring training of smallholder farmers and increased costs. The proposal required months of convincing using three business model proposals:

1. **Ensuring supply** - For years, farmers had been intensifying production to increase yields to keep up with demand while combating increasingly low prices. This, combined with global warming production vulnerabilities, was a material issue for Unilever. There was a risk to future quantity and quality needed, which could not be solved without helping the tea-growers.
2. **Protecting Tea Brands** - reducing the risk of a mass media attack on the poor working conditions in tea supply chains.
3. **Sustainability would increase consumer demand.**

The project led to the training of half a million smallholder farmers on sustainable agriculture practices, with Unilever subsidising some additional investments or helping farmers access affordable finance.

Farmer benefits:

- Yield gains from 5-15%
- Improved tea quality
- Reduced operating costs
- Higher tea prices
- Average income increased by 10-15%
- Practices passed through generations.

source: https://www.edie.net/

19 Henderson, Rebecca. Reimagining Capitalism in a World on Fire. New York: PublicAffairs, 2020.

Unilever knew that customers would not change overnight to paying a premium for the new sustainable tea and so had to increase demand to cover the higher costs. This required talking to consumers, explaining the complex topic in language that was in-line with brand communications.

The **UK** did this brilliantly, where PG Tips competed with Tetley for top brand with both having a circa 25% market share. With the *Do your bit, put the kettle on* campaign, market share increased by 1.8pts while Tetley remained flat. Repeat purchase rates increased from 44% to 49% and sales increased by 6%. There was also a steady increase in the perception of PG Tips as an ethical brand. Similar results were seen in **Australia** (Sales increased by 11% and market share rose from 24.2 to 25.8%) and **Italy** (10.5% sales increase).

Source: Sustainly

The figures also suggest that Unilever broke even on investments in the first few years while simultaneously, significantly strengthening brands, ensuring a resilient supply and transforming the lives of hundreds of thousands of people. [20] [21]

20 Henderson, Rebecca. Reimagining Capitalism in a World on Fire. New York: PublicAffairs, 2020.

21 Henderson, R., and Nellemann, F. (2012, November). Sustainable Tea at Unilever. Retrieved from Harvard Business School: http://blogs.ubc.ca/courseblogsis_ubc_ba_504_001_2014w1-2_45258-sis_ubc_ba_504_001_2014w1-2_45258/files/2015/08/Sustainable-Tea-at-Unilever.pdf

Transforming Transparency, Protecting Reputation

Oxfam's 2018 behind the barcode campaign on Dutch retailers resulted in a poor performance for Albert Heijn. The following year, Albert Heijn published its human rights and due diligence policy[22], a world first. It acknowledged that sole reliance on social audits and certifications is insufficient to protect human rights and committed to completing six impact assessments per year in supply chains where human rights are at risk. Jumbo supermarket and Lidl have now followed suit, publishing their own due-diligence policies.

Conversely, **M&S** commissioned **Oxfam** to undertake a collaborative review of their grocery and footwear supply chains, focusing on human rights and worker wellbeing. The assessment included over 400 interviews to better understand "the true worker experience" and identify changes needed in its own operations and those of suppliers. This type of analysis helps uncover some issues which are not often registered in audits due to worker fears.[23]

Industry Collaboration

One solution that is helping accelerate change is the formation and combined power of industry groups. We see these addressing many different issues. Groups such as SAI Platform, Roundtables on specific ingredients, the Soy Transparency Coalition, the Business Benchmark on Farm Animal Welfare (BBFAW), Food Reform for Sustainability & Health (FReSH), and many more are working together for the overall benefit and indeed survival of their industry. These groups focus on ensuring transparency and collaboratively identifying solutions. The power of such coalitions comes through transparency and scale – no single company can tackle supply chain issues alone, collective industry solutions and coordinated action are key to positive transformation.

Example: National Collaboration Addressing Living Wage. In an industry first, Dutch supermarkets have joined forces to ensure a living wage for banana workers in the international production chain. The retailers' five-year ambition is to reduce the gap between the current wage and the living wage for their entire banana assortment by at least 75%.

Source: IDH, 2019

22 Albert Heijn. (2019). Van de wereld voor de wereld. Retrieved from AHold: https://static.ahold.com/media/002099800/000/002099838_001_Albert_Heijn_Due_Diligence.pdf

23 Oxfam. (2021, January 14). Working in Marks and Spencer's Food and Footwear Supply Chains. Retrieved from Oxfam Policy and Practice: https://policy-practice.oxfam.org/resources/working-in-marks-and-spencers-food-and-footwear-supply-chains-621145/

Data & Technology

Technology is playing a huge role in gathering data on supply chains. Examples include:

Mars tracing its top 10 raw materials globally using Sourcemap which allows visualisation of its supply chains, tracking locations of all supply down to raw materials, and the social and environmental risks associated with those.[24]

Sample Sourcemap Supplier Visualisation

Source: Sourcemap, 2021

This year, Ferrero announced that they are moving toward 100% satellite mapping of their palm oil supplies. They have partnered with Earthworm Foundation and Airbus to use a combination of satellite imagery and on-the-ground expertise to examine land cover change and forest cover disturbance. This will help identify where deforestation is happening, clearly pinpoint any grievances in the supply chain and allow the company to swiftly remedy these. Ferrero is among the first companies to use satellite monitoring across all its palm oil supply chain, accelerating its deforestation and exploitation-free commitment and demonstrating the new industry standard of transparency and accountability.[25]

24 Sourcemap. (2020, August 3). Interview with Luc Beerens, Global Sustainability Director at Mars Inc. [Customer Testimonial]. Retrieved from Sourcemap: https://www.sourcemap.com/blog/2020/8/3/interview-with-luc-beerens-global-sustainability-director-at-mars-inc

25 Confectionary Production. (2021, February 4). Ferrero moves towards 100% satellite mapping of palm oil supplies. Retrieved from https://www.confectioneryproduction.com/news/33451/ferrero-moves-towards-100-satellite-mapping-of-palm-oil-supplies/

Key Takeaways

1. Supply chain transparency is essential to recognise the impacts that the ingredients and materials we buy have on society and the environment through deforestation, water stress, forced labour practices, income issues, and so forth.
2. For any company that wants to improve supply chain transparency, data is a good place to start. CDP, the global disclosure NGO, noted in their 2019 report about its Supply Chain Program, which facilitates carbon emission transparency that, "as suppliers become more mature in their understanding of sustainability issues and advance their approaches for taking action, there is evidence that they too are improving their efforts to cascade positive change downwards through their own supply chains." The Harvard Business Review independently notes that this improvement is because company disclosures now influence how corporations' contract with suppliers.
3. Companies have a duty to carry out supply chain due diligence, while the case studies highlight that it also makes business sense. Tackling problems around people and planet in supply chains builds resilience and helps ensure continuous supply. Regulations also making this a 'license to operate.'
4. Lastly, many reports highlight that employees favour working for purpose-led companies that are leading in sustainability, which helps attract top talent and enhance employee engagement. Addressing sustainability through supply chain transparency boosts relationships with external stakeholders, brand image, and consequently enhances the overall business.

source: https://coolchoices.com/blog/sustainability-employee-perspective/

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