
Fast Moving Consumers

Which Consumer Goods companies are ready for the low-carbon transition?

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Linking climate metrics to earnings for Consumer Goods companies

This is CDP's first Investor Research report on the Consumer sector. It ranks 16 of the largest publicly listed Consumer Goods companies on business readiness for a low-carbon economy transition. The universe covers a diverse range of companies which have been categorized into two sub-sectors:

- ▼ Food & Beverage (9 companies)
- ▼ Household & Personal Care (7 companies)

We cover around 38% of listed global Consumer Goods companies by market capitalization. While the companies covered are listed in the UK, Europe or the US, the majority of companies have global activities with a large and growing presence in emerging markets.

The Consumer Goods sector is not an emissions intensive sector from a Scope 1 and 2 perspective but is indirectly responsible for significant Scope 3 emissions across the value chain. Food & Beverage companies have higher upstream exposure associated with the use of agricultural commodities in their products. Conversely, Household & Personal Care companies have higher downstream exposure due to energy and water use in the consumption phase.

Companies also face risks associated with resource availability and water stress which threatens to disrupt business models both up and downstream. Leading companies are attempting to innovate their way past these risks; however, their core business models which are linear in nature remain exposed to future resource constraints.

As a consumer facing sector, companies are exposed to changing consumer trends. While consumers face limited direct regulation related to climate change, there is an emerging trend amongst millennials to adopt more environmentally conscious practices. This is evidenced in shifting preference for vegan diets, smaller eco-friendly brands and reduced packaging. Leading companies are responding to these trends through the acquisition of small brands but more transformative innovation and shifts in business models may be needed to align with targets set by the Paris Agreement.

There are four key areas assessed in the League Table, which are aligned with recommendations for company reporting from the G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD):

Transition risks: We assess companies' disclosure and exposure to Scope 3 emissions, business resilience, brand performance and raw material risks.

Physical risk: We assess companies' exposure to water stress across their value chain and evaluate their water management processes and targets.

Transition opportunities: We assess companies' positioning to capitalize on the significant revenue potential resulting from changing consumer preferences. In addition, we assess companies' investments in renewable energy.

Climate governance and strategy: We analyze companies' governance frameworks including emission reduction targets and the alignment of remuneration with low-carbon objectives.

Key findings

- ▼ **The sector's key carbon exposures exist in the value chain** driving large Scope 3 emissions which make up **90% of life-cycle emissions**.
- ▼ **Scope 3 emissions disclosure is strong relative to sectors such as Capital Goods**. 88% of companies disclose both Purchased Good and Services and Use of Sold Products - the robustness of calculation methodologies varies.
- ▼ Despite acknowledging the significance of Scope 3 emissions, **33% of Food & Beverage companies have no Scope 3 emission reduction targets** with Household & Personal Care companies performing better at 29%.
- ▼ **Diversified food companies** which are reliant on a wide range of agricultural commodities including meat, dairy, nuts and soy have **amplified exposure to raw material risks** from water and emissions intensive supply chains.
- ▼ **Pureplay beverage companies are less exposed to these supply chain risks**; however, **the use of water as a key ingredient generates operational and reputational risks**. On average, beverage companies withdraw more than 4 times the water in their operations than their food counterparts.
- ▼ All Household & Personal Care companies are exposed to risks associated with palm oil use. On average, **less than 50% of palm oil is supplied from physically certified sources**.
- ▼ **A number of companies are embracing trends in consumer preferences** where there is a convergence of health and environmental benefits.
- ▼ Outside the brewers which are already plant based, **5 out of the remaining 7 Food & Beverage companies have innovated** existing dairy or meat-based products **to offer vegan options**.
- ▼ **6 out of the 7 Household & Personal Care companies are actively innovating to replace petrochemicals** in their formulations with natural, biodegradable ingredients.
- ▼ **Packaging is one area where companies can introduce circularity** to their business models. 63% of companies are investing to advance depolymerization and recycling infrastructure.
- ▼ **Almost 60% of the top 10 revenue generating brands for each company have failed to deliver low-carbon innovations** to market in the last 5 years, representing 48% of top 10 revenues.
- ▼ **R&D is low for the sector while M&A activity is high**. 75% of companies have acquired smaller, environmentally conscious brands to create strategic optionality. Core brands remain unchanged.
- ▼ **Highly consolidated brand revenues result in exposure to losses** if key brands are not positioned to respond to changing consumer preferences. **88% of companies generate over 50% of group revenues from top 10 brands**.
- ▼ The **Food & Beverage** sub-sector is led by **Danone**, closely followed by **Nestlé** in second place.
- ▼ The **Household & Personal Care** sub-sector is led by **Unilever**, followed closely by **L'Oréal**.

The summary League Table below presents headline company performance and ranking. It is based on detailed analysis across a range of climate-related indicators which could have a material impact on company performance. The League Table is designed to serve as a proxy for business readiness in an industry which will have significant opportunities as governments increase efforts to implement the Paris Agreement. Companies placed towards the bottom are deemed less prepared for a low-carbon transition.

Figure 1: Food & Beverage - League Table summary ⁽ⁱ⁾

League Table rank	Company ⁽ⁱⁱ⁾	Ticker	Country	Average market cap 2018 (US\$bn)	Weighted rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank	2017 Revenue split by business area (%)
1	Danone	BN FP	France	53	3.28	3	3	1	1	Food
2	Nestlé	NESN SW	Switzerland	250	3.59	1	6	2	2	Food
3	AB InBev	ABI BB	Belgium	194	4.31	5	2	3	5	Beverages
4	PepsiCo	PEP US	USA	156	4.59	2	5	7	4	Beverages
5	Diageo	DGE LN	UK	87	4.65	6	1	5	3	Beverages
6	Heineken	HEIA NA	Netherlands	58	5.16	4	4	6	7	Beverages
7	The Coca-Cola Company	KO US	USA	193	5.55	7	9	4	6	Beverages
8	Mondelez	MDLZ US	USA	62	6.44	8	8	8	8	Food
9	Kraft Heinz	KHC US	USA	74	7.52	9	7	9	9	Food

Weighting
Source: CDP

30% 20% 30% 20%

Figure 2: Household & Personal Care - League Table summary ⁽ⁱ⁾

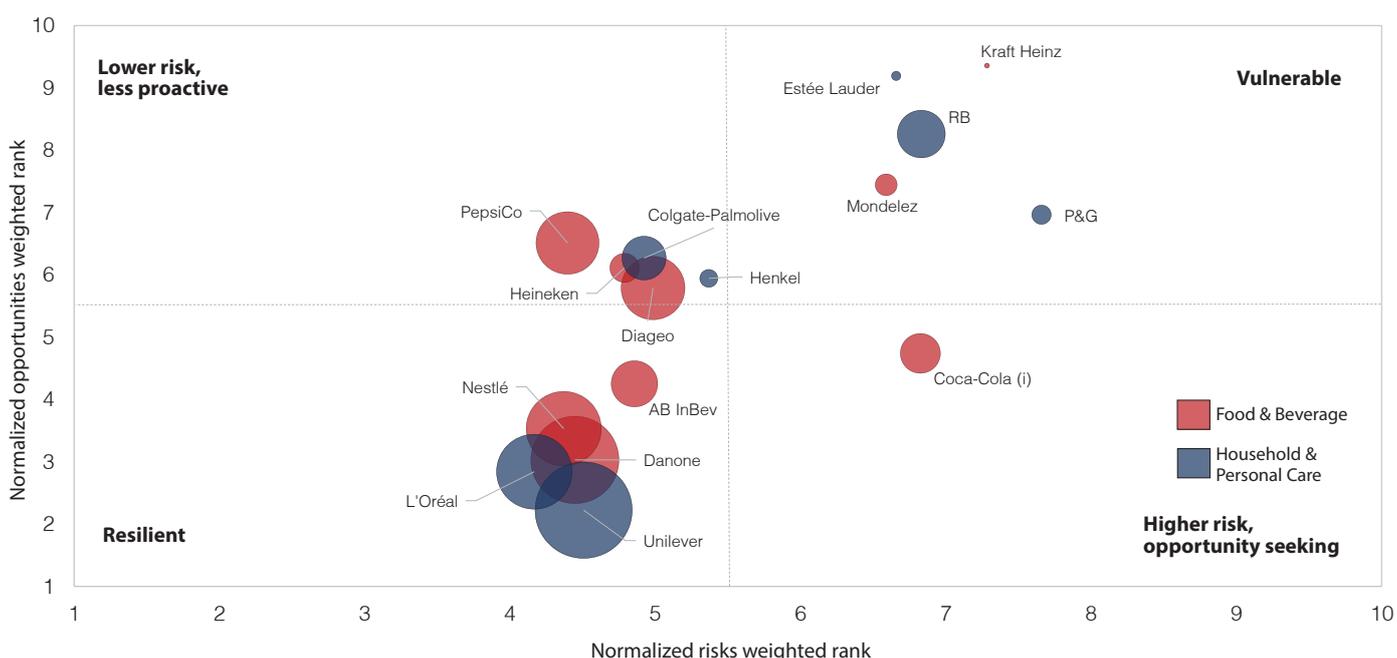
League Table rank	Company	Ticker	Country	Average market cap 2018 (US\$bn)	Weighted rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank	2017 Revenue split by business area (%)
1	Unilever	ULVR LN / UNA NA	UK / Netherlands	161	2.31	4	2	1	1	Food, Personal Care, Home Care
2	L'Oréal	OR FP	France	130	2.60	1	1	2	2	Personal Care
3	Colgate-Palmolive	CL US	USA	58	3.92	2	3	4	4	Personal Care, Home Care
4	Henkel	HEN GY	Germany	51	4.31	3	4	3	6	Personal Care, Home Care
5	RB	RB / LN	UK	60	4.96	6	6	6	3	Personal Care, Home Care
6	P&G	PG US	USA	207	5.32	7	7	5	5	Personal Care, Home Care
7	Estée Lauder	EL US	USA	51	5.55	5	5	7	7	Personal Care, Home Care

Weighting
Source: CDP

30% 20% 30% 20%

(i) Weighted ranks are calculated for each area. We display non-weighted ranks in this summary for simplicity only.
(ii) Kweichow Moutai did not respond to CDP's 2018 climate change questionnaire. We encourage investors to raise this lack of transparency in discussions with the company.

Figure 3: Opportunity vs. risk for low-carbon transition



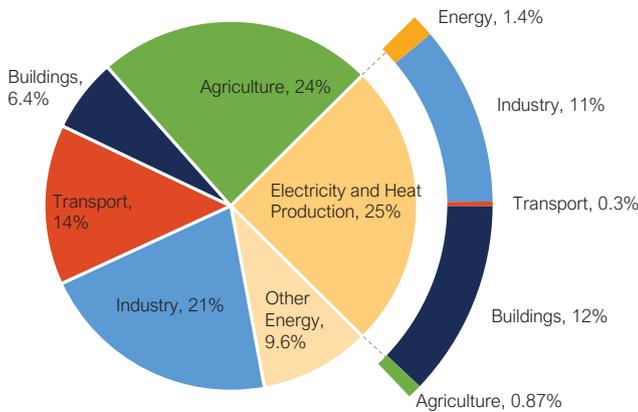
Note: Weighted ranks normalized to 10.
Bubble size: Larger bubble size = stronger performance on climate governance & strategy.
(i) The Coca-Cola Company has been abbreviated to Coca-Cola for the remainder of the report.
Source: CDP

Overview

The Consumer Goods sector has not traditionally been targeted in global decarbonization scenarios given its relatively low Scope 1 and 2 emissions compared to industrial and energy sectors. However, when taking a holistic, value chain approach incorporating Scope 3 emissions, the sector emerges as a dominant player in driving both agricultural emissions associated with food production and household emissions in the consumer use phase.

Food and agricultural production accounts for about a quarter of all global emissions while emissions from electricity and heat production associated with water heating, cooking and appliances in the built environment account for 8%.⁽¹⁾ Consumer Goods companies therefore have a key role to play in the decarbonization of over a third of global emissions which presents significant transition risks and opportunities for the sector (Figure 4). If companies do not work to adequately mitigate these risks and capitalize on these opportunities in line with a 2-degree pathway, then climate change has the potential to significantly disrupt their business models.

Figure 4: Greenhouse gas emissions per sector



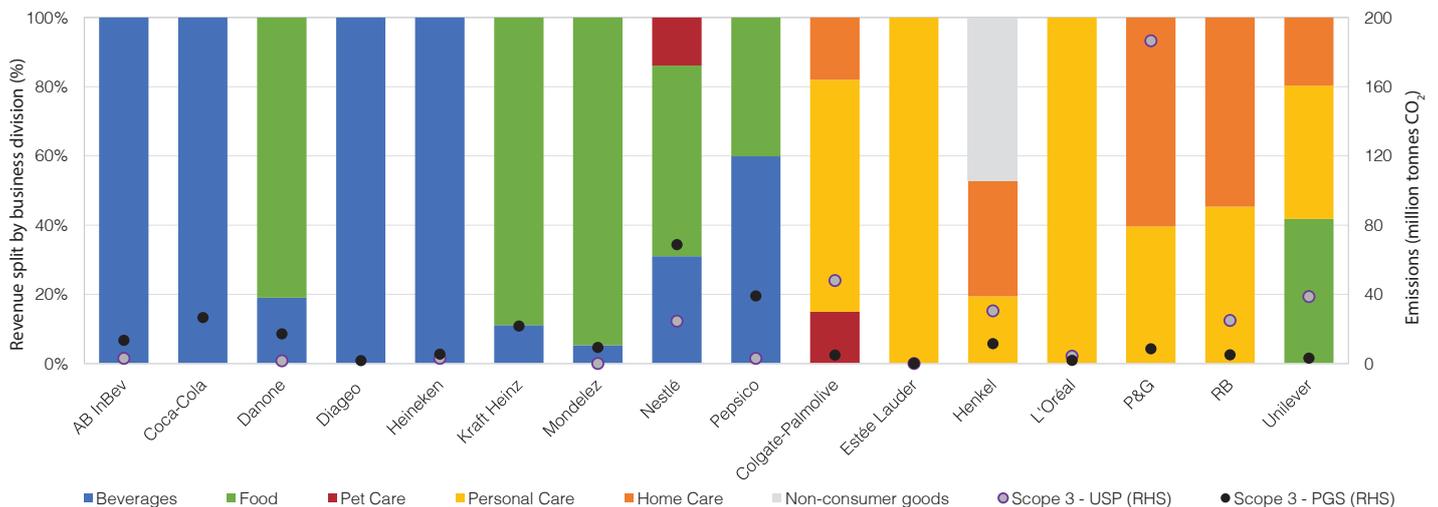
Source: AR5, IPCC

The point along the value-chain at which these risks and opportunities become most material to companies depends on their business models which directly drive the break-down of Scope, 1,2 and 3 emissions. For Food & Beverage companies, a reliance on agricultural commodities means that the majority of life-cycle emissions are generated upstream in their supply chain (Figure 6).

Conversely for Household & Personal Care companies the production of products that require high levels of water consumption in the use phase means that a majority of life-cycle emissions occur downstream in the consumption phase (Figure 6).

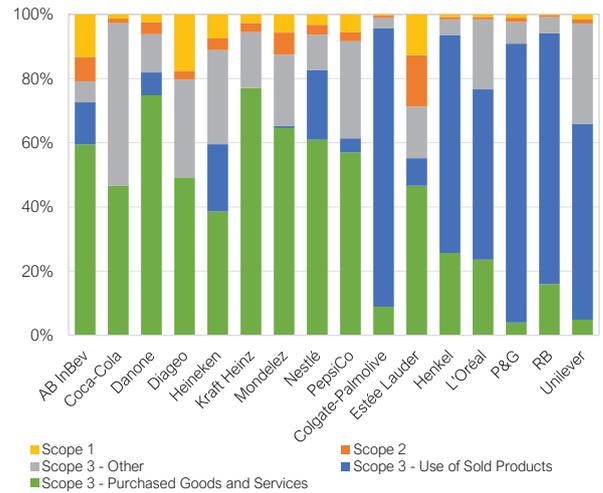
Companies therefore have different risk exposures and must invest in innovation and collaboration at different points of their value chain in order to capitalize on opportunities (Figure 5).

Figure 5: Business diversification - 2017 revenue split by business area



Source: CDP, company reports

Figure 6: Emissions split by category



Source: CDP, company reports

Changing consumer preferences:

Due to their position in the value chain, Consumer Goods companies face unique risks and opportunities resulting from their proximity to the consumer. From a risk perspective, they are highly exposed to changes in consumer preferences and reputational risks compared to upstream industrials. From an opportunity perspective, this proximity gives them the ability to engage directly with their consumers and drive behavior change to shape the markets into which they sell, ensuring the longevity of their brands.

Many consumer trends are already beginning to shift demand towards a lower carbon footing. On the Food & Beverage front, momentum is building around alternative proteins beyond meat with global sales of plant-based meat alternatives growing at twice the rate of processed meat since 2010.⁽²⁾ Currently two-thirds of agricultural emissions come from the livestock sector⁽³⁾ and in recent years a number of large meat players including Tyson Foods and Cargill have invested in alternative protein groups.

In a similar trend on the Household & Personal Care front, consumers are increasingly demanding more natural, plant-based ingredients, resisting chemical heavy supply chains. Across the board organic products have also surged in market share. In 2017, UK supermarkets reported growth of 4.2% in the organic food market compared to non-organic sales growth of just over 2%.⁽⁴⁾

Consumers are not only beginning to demand different products but also different business models and delivery mechanisms. Preferences are shifting away from mass global brands towards smaller, local brands (Figure 7). The beauty category is particularly ripe for this kind of disruption with smaller single-brand beauty companies growing by 16% per annum from 2008 to 2016, four times faster than legacy companies. Smaller brands have also attracted 80% of venture capital investment in the beauty category since 2014.⁽⁵⁾

Packaging has also recently attracted a surge of consumer attention and in some cases consumer activism. With increasing visibility over the impacts of packaging pollution downstream, companies have been forced to **rethink their packaging materials, product designs and business models.**

While many Consumer Goods companies have incorporated these shifts in consumer preferences in recent M&A activity by acquiring smaller, environmentally conscious brands, this will not be sustainable if the **fundamental business models on which they operate remain unchanged.** The globally centralized, linear business models which delivered strong growth in returns to shareholders of 15% p.a. from the mid-1960s to 2010 are now being called into question. Top line growth has fallen across most sub-sectors with growth in the sector's Total Shareholder Return lagging the S&P 500 by 3% from 2012 to 2017. The Household & Personal Care category is now the tenth most profitable sub-sector falling from sixth place at the start of the century. Over the same time period the food category fell from 21st to 32nd position.⁽⁴⁾

Ultimately Consumer Goods companies will need to be both innovative and agile in order to remain relevant in a world that is increasingly seeking natural, local and circular products and business models.

Acute and chronic physical risks:

Beyond the risks and opportunities driven by consumer preferences, the Consumer Goods sector faces a number of physical risks. Upstream physical risks associated with heat stress and water scarcity have the potential to disrupt agricultural supply chains creating price volatility for key commodities. During the heatwaves of August 2018, US Wheat Futures prices hit a three-year high, climbing 36 per cent higher than the average for August 2017. At the same time prices in Europe for milling wheat reached their highest in four years.⁽⁶⁾ These events are likely to increase in frequency and severity out to 2050 with adverse implications for crop yields and agricultural productivity and are particularly material to Food & Beverage companies.

Operational water stress also presents material risks for companies with products that require water intensive manufacturing, or which use water as a key ingredient (Beverage and Household & Personal Care companies). More acute weather events such as hurricanes also have the potential to cause damage to facilities resulting in disruption to operations.

Finally, downstream water stress presents a material risk for Household & Personal Care companies which generate revenue from the consumption of products with large water footprints in the use phase. As water stress intensifies in the future, the feasibility of these products may be challenged, especially in already water stressed parts of the world including India, the Middle East and parts of Africa which represent high growth markets. For most Household & Personal Care companies the use phase water footprint accounts for over 50% of total life-cycle emissions. Leading companies are investing in innovation to reduce the water footprint of products through new product design and delivery mechanisms and also by engaging in behavior change campaigns to promote responsible consumption.

Regulatory pressure:

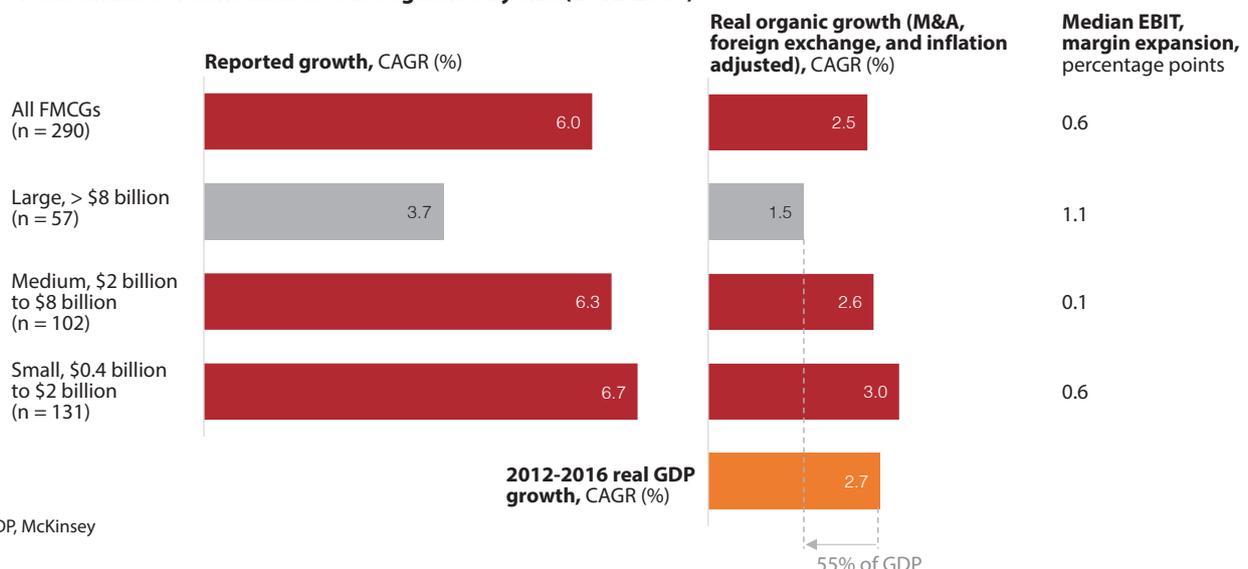
While the Consumer Goods sector is not directly covered by any global carbon trading schemes, companies face a number of emerging regulatory drivers and indirect regulatory risks associated with their value chains.

Scope 3 emissions for the sector make up over 90% of life-cycle emissions and therefore carbon regulations tend to hit companies indirectly, outside of their operations. Household & Personal Care companies which are exposed to chemical heavy supply chains, for example, will be impacted by carbon pricing passed on by their chemical suppliers.

In addition, all Consumer Goods companies are likely to be impacted by strengthening regulations on packaging and waste. While Extended Producer Responsibility schemes have required Consumer Goods companies to cover the cost of waste management in most major markets globally for many years, these market mechanisms are being increasingly supplemented with strong mandates on packaging. EU 94/62 for example has set measures for the reduction of packaging waste at source and improved recycling and recovery.

While still not mandatory with approaches differing in countries and regions, product carbon footprinting and labelling is also on the horizon, increasing pressure on companies to be more transparent about their full life-cycle emissions of products.

Figure 7: Performance of Consumer Goods segments by size (2012-2016)



Source: CDP, McKinsey

Key report findings⁽⁷⁾

We have divided the companies in our universe into two sub-sectors – Food & Beverage and Household & Personal Care to reflect the fundamental variations in their business models which drive different carbon and water exposures. These nuances are also reflected in how we have weighted each metric in order to draw out to the unique risks and opportunities specific to each sub-sector.

Food & Beverage

Food & Beverage companies are more exposed to supply chain risks associated with agricultural raw materials both from a carbon and water perspective. To reflect this, we have emphasized the importance of Purchased Goods and Services, raw material intensity and supply chain physical risks for the sub-sector.

Transition risks

- ▼ **Purchased Goods and Services account for 60% of life-cycle emissions for the sub-sector.** Calculation methodologies vary across the group with Danone leading the way.
- ▼ **Coca-Cola have less sophisticated calculation methodologies for Purchased Goods and Services** relying on global emission factors.
- ▼ **Scope 1 + 2 account for only 8% of life-cycle emissions** and on average have remained flat over the period 2013-17.
- ▼ **Some companies are found to be better positioned to respond to shocks to their business models than others.** Nestlé and PepsiCo have developed strong risk management processes and have sufficient free cash flows to protect against some level of disruption.
- ▼ **The sub-sector is exposed to risks associated with carbon and land-use intensive agricultural commodities.** These risks are most pronounced for Nestlé and Kraft Heinz due to reliance on meat and dairy products.
- ▼ **69% of top 10 revenue generating brands for the sub-sector have failed to deliver low-carbon innovations** in the last five years.
- ▼ **Nestlé is the only Food & Beverage company with a diversified brand portfolio** in which the top 10 brands account for less than 50% of group revenue.

Physical risks

- ▼ **Diversified food companies Nestlé and Kraft Heinz are exposed to substantial water stress risks in their supply chains** due to a reliance on high water risk commodities such as meat, dairy, nuts and tea.
- ▼ **Pureplay beverage companies Coca-Cola and AB InBev have the highest water withdrawal intensities**, exposing them to greater production and reputational risks at manufacturing sites.
- ▼ **Coca-Cola, PepsiCo and Diageo only identify sites at risk in less than 10% of the high-risk countries they operate in.** Mondelez have not disclosed any sites as at risk despite operating in up to 20 countries with high or extremely high water stress scores.⁽⁸⁾ **A lack of transparency at a facility level across the board limits the ability to assess water risk at a granular level.**
- ▼ **AB InBev and Danone have the most comprehensive water governance frameworks**, engaging with their suppliers and incorporating water related issues into their long-term business plan.

Transition opportunities

- ▼ While eight out of nine companies have delivered low-carbon and circular innovations which we consider to be transformative, these are limited in scale and tend to be deployed by smaller, niche brands. **On average, only 15% of transformative innovations are deployed at group level.**
- ▼ **AB InBev, Danone and Nestlé lead the group in the delivery of transformative innovations at scale** accounting for 71% of transformative innovations delivered at group level.
- ▼ **Kraft Heinz, PepsiCo and Mondelez perform towards the bottom of the group in terms of low-carbon innovation**, with over 50% of their innovations considered incremental.
- ▼ **R&D as a percentage of sales is low for the sector** as a whole and on average, Food & Beverage companies invest half that of Household & Personal Care companies.
- ▼ **The Food & Beverage subsector is showing leadership in the production of renewables** due to the production of biofuels as a by-product of manufacturing processes.
- ▼ **However, the sub-sector has a way to go in terms of total renewable energy consumption** and should step up the procurement of renewable energy from external sources to close the gap.
- ▼ **Leaders such as AB InBev have begun to use renewable energy as a branding tool**, placing 100% renewable electricity labels on their UK Budweiser bottles.

Governance & Strategy

- ▼ **All companies have emission reduction targets with 67% of these covering Scope 3 emissions.** Operational carbon targets are also less ambitious compared to the Household & Personal Care sub-sector, with no Food & Beverage companies setting net zero or net positive operational carbon targets.
- ▼ **Nestlé and PepsiCo have developed leading climate strategies** underpinned by strong value chain engagement and an understanding of life-cycle exposures.
- ▼ **Less than 50% of Food & Beverage companies are official supporters of the TCFD.**
- ▼ **77% of Food & Beverage companies have directed M&A activity towards the acquisition of small, niche, environmentally conscious brands** in order to provide strategic optionality. Over 50% of these acquired brands are associated with the health food segment.
- ▼ **1/3 of Food & Beverage brands own B Corporations.**⁽⁹⁾

7. Summaries for each company listing strengths and weakness can be found in Appendix II on page 57.

8. Scores refer to WRI Aqueduct Countries at Risk Rating.

9. B Corporations are companies set up in accordance with the B Corp Declaration of Interdependence which requires the creation of benefits for a wider range of stakeholder beyond shareholders including the community and environment.

Household & Personal Care

Household & Personal companies are more exposed to downstream risks associated with water and energy use in the consumption phase. They are also all exposed to risks relating to the use of palm oil in their supply chain. To reflect this, we have emphasized the importance of Use of Sold Products, downstream physical risk and palm oil exposure for the sub-sector.

Transition risks

- Use of Sold Products accounts for 80% of the sub-sectors' life-cycle emissions.
- The sophistication of Use of Sold Products calculations is varied with Colgate-Palmolive leading the group due to the development of a robust methodology using country level consumer behaviour data. Leaders like Colgate-Palmolive are better positioned to respond to emerging regulation around carbon labelling.
- Household & Personal Care companies have strong coverage across Scope 3 emission categories, with all companies disclosing both Use of Sold Products and Purchased Goods & Services.
- Scope 1 + 2 account for only 2% of life-cycle emissions and on average have remained flat over the period 2013-17.
- L'Oréal and Colgate-Palmolive lead the group in terms business resilience due to strong risk management processes. Free cash flows for the sub-sector are relatively high providing some protection from disruption.
- All companies are exposed to reputational risks associated with palm oil use. RB and Estée Lauder are doing the least to manage this risk.
- Across the group, 46% of top 10 brands have failed to deliver low-carbon innovations to market.
- Henkel is the only company in the sub-sector with a diversified brand portfolio in which the top 10 brands account for less than 50% of group revenues.

Physical risks

- Household & Personal Care companies are most exposed to physical risks in downstream consumption. RB and P&G generate the highest proportion of revenues from highly water stressed regions.
- Companies that manufacture products which use water as a key ingredient face exposure to operational water stress and reputational risks associated with high withdrawals. Colgate-Palmolive and Estée Lauder are most exposed to these risks.
- Colgate-Palmolive and L'Oréal have developed robust processes to manage water related risks with ambitious and comprehensive targets covering issues such as water reduction, replenishment and customer engagement on water use.

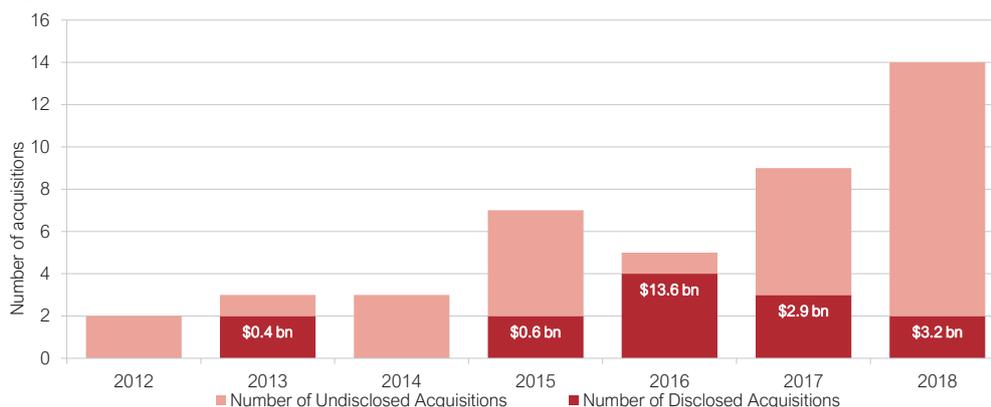
Transition opportunities

- On average, the Household & Personal Care sub-sector outperforms the Food & Beverage sub-sector in terms of innovation, investing on average double in R&D as a percentage of sales. However, R&D expenditure is low for the sector as a whole compared with sectors such as Capital Goods.
- While all companies deliver transformative innovations, these tend to be focused around ingredient reformulations and packaging and are commonly deployed by small brands with limited scale. Only 13% of transformative innovations have been delivered at group level.
- Unilever leads the group in terms of low-carbon innovation delivered at scale, accounting for nearly 70% of all group level transformative innovations.
- Estée Lauder ranks last for both low-carbon and circular innovation, delivering no transformative low-carbon innovations at group level.
- On average, the sub-sector out-performs Food & Beverage companies in terms of renewable energy consumption due to stand out leadership by L'Oréal, which procures over 50% of total energy requirements from renewable sources.

Governance & Strategy

- All companies have emission reduction targets, 71% of which cover Scope 3 emissions. This outperforms the Food & Beverage sector in terms of Scope 3 coverage by 27%.
- The sophistication of climate strategies is varied in the sub-sector. Unilever leads the group with its Sustainable Living Plan. The company's climate work is bolstered by extensive scenario analysis and a strong internal carbon price.
- L'Oréal offers the most generous climate-related Short-Term Incentives with 8% of executives' annual bonus linked to progress against L'Oréal's "Sharing Beauty with All" program.
- Unilever is the only Household & Personal Care company which is an official supporter of the TCFD.
- 71% of companies in the sub-sector have directed M&A efforts towards the acquisition of small environmentally conscious brands (Figure 8). Only Unilever and P&G have acquired B Corporations.⁽⁹⁾

Figure 8: M&A activity



Source: CDP, company reports

Company selection and classification

Companies were selected from the largest publicly listed Consumer Goods companies, based on 2018 market capitalization and those that responded to CDP's 2018 climate change information request. The companies were divided into the following two sub-sectors based on GICs classifications in order to acknowledge fundamental differences in underlying business models:

- ▾ Food & Beverage⁽¹⁰⁾ (9 companies)
- ▾ Household & Personal Care (7 companies)

Excluding tobacco companies, only one company did not disclose to CDP across the top 20 market cap companies for the sector, Kweichow Moutai. Kweichow Moutai is a Chinese Food & Beverage manufacturer well-known for its large Chinese liquor brand Maotai. It has an average 2018 market capitalization of US\$143 billion and is listed in Shanghai.

Figure 9: A summary of key areas, associated metrics and weights within the League Table

Key area in League Table	Financial impact	Metrics	Metric weighting	Key area weighting
Transition risks	While operational emissions intensities are small, Scope 3 emission intensities are significant. As consumer preferences change, demand and ultimately revenues could be influenced by the life-cycle emissions of products.	<ul style="list-style-type: none"> • Scope 3 emissions performance <i>Scope 3 methodology score (80%), Purchased Goods and Services intensity (15% for Food & Beverage, 5% for Household & Personal Care), Use of Sold Products intensity (15% for Household & Personal Care, 5% for Food & Beverage)</i> 	35%	30%
	Consolidation of brand revenues exposes companies to losses if brand value is eroded. Brands must position themselves to respond to changing consumer preferences.	<ul style="list-style-type: none"> • Business resilience <i>Risk management (70%), Free cash flow (20%), EBITDA margins (10%)</i> 	25%	
	Business resilience could be improved by growing free cash flows and developing sophisticated risk management processes.	<ul style="list-style-type: none"> • Brand analysis <i>Revenue consolidation (60%), Brand innovation (40%)</i> 	20%	
		<ul style="list-style-type: none"> • Raw material risk <i>Palm oil (60% for Household & Personal Care, 40% for Food & Beverage), Raw material intensity (60% for Food & Beverage, 40% for Household & Personal Care)</i> 	15%	
		<ul style="list-style-type: none"> • Operational emissions and energy <i>Scope 1+2 Emissions intensity (50%), Energy intensity (50%)</i> 	5%	
Physical risks	Increases in the frequency and severity of physical risks have the potential to cause significant disruption across the Consumer Goods value chain.	<ul style="list-style-type: none"> • Supply chain physical risks <i>Supply chain water intensity (60%), Supply chain water stress (40%)</i> 	40% for F&B, 10% for H&P	20%
	Water stress in the supply chain could drive volatility in both price and supply of agricultural inputs.	<ul style="list-style-type: none"> • Operational physical risk <i>Operational water stress (40%), Water withdrawal intensity (30%), Water consumption intensity (30%)</i> 	40%	
	Water stress in company operations and downstream could also impact the viability of water intensive manufacturing and water intensive consumption.	<ul style="list-style-type: none"> • Downstream physical risk 	5% for F&B, 35% for H&P	
		<ul style="list-style-type: none"> • Water governance <i>Water governance (50%), Water targets (50%)</i> 	15%	
Transition opportunities	Significant opportunities exist to grow revenues from low-carbon brands, providing a competitive advantage for first movers.	<ul style="list-style-type: none"> • Low-carbon innovation 	40%	30%
		<ul style="list-style-type: none"> • Circular innovation and packaging <i>Circular innovation (60%), Packaging disclosure and targets (40%)</i> 	25%	
		<ul style="list-style-type: none"> • Renewable energy <i>Renewable consumption (30%), Renewable production (40%), Renewable targets (30%)</i> 	25%	
		<ul style="list-style-type: none"> • R&D % of sales 	5%	
		<ul style="list-style-type: none"> • Patent analysis 	5%	
Climate governance & strategy	Embedding low-carbon thinking into corporate strategies will allow companies to capitalize on climate-related opportunities.	<ul style="list-style-type: none"> • Strategy 	30%	20%
	Ambitious target setting and strong climate governance ensures these strategic plans will be realized.	<ul style="list-style-type: none"> • Targets • Climate-related remuneration • Board & executive climate management • CDP Score 	20% 20% 20% 10%	

Source: CDP

Linking our findings to investment choices

We recognize that investment decisions are based on a multitude of different factors and that some of these can be misaligned with emission-reduction efforts. Our League Table identifies company readiness for the transition to a low-carbon economy and the physical impacts of climate change, meaning that companies towards the bottom of our League Table are potentially higher risk investments from a climate change perspective than those towards the top.

Methodology

We score each company based on a number of metrics which are ranked and then weighted within each key area (see Figure 9 for metric weightings within each key area). We then assign traffic light colours based on these weighted ranks. We calculate the overall League Table score by collating the weighted ranks for each key area. Each of the key areas has a separate chapter within this report.

Data is compiled from multiple sources including: CDP questionnaire responses, company annual reports, CSR reports, websites, investor presentations and third party sources such as Bloomberg and Euromonitor.

10. Tobacco companies were excluded from the universe due to having different business models to the rest of the group and limited disclosure.

Transition risks

- ▼ The sector has strong Scope 3 disclosure relative to other sectors such as Capital Goods.
- ▼ Nestlé ranks first in the Food & Beverage sub-sector for Transition Risks, leading the group in business resilience and brand analysis.
- ▼ L'Oréal ranks first in the Household & Personal Care sub-sector for Transition Risks leading the group in terms of Scope 3 emissions and business resilience.
- ▼ Kraft Heinz and P&G rank last in their respective sub-sectors for Transition Risks.

Overview

In this section, we seek to identify companies that are more exposed to risks from their value chain in terms of Scope 3 emissions and assess how prepared companies are to manage these risks. Scope 3 emissions account for over 90% of life-cycle emissions on average for companies in our universe and hit companies at different parts of the value chain depending on their business models. Food & Beverages companies reliant on agricultural supply chains tend to have higher upstream emissions while Household & Personal Care companies producing water intensive consumables tend to have higher downstream emissions. While we stress the importance of Scope 3 emissions in our analysis, we recognize that methodologies adopted are evolving and therefore do not focus solely on Scope 3 intensities but also interrogate the quality of the methodologies used to calculate those intensities.

Companies are also exposed to risks in their supply chain due to land use change and deforestation from the production of several high-risk commodities. The use of palm oil, for example, has garnered much public attention in recent years with growing global demand driving severe forest loss in parts of Indonesia and Malaysia. Palm oil is a common ingredient in food products and personal-care products and therefore impacts both sub-sectors covered in this report. We have conducted a detailed analysis of palm oil exposure and efforts to ensure sustainable supply. We have also looked at dependency on other high-risk commodities associated with high carbon and land use intensities.

Companies which have integrated value chain thinking into their corporate risk management processes and understand their specific exposures both upstream and downstream will be better placed to manage these risks and respond to potential shocks to their business models. Business resilience will also be supported by financial flexibility associated with higher margins and free cash flow availability. Finally, companies must continue to invest in their brand portfolio to ensure they remain innovative and well positioned to respond to changing demand.

Transition risks are assessed in this chapter using the following five metrics:

Metric 1) Scope 3 emissions performance (35%): This metric evaluates how well companies rank in terms of Scope 3 disclosure and intensities – we compile this metric based on companies' disclosure of category 1 and 11 (i.e. Purchased Goods and Use of Sold Products) of Scope 3 emissions defined by the GHG protocol. The intensities of these Scope 3 emissions categories are calculated using absolute emissions normalized by revenue and Cost of Goods Sold (COGs). The quality of disclosure is assessed according to the methodologies detailed in CDP disclosure.

Metric 2) Business Resilience (30%): This metric evaluates how well companies are positioned to changes in end-market demand. We look at EBITDA margins, free cash flow and conduct an assessment of risk management frameworks identifying substantive risks and mitigation strategies from CDP disclosure.

Metric 3) Brand analysis (15%): This metric evaluates how well positioned each company's top 10 brands are to respond to changing consumer preferences. We assess which brands have invested in low-carbon innovation over the last five years and how consolidated the top 10 brands are in terms of revenue contribution.

Metric 4) Raw material risk (10%): This metric evaluates the emissions and land use intensity of the agricultural commodities based on use by each company. Key commodity lists are derived from public reporting and CDP disclosure and evaluated according to intensities derived from academic literature.

Metric 5) Operational emissions and energy (10%): This metric identifies the companies with the lowest current operational emission and energy intensity levels and evaluates the extent to which companies have reduced their operational emissions and energy intensity over the period 2013-2017. Gross emissions are normalized by revenues and COGs.

Overall highlights

- ▼ The sector overall has strong disclosure of Scope 3 emissions relative to other sectors. All companies across both sub-sectors disclose Purchased Goods and Services and all companies excluding Diageo and Coca-Cola⁽¹¹⁾ disclose on Use of Sold Products.
- ▼ The development of Scope 3 methodologies is varied. Household & Personal Care companies have better coverage across Scope 3 emission categories. This sub-sector also tends to outperform Food & Beverage companies in terms of Use of Sold Products methodologies, while the reverse applies for Purchased Goods and Services.
- ▼ The two sub-sectors perform similarly in terms of Business Resilience. Leading companies Nestlé and L'Oréal rank first in their respective sub-sectors due to comprehensive risk management processes.
- ▼ Household & Personal Care companies outperform Food & Beverage companies on average in terms of the Brand Analysis. The key revenue generating brands in this sub-sector tend to be more active in low-carbon innovation relative to Food & Beverage brands.
- ▼ Food & Beverage companies tend to outperform Household & Personal Care companies in terms of palm oil exposure with the four pure-play beverage companies having no palm oil exposure.

- ▼ Household & Personal Care companies outperform Food & Beverage companies in terms of raw material intensity with a relatively limited reliance on agricultural commodities. However, their intensities could be understated as they are more reliant on chemical supply chains where a lack of granularity of data resulted in this not being evaluated.

Food & Beverage

- ▼ Nestlé ranks first in terms of Transition Risk for the Food & Beverage sub-sector. The business is found to be resilient due to having a diversified brand portfolio driving strong performance in the brand analysis and well-developed risk management processes. It also ranks second in terms of Scope 3 emissions due to robust calculation methodologies (Figure 10).
- ▼ Kraft Heinz ranks last in terms of Transition Risk for the sub-sector driven by poor performance in terms of the brand analysis and business resilience. It also ranks seventh for raw material risk and eighth for Operational Emissions and Energy.

Household & Personal Care

- ▼ L'Oréal leads the Household & Personal Care sub-sector, ranking first in terms of Scope 3 performance, Business Resilience and Raw Material Risk (Figure 11).
- ▼ P&G ranks last in terms of Transition Risk for the sub-sector, driven by poor performance in Scope 3 emissions disclosure and the brand analysis.

Figure 10: Food & Beverage - Transition risks summary

Company	Scope 3	Business Resilience	Brand analysis	Raw material risk	Emissions and Energy	Overall weighted rank	Transition risks rank
Nestlé	2	1	1	9	6	3.5	1
PepsiCo	3	2	4	5	8	3.8	2
Danone	1	4	7	6	7	3.9	3
Heineken	6	5	3	3	1	4.4	4
AB InBev	5	6	5	1	5	4.6	5
Diageo	8	3	6	4	2	5.3	6
Coca-Cola	9	7	2	2	9	6.0	7
Mondelez	4	8	8	8	3	6.2	8
Kraft Heinz	7	9	9	7	4	7.4	9
Weighting	35%	25%	20%	15%	5%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

Figure 11: Household & Personal Care - Transition risks summary

Company	Scope 3	Business Resilience	Brand analysis	Raw material risk	Emissions and Energy	Overall weighted rank	Transition risks rank
L'Oréal	1	1	7	2	3	3.0	1
Colgate-Palmolive	2	2	5	6	6	3.3	2
Henkel	4	4	1	1	5	3.3	3
Unilever	3	3	2	4	7	3.3	4
Estée Lauder	6	6	3	7	2	4.7	5
RB	5	7	4	5	1	4.8	6
P&G	7	5	6	3	4	5.4	7
Weighting	35%	25%	20%	15%	5%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

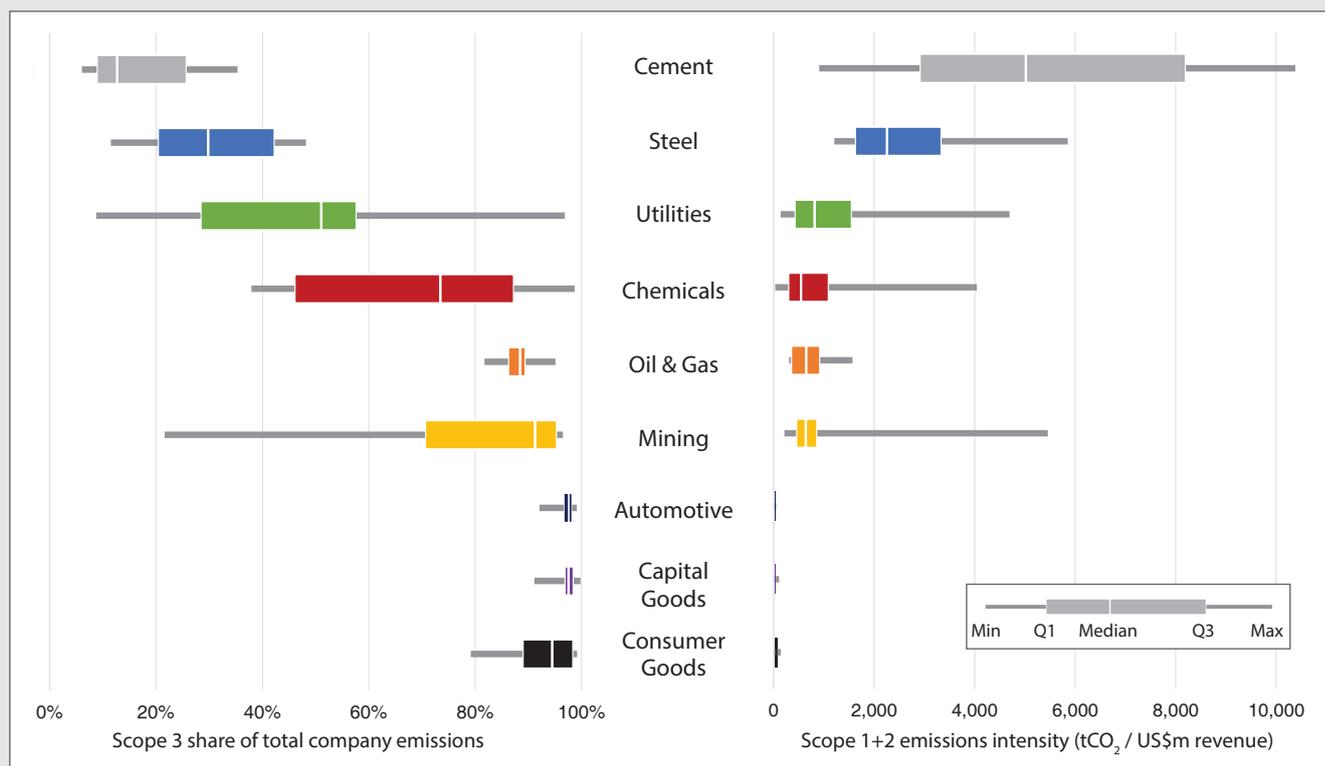
11. Coca-Cola do not currently report according to GHG Protocol categories for Use of Sold Products. Refrigeration-related Scope 3 emissions have been captured by the company in Processing of Sold Products and we have rewarded Coca-Cola for this coverage in our methodology score.

Scope 3 Emissions in the Value Chain are key for the sector

While most companies have started disclosing on their Scope 1 emissions (emissions from their own operations) and Scope 2 emissions (emissions from indirect energy use typically purchased electricity), Scope 3 emissions reporting is still in its infancy. Scope 3 emissions are emissions outside the operations of a company and cover the full life-cycle of emissions attributable to a company's process or product often termed "cradle to grave".

For a number of sectors, however, most of their climate change impacts lie outside manufacturing operations and in two categories of Scope 3 emissions – Use of Sold Products and Purchased Goods and Services. The first captures the main downstream emissions from product use and for the Consumer Goods sector this is mainly for personal products that require a combination of water and heat in their use such as laundry detergents, shampoos and soaps. Purchased Goods and Services captures the emissions upstream and in the case of this sector this comes through mainly for the Food & Beverage sector through their raw material supply chain and use of agricultural commodities.

Figure 12: Sector comparison - share of Scope 3 and Scope 1+2 emissions intensity



Source: CDP, company reports

Why is it important to measure Scope 3 emissions when it is outside your own operational boundaries and arguably outside your control? The key reason is to be in a position to assess what exposures could directly impact companies both from the supply and demand side through requirements from carbon emission constraints. Recognising and measuring where emissions lie in the life-cycle of a product or service is crucial and would form part of the mitigation process taken to limit disruption from supply shortages, higher input prices or regulation which could impact demand for products. For Consumer Goods companies where brands are integral to their business models and asset values, reputation linked to carbon risks in the value chain is another key driver.

This sector is ahead of the curve of other sectors such as capital goods where Scope 3 emissions particularly in the Use of Sold Products dominates. Unlike autos which are regulated on fleet emissions (Scope 3 Use of Sold Products emissions) neither Capital Goods or Consumer Goods are regulated directly on products. Its proximity to customers and changing consumer preference and impact on brand revenues could be a strong motivation for this group to fully understand this category of Scope 3 emissions. While consumers are not directly regulated on how they use products, higher energy prices and carbon footprint labelling could drive change in consumer demand. For autos, regulators decided to directly influence their choice by targeting fleet emissions which has driven car companies to change their fleet composition and adopt electric vehicles.

Methodologies being adopted by a number of companies point to rigorous life-cycle analysis with detailed input into Purchased Goods and Services from supplier engagement and similarly with detailed input on consumption including looking at consumer behavior in Use of Sold Product calculations. Companies in this sector who have adopted rigorous methodologies have been credited in our evaluation of their Scope 3 risk metrics and are better positioned than their peers to address potential disruption both upstream and downstream.

Scope 3 emissions performance

We focus our Scope 3 emissions analysis on two key categories which make up the majority of life-cycle emissions for the sector (Purchased Goods and Services and Use of Sold Products) and conduct an in-depth assessment of calculation methodologies. The methodology score is given a high weighting in our overall assessment to offset companies which perform better in terms of intensity due to under-developed methodologies.

Methodology score (80% for all companies): Due to limitations in the sophistication of Scope 3 calculations used by some companies we assess the quality of disclosure based on methodology descriptions provided in each company's CDP disclosure. Companies are awarded for coverage across a broad range of categories, the use of country level data, and engagement with their value chain to collect more representative data.

Purchased Goods and Services (15% for Food & Beverage companies and 5% for Household & Personal Care companies)

This category refers to the emissions generated upstream in the supply chain and particularly present risks to Food & Beverage companies.

Use of Sold Products (15% for Household & Personal Care companies and 5% for Food & Beverage companies). This category refers to the emissions generated downstream in the consumption phase and particularly present risks to Household & Personal Care companies.

Food & Beverage

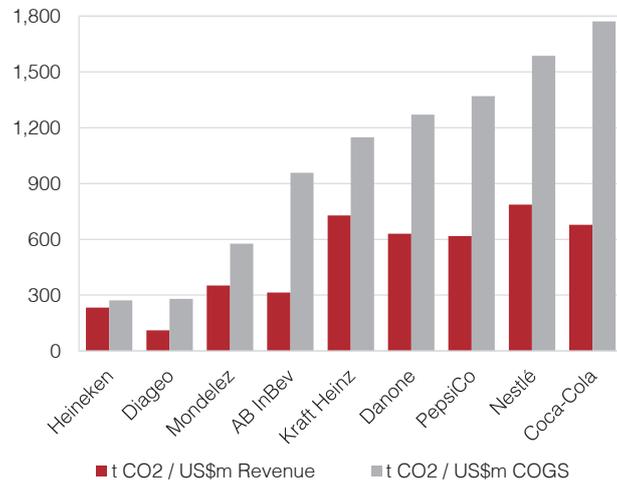
- ▼ Danone ranks first overall due to strong disclosure. Its methodology for Purchased Goods & Services uses data provided by suppliers and dairy calculations are based on a tool developed in collaboration with the French Livestock Institute accounting for parameters such as feeding composition and yield per cow. Use of Sold Products is based on country specific consumer behavior data and country level energy mixes (Figure 13).
- ▼ Coca-Cola ranks last overall. The company's Purchased Goods & Services calculations are the least robust of the sector relying on global average emissions factors. It currently does not align its reporting with the GHG Protocol's Scope 3 categories for Use of Sold Products. Refrigeration-related emissions are captured in Processing of Sold Products and the company has been rewarded for this coverage in their methodology score (Figure 15).
- ▼ Pure play brewers Heineken and Diageo perform well in Purchased Goods & Services intensity underpinned by a reliance on a limited suite of agricultural commodities with lower carbon intensities (Figure 14).
- ▼ Diageo fails to report Use of Sold Products.

Figure 13: Food & Beverage - Scope 3 disclosure

Company	Purchased Goods & Services calculated	Use of Sold Products calculated	Total number of categories calculated	Methodology score
Danone	✓	✓	7	79
Nestlé	✓	✓	11	77
PepsiCo	✓	✓	13	73
Mondelez	✓	✓	9	69
AB InBev	✓	✓	4	67
Heineken	✓	✓	7	64
Kraft Heinz	✓	✓	10	55
Diageo	✓	✗	9	48
Coca-Cola ⁽ⁱ⁾	✓	✗	7	47

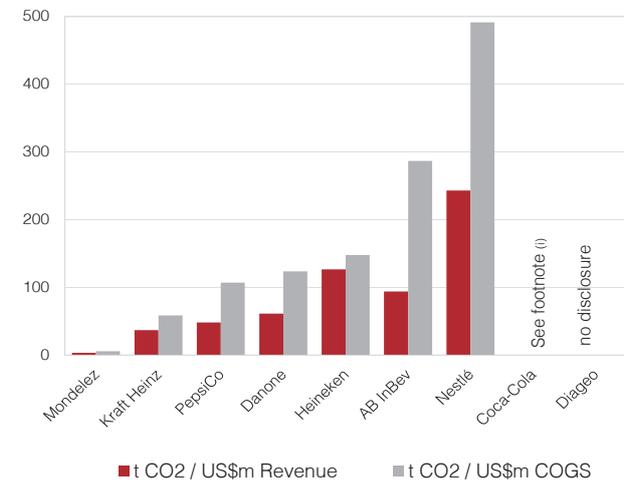
Source: CDP, company reports

Figure 14: Scope 3 emissions intensity - Purchased Goods and Services



Source: CDP, company reports

Figure 15: Scope 3 emissions intensity - Use of Sold Products



(i) Coca-Cola do not currently report according to GHG Protocol categories for Use of Sold Products. Refrigeration-related Scope 3 emissions have been captured by the company in Processing of Sold Products and we have rewarded Coca-Cola for this coverage in our methodology score.

Household & Personal Care

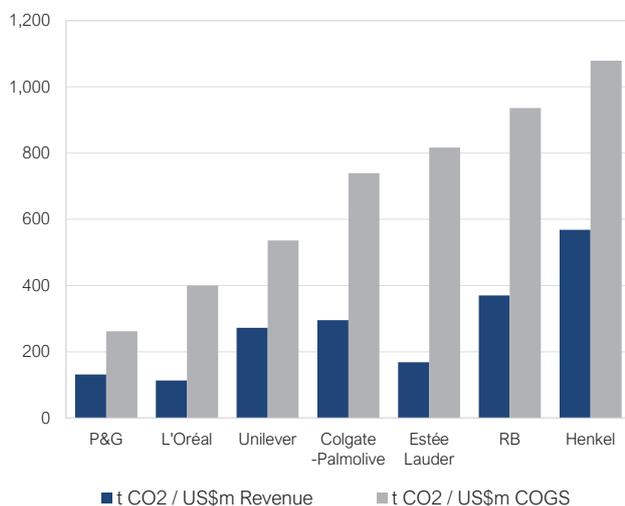
- ▼ L'Oréal ranks first overall due to strong disclosure and relatively low Purchased Goods & Services and Use of Sold Products intensities (Figures 17 & 18). It achieves the second highest disclosure score, calculating Scope 3 emissions across 14 categories and using country level data for Use of Sold Products (Figure 16).
- ▼ Colgate-Palmolive ranks first in terms of its methodology score. Its Use of Sold Products methodology is particularly well developed, relying on country level consumer behaviour data from Consumer Insight surveys and market research. Due to the water intensive nature of Colgate-Palmolive's products, this category accounts for around 85% of the company's life-cycle emissions and therefore has been the focus of its Scope 3 calculation efforts. As such, while it ranks first in terms of disclosure, it ranks last in terms of Use of Sold Products intensity and ultimately second overall.
- ▼ P&G rank last overall due to poor disclosure. Its calculation of both Purchased Goods & Services and Use of Sold Products rely on 2015-16 procurement and sales data and therefore its absolute emissions estimates have not changed since 2015-16.
- ▼ Estée Lauder ranks second last overall due to poor disclosure on Use of Sold Products. Its calculation only accounts for emissions associated with aerosols and there is no calculation of emissions associated with water use in consumption. As a result it has the lowest Use of Sold Products intensity.

Figure 16: Scope 3 disclosure

Company	Purchased Goods & Services calculated	Use of Sold Products calculated	Total number of categories calculated	Methodology score
Colgate-Palmolive	✓	✓	10	85
L'Oréal	✓	✓	12	84
Unilever	✓	✓	8	80
Henkel	✓	✓	8	71
RB	✓	✓	8	62
Estée Lauder	✓	✓	10	58
P&G	✓	✓	10	52

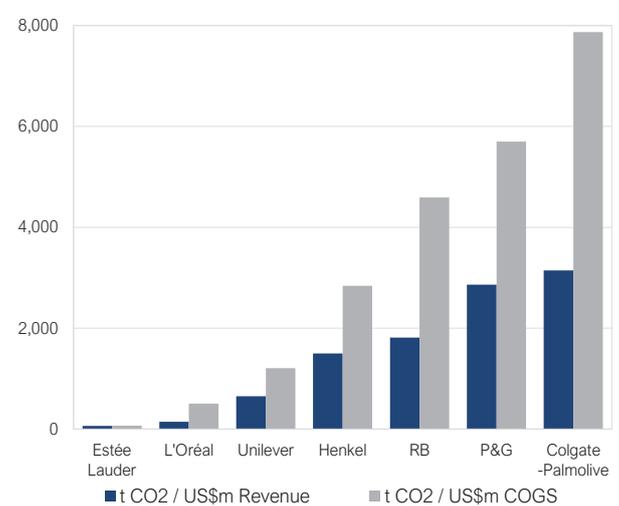
Source: CDP, company reports

Figure 17: Scope 3 emissions intensity - Purchased Goods and Services



Source: CDP, company reports

Figure 18: Scope 3 emissions intensity - Use of Sold Products



Business resilience

Our analysis of business resilience is based on a number of sub-metrics which together provide an indication of how well-prepared companies are to respond to shocks to their business model.

Risk management analysis (70%): We have conducted an in-depth analysis of company risk management processes relating to four substantive risk exposures - raw material risks, water risks, consumer/brand risks, carbon/energy risks and risks associated with damage to facilities.

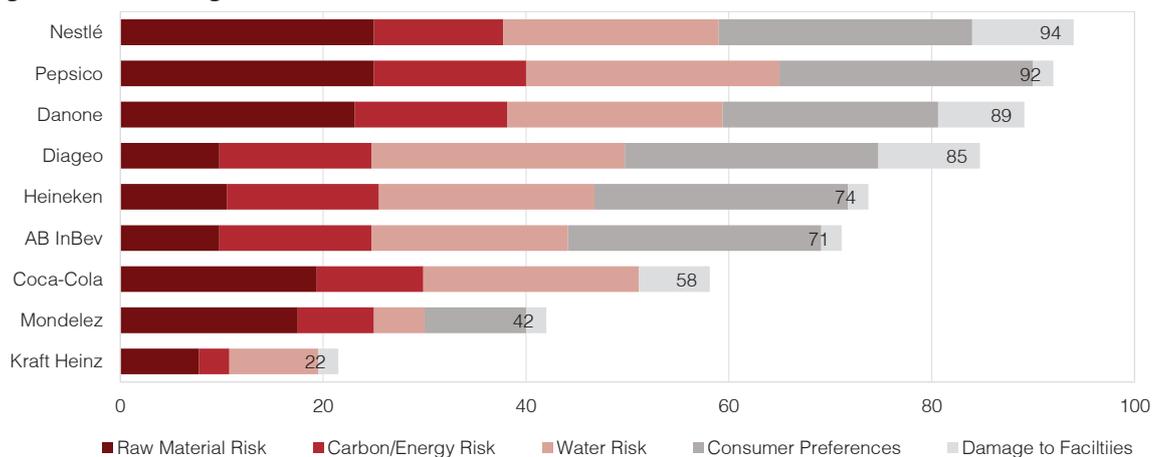
Free cash flows (20%): We look at current free cash flows and calculate a free cash flow CAGR over the period 2013-17 as a measure of financial resilience.

EBITDA margins (10%): We look at current EBITDA to revenue ratios and calculate an EBITDA margin CAGR over the period 2013-17 as a measure of financial resilience.

Food & Beverage

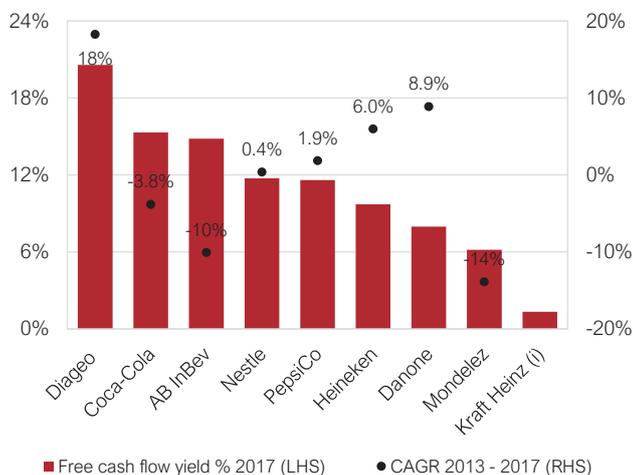
- Nestlé ranks first overall driven by strong performance in terms of risk management. It identifies and has set out mitigation strategies to manage substantive risks to the business. It also quantifies the financial implications of these substantive risks excluding water stress risk (Figure 19).
- Kraft Heinz ranks last overall driven by weak risk management processes. It only partially identifies risks associated with raw materials, water stress, carbon and energy and fails to identify any substantive risks relating to consumer preferences and damage to facilities. The mitigation of identified risks is limited, and no financial implications are quantified. It also ranks second last in terms of free cash flow generation.
- Diageo ranks first in terms of free cash flow with a yield percentage of 22% (2017) and steady growth over the period 2013-17 (Figure 20).
- AB InBev ranks first in terms of current EBITDA margins of 39% (2017) however margins have been declining by 1% p.a. over the period 2013-2017 (Figure 21).

Figure 19: Risk management



Source: CDP, company reports

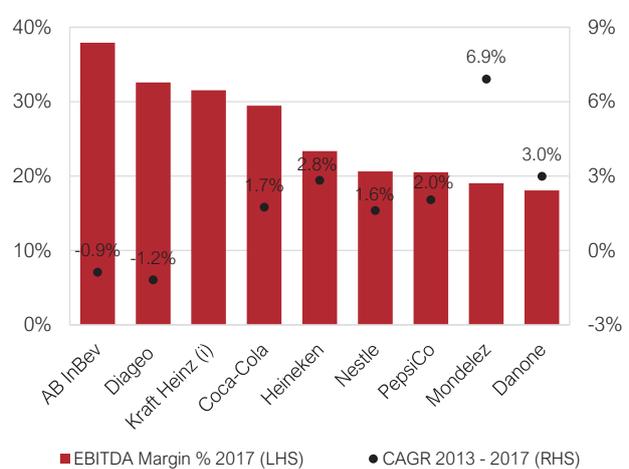
Figure 20: Free cash flow yield



Source: CDP, company reports

(i) No CAGR shown for Kraft Heinz due to only three years of data

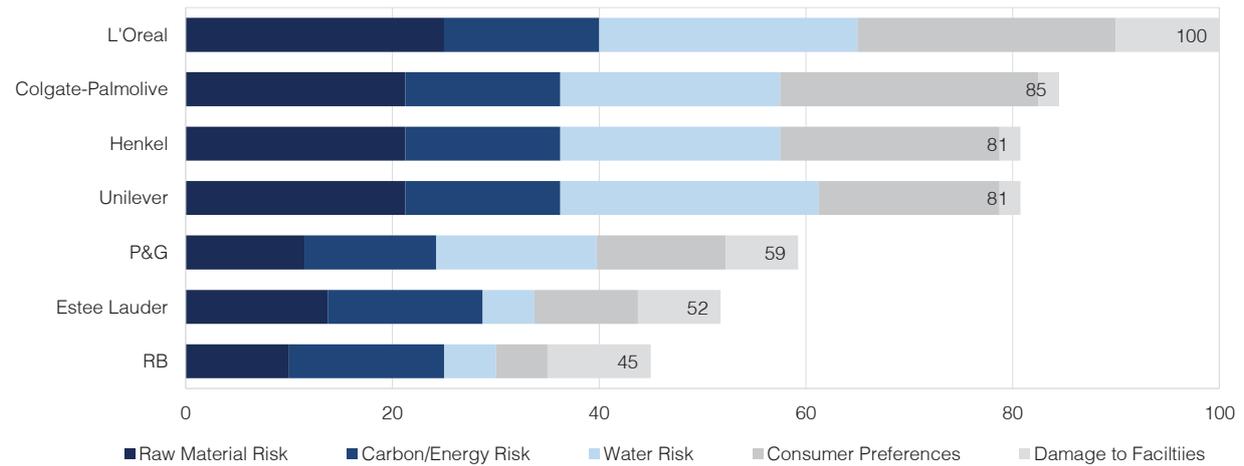
Figure 21: EBITDA margins



Household & Personal Care

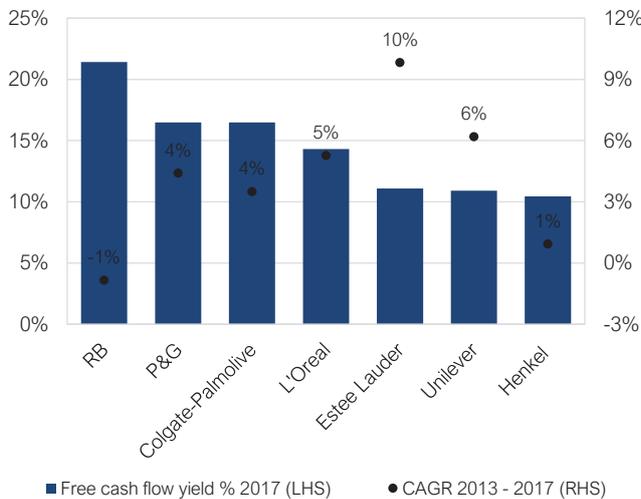
- L'Oréal ranks first overall due to strong performance in risk management. It identifies, mitigates and quantifies all substantive risks facing the business and its quantification methods are robust and detailed (Figure 22).
- Colgate-Palmolive rank second overall driven by strong performance in risk management. It also has the second highest 2017 free cash flow yield and EBITDA margin (Figure 24).
- RB ranks last overall due to weak risk management processes. It only partially identifies risks relating to water and consumer preferences and fails to quantify and mitigates risks relating to raw materials, water and consumer preferences. RB however have the highest current free cash flow yields and EBITDA margins of 19% and 29% (2017) respectively. Free cash flows however have declined over a five-year period.
- Estée Lauder ranks second last overall due to poor performance in risk management. It also ranks last in terms of EBITDA margins and is the only company where margins have narrowed over period (Figure 23).

Figure 22: Risk management



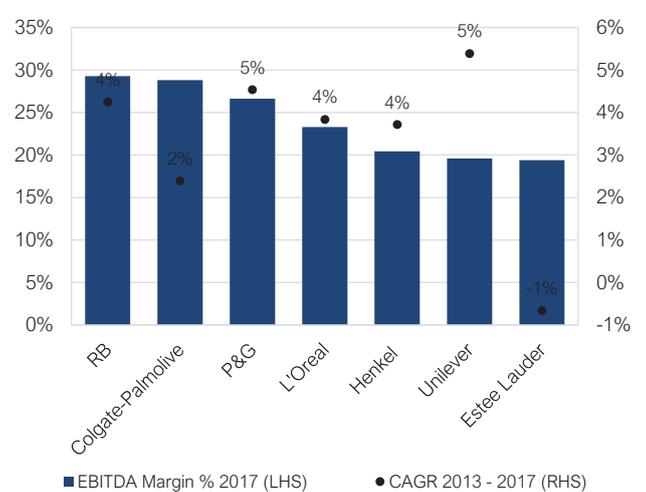
Source: CDP, company reports

Figure 23: Free cash flow yield



Source: CDP, company reports

Figure 24: EBITDA margins



Brand analysis

Brands are one of the most important assets owned by Consumer Goods companies. They attract customers, build loyalty and motivate staff. The Consumer Goods sector is heavily consolidated in terms of revenue contribution by brand which exposes companies to significant risks if the valuation of key brands is eroded.

The financial valuation of brands not only depends on market performance and tangible assets but also on goodwill. Therefore, large investments are required to ensure the ongoing success and relevance of brands, allowing them to generate sustainable revenues and grow in value. If such investments are not made, brands risk losing market acceptance, potentially generating significant revenue losses for the company.

As consumer preferences change, this risk intensifies as legacy brands are required to innovate to remain relevant and maintain market share. To capture this risk, we focused on the top 10 revenue generating brands for each company using estimated sales data from Euromonitor. We then assessed two sub-metrics:

Revenue consolidation (60%): Having a very consolidated brand portfolio in which a small number of brands generate a large proportion of group level revenues exposes companies to greater risks if any key brands fail to perform. To measure this, we calculated the percentage of group level revenues generated by the top 10 brands and categorized each company as either consolidated (>50% of group level revenues) or diversified (<50% of group level revenues).

Brand innovation (40%): For this sub-metric, we assessed each of the top 10 brands based on how well positioned they were to respond to changing consumer preferences associated with a low-carbon transition. If the brand had successfully delivered low-carbon innovations to market over the past five years we categorized them as being 'active carbon management brands.' If the brand had failed to deploy any low-carbon innovations, we categorized them as being 'business as usual brands.' We then calculated what percentage of the revenue generated by the top 10 brands was contributed by active carbon management brands vs BAU brands. Finally, we assessed the impact of the low-carbon innovations associated with each active carbon management brand according to the framework outlined in Transition Opportunities to derive an innovation impact score per company. We have intentionally excluded packaging innovations in this analysis as this is assessed separately in our Circular Innovation and Packaging metric in Transition Opportunities. Packaging is also a uniform risk across all Consumer Goods brands and in this analysis, we wanted to focus on brand exposures specific to particular product categories.

Food & Beverage

- ▼ Nestlé ranks first overall in our brand analysis. It is the only Food & Beverage company with a diversified portfolio of brands with no top 10 brand driving a significant proportion of group revenues. Of its top 10 brands, 4 have delivered low-carbon innovations to market and these innovations have also been assessed as having the greatest impact of the group. These active carbon management brands account for 62% of the total revenue generated by the top 10 brands (Figure 25).
- ▼ Coca-Cola ranks second overall despite having a very consolidated portfolio of brands driven largely by the Coca-Cola brand and having six of its top ten brands classified as business as usual. Although large global brands like Sprite and Fanta are in this group, these BAU brands only account for 35% of the revenue generated by the top 10 brands. In addition, the low-carbon innovations delivered by Coca-Cola's active carbon management brands were assessed as having the second highest impact of the group.
- ▼ Kraft Heinz ranks last overall in our brand analysis. Eight of its top 10 brands have not delivered any low-carbon innovations to market, accounting for 74% of the revenue generated by the top 10 brands. Amongst these are some very high revenue contributors such as Kraft and Oscar Mayer. It also owns a relatively consolidated portfolio of brands with the Kraft and Heinz brands driving a significant portion of group level revenues.
- ▼ Mondelez ranks second last overall with 9 out of its top 10 brands failing to deploy any low-carbon innovation. These brands account for 71% of top 10 revenue. Cadbury is the only brand which is actively managing its carbon exposure however it is engaging in very incremental low-carbon innovation associated with limited decarbonization impacts.

Figure 25: Brand analysis

Company	Revenue contribution of top 10 brands	Innovation impact score	Revenue of top 10 brands split (%)		Rank
			Business As Usual	Active carbon management	
Nestlé	Diversified	51	Maggi, Friskies, Pure Life, Kit Kat, Fancy Feast, Nan		1
Coca-Cola	Consolidated	31	Sprite, Fanta, Powerade, Minute Maid, Georgia, Aquarius		2
Heineken	Consolidated	21	Tecate, Amstel, Nova Schin, Foster's Kaiser, Cruzcampo, Dos Equis XX		3
PepsiCo	Consolidated	24	Lay's, Doritos, Mountain Dew, Cheetos, 7-Up, Tostitos		4
AB InBev	Consolidated	11	Skol, Corona, Brahma, Stella Artois, Cass, Busch, Antarctica		5
Diageo	Consolidated	25	McDowell's, Smirnoff, Captain Morgan, Crown Royal, Gordon's, Tanqueray, Old Tavern		6
Danone	Consolidated	30	Activia, Prostokvashino, Mizone, Nutricia, Actimel, International Delights		7
Mondelez	Consolidated	6	Oreo, Milka, Trident, Tang, Ritz, Halls, Philadelphia, Chips Ahoy!, Lacta		8
Kraft Heinz	Consolidated	6	Kraft, Oscar Mayer, Philadelphia, Maxwell House, Ore Id, Velveeta, Kool Aid, Jell-O		9

Source: CDP, Euromonitor

Household & Personal Care

- ▼ Henkel ranks first overall in our brand analysis. It is the only company in the Household and Personal Care sub-sector that has a diversified brand portfolio, with group revenues not depending on any key brands. Even its highest earning brand Persil accounts for a relatively small proportion of group revenues. Of its top 10 brands, five have delivered low carbon innovations to market accounting for 65% of top 10 revenue (Figure 26).
- ▼ Unilever ranks second overall. While it is not a diversified company, seven of its top 10 brands have delivered low-carbon innovations to market in the last five years, the largest proportion of the group. These brands account for 77% of top 10 revenues and the innovations deployed were assessed as being high impact.
- ▼ L'Oréal ranks last in our analysis. Its brand portfolio is concentrated due to the relatively large proportion of revenues generated by key brands such as L'Oréal Paris and Maybelline. Five of its top 10 brands are considered to be 'business as usual brands' including a number of high revenue earners such as Maybelline and Lancôme. These brands account for 44% of total revenue generated by the top 10 group.
- ▼ P&G ranks second last in the brand analysis. Six of its top 10 brands have failed to deliver low-carbon innovations to market accounting for 39% of top 10 revenue. It also has the second lowest innovation impact score of the group and has a consolidated brand portfolio driven by large global brands such as Tide/Ariel.

Figure 26: Brand analysis

Company	Revenue contribution of top 10 brands	Innovation impact score	Revenue of top 10 brands split (%)		Rank
			Business As Usual	Active carbon management	
Henkel	Diversified	39	Fa, Dial, Bref, Diadermine, Pril		1
Unilever	Consolidated	100	Rexona, Lynx, Sunsilk		2
Estée Lauder	Consolidated	46	Bobbi Brown, Tom Ford, La Mer, Jo Malone		3
RB	Consolidated	41	Lysol, Veet, Harpic, Mortein, Enfitas		4
Colgate-Palmolive	Consolidated	31	Hill's, Darlie, Sorriso, Suavitel		5
P&G	Consolidated	32	Gillette, Oral-B, Head & Shoulders, Charmin, Bounty, Olay		6
L'Oréal	Consolidated	69	Maybelline, Lancome, Elvive, La Roche-Posa, Vichy		7

Source: CDP, Euromonitor

Raw material risk

In order to assess company exposure to high risk raw materials we developed two sub-metrics. The first examines deforestation risks associated with the use of palm oil and the second assesses the risks associated with a reliance on carbon and land intensive commodities.

Palm oil analysis (60% for Household & Personal Care companies and 40% for Food & Beverage companies): This metric looks across a number of sub-metrics including percentage of physically certified palm oil supply, target year to achieve 100% physically certified supply, public disclosure of palm oil suppliers and exposure to suppliers deemed to be involved in deforestation related activities as per Greenpeace's 2018 report The Final Countdown.⁽¹²⁾

Raw material intensity (60% for Food & Beverage companies and 40% for Household & Personal Care companies): This metric assesses the carbon and land use intensities of key commodities based on empirical data sourced from studies conducted by Oxford University and The LCA Research Group (2018).⁽¹³⁾ The key commodities on which each company's business model are dependent were determined from CDP disclosure and public reporting.

Food & Beverage

- Pure-play beverage companies AB InBev, Coca-Cola, Heineken and Diageo perform well overall due to using no palm oil in their products. Brewers also rely on a limited suite of agricultural commodities such as barley, rice and maize which have relatively low-carbon and land use intensities (Figure 27).
- Nestlé ranks last overall performing poorly on palm oil due to sourcing only 25% of palm oil from physically certified suppliers. In addition, it ranks last in terms of carbon and land use intensity due to its reliance on meat products driven by its pet care division. (Figure 28).
- Kraft Heinz also performs poorly in terms of carbon and land use intensity due to its reliance on meat and dairy commodities for several of their brands.
- Of the palm oil users, Danone performs best due to having already achieved 100% physically certified supply. It performs towards the middle of the group in terms of carbon and land use intensity due to a reliance on dairy.

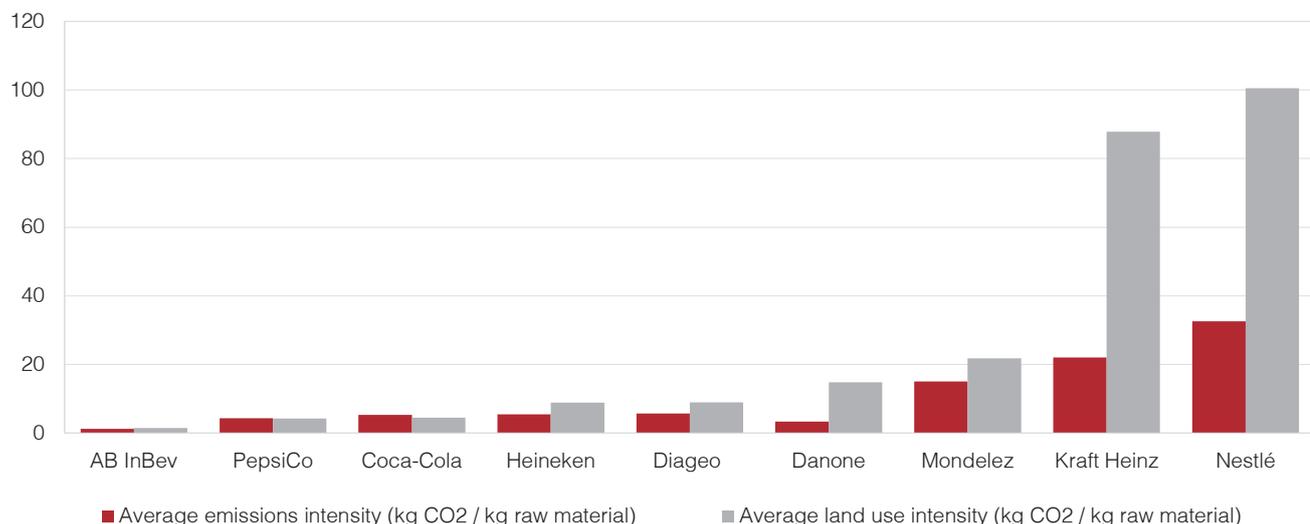
Figure 27: Palm oil scorecard

Company	Percentage revenue dependent	Percentage physically certified ⁽ⁱ⁾	Target year for 100% certified	Public disclosure of suppliers	GreenPeace assessment	Final score
AB InBev	0%	-	-	-	-	100
Coca-Cola	0%	-	-	-	-	100
Diageo	0%	-	-	-	-	100
Heineken	0%	-	-	-	-	100
Danone	15%	100%	Achieved	Yes	2	99.3
Kraft Heinz	1%	79%	2025	No	22	48.6
PepsiCo	50%	32%	2020	Yes	22	47.3
Nestlé	No disclosure	25%	2020	Yes	23	40.0
Mondelez	No disclosure	No disclosure	No target	Yes	22	16.0

(i) Physical certification refers to palm oil supply that has achieved Mass Balanced (MB), Identify Preserved (IP) or Segregated (SG) certification according to the RSPO.

Source: CDP, company reports

Figure 28: Raw material intensity



Source: CDP, company reports, Oxford University and LCA Research Group

12. Green Peace, 2018: The Final Countdown: Now or never to reform the palm oil industry

13. Oxford University and LCA Research Group, Poore & Nemecek, 2018: Reducing food's environmental impacts through producers and consumers

Household & Personal Care

- ▼ L'Oréal, P&G, Henkel and Estée Lauder perform well on carbon and land use intensity due to not having any food brands. These companies rely predominately on a small number of agricultural commodities such as palm oil and soy (Figure 30).
- ▼ All Household & Personal Care companies however, will have chemical heavy supply chains associated with their own emissions intensities. These intensities were not assessed due to lack of data.
- ▼ Unilever and Colgate-Palmolive perform poorly in terms of raw material intensity due to having respective food and pet care divisions driving a reliance on dairy and meat products.
- ▼ Henkel ranks first overall due to strong performance on palm oil having already achieved 60% physically certified supply (Figure 29).
- ▼ Estée Lauder ranks last overall due to poor performance in palm oil driven by limited disclosure and a relatively unambitious target.

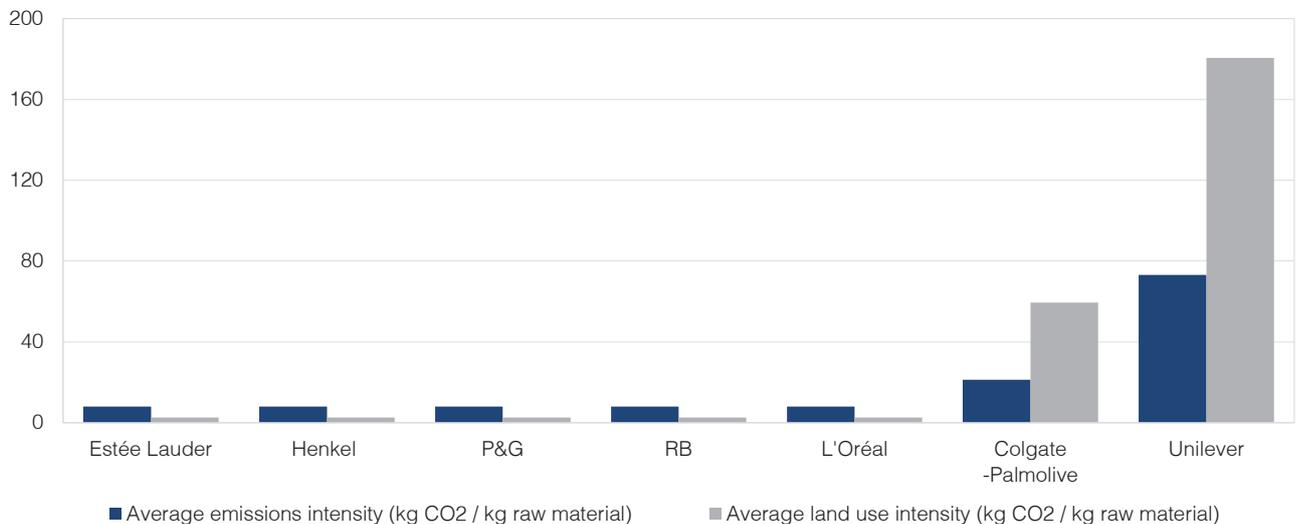
Figure 29: Palm oil scorecard

Company	Percentage revenue dependent	Percentage physically certified ⁽ⁱ⁾	Target year for 100% certified	Public disclosure of suppliers	GreenPeace assessment	Final score
Henkel	36%	60%	2020	No	20	53.2
L'Oréal	76%	51%	2020	No	21	52.8
Unilever	55%	56%	2019	Yes	25	52.7
Colgate-Palmolive	26%	45%	2020	Yes	23	51.5
P&G	30%	28%	2020	Yes	20	50.7
RB	3%	0%	2020	Yes	22	36.9
Estée Lauder	No disclosure	32%	2030	No	20	22.8

(i) Physical certification refers to palm oil supply that has achieved Mass Balanced (MB), Identify Preserved (IP) or Segregated (SG) certification according to the RSPO.

Source: CDP, company reports

Figure 30: Raw material intensity



Source: CDP, company reports, Oxford University and LCA Research Group

Operational emissions and energy

Operational emissions refer to direct Scope 1 and 2 emission generated in company manufacturing facilities. As operational emissions and energy account for less than 5% of total life-cycle emissions for the sector we have given this metric a relatively low weighting within transition risks. This metric however, does provide an indication of operational efficiency. Operational emissions intensities can also provide insights into the energy mix being used within a company's operations and the extent to which renewables are being integrated.

Operational emissions intensity (50%): We calculate operational emissions intensity by normalizing absolute Scope 1 and 2 emissions by revenue and COGS. We also calculate a CAGR to identify whether operational emissions intensities have been reduced over the period 2013-17.

Operational energy intensity (50%): We calculate operational energy intensity by normalizing operational energy consumption by revenue and COGS. We also calculate a CAGR to identify whether operational energy intensities have been reduced over the period 2013-17.

Food & Beverage

- Heineken and Diageo rank first and second respectively in operational emissions and energy. This is driven by strong performance in operational emissions intensity underpinned by a high uptake a renewable energy in their facilities. The business case for renewable energy use is particularly clear for brewers due to the productions of biofuels as a bioproduct of the manufacturing process (Figure 31).
- Coca-Cola rank last overall driven by poor performance across both sub-metrics. Both emissions and energy intensities have increased across the period 2013-17 suggesting poor operational energy efficiency and/or a reduction in the uptake of clean energy.
- Mondelez rank first in terms of energy intensity having achieved the most aggressive reductions in energy intensity over the period 2012-17 (Figure 32).

Figure 31: Scope 1+2 Emissions intensity

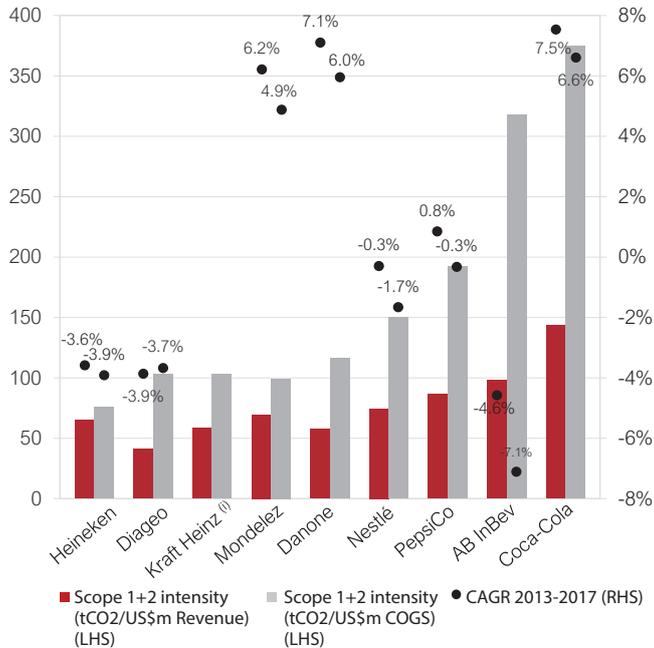
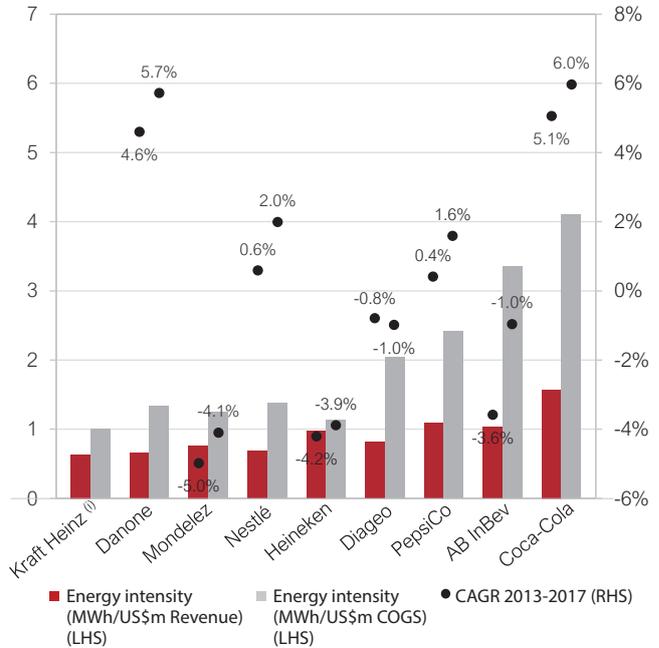


Figure 32: Energy intensity



(i) No CAGR shown for Kraft Heinz due to only three years of data Source: CDP, company reports

Household & Personal Care

- RB leads overall, ranking first for operational energy and second for operational emissions. This is underpinned by relatively low intensity levels and the achievement of considerable reductions in both metrics over the period 2013-17.
- L'Oréal ranks first in terms of operational emissions driven by the significant uptake of renewables across its facilities. This has resulted in an impressive 17% reduction in operational emissions over the period (Figure 33).
- Unilever ranks last overall. This is driven by poor performance in energy intensity which has increased across the period 2013-17.
- Henkel performs poorly in terms of operational emissions and energy intensity driven by its large adhesives division. On average, this chemical heavy business will have higher manufacturing emissions intensities than pure-play Consumer Goods businesses (Figure 34).

Figure 33: Scope 1+2 Emissions intensity

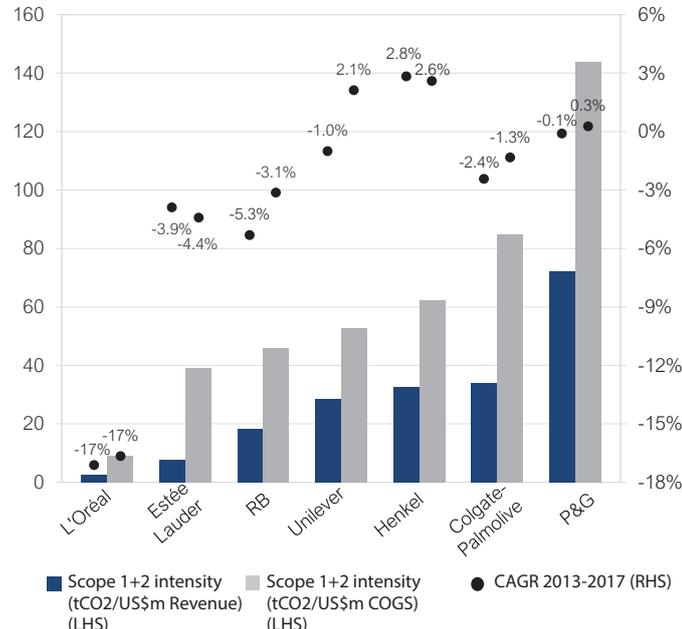
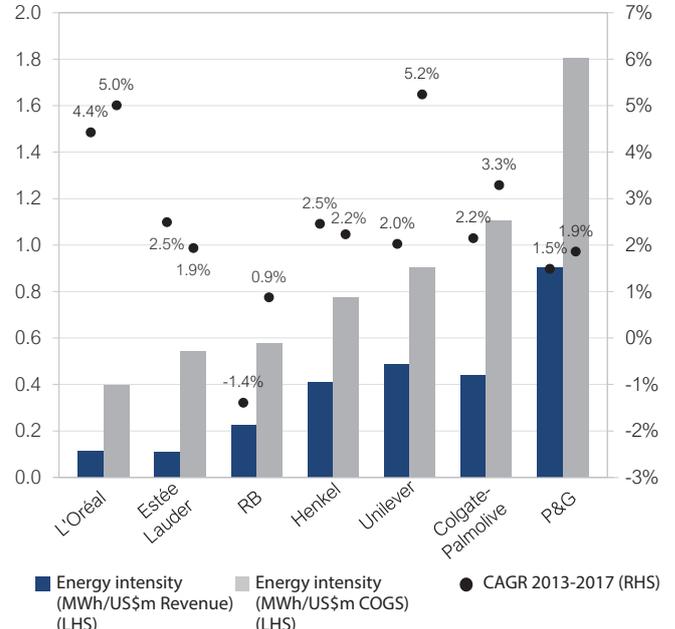


Figure 34: Energy intensity



Consumer contribution to the climate change challenges

The main focus of climate change regulation has been primarily on production, how to improve the efficiency of a product or process, or through innovation. However, the goods we consume and how we consume a range of products have a significant impact on climate change. Products range from consumer durables such as a fridge freezer or bicycles to Fast-Moving Consumer Goods from drinks to shampoos that are covered in this report.

How best should this challenge be addressed for sectors which are focussed on growing rather than reducing consumption and where business models tend to be linear rather than circular? How and what drives consumption is also down to consumers and their behaviour, where consumer choice is just part of the equation with habits and practices often entrenched in consumption patterns. Should companies give consumers the knowledge on what impact their products have so they can make the choice to reduce their carbon footprint? The Product Carbon Footprint (PCF) is one way that consumers can be given the information to influence their choices.⁽¹⁴⁾

The PCF measures the carbon emissions of a product through its life-cycle. However, calculating this is not simple, as products can have a complicated route before they reach the end consumer. Emissions can arise from:

- ▼ Raw material use – what is the make up of raw materials and where it is sourced – raw materials can be a combination of different types of food and non-food commodities, including chemicals that come from different chemical chains, and have packaging from primary or secondary material.
- ▼ Production process – is this a high carbon intensive process through its energy use or through inherent emissions in the production process?
- ▼ Transport – where does the product come from and how does it get to the end consumer?
- ▼ Use of product - how is the product consumed – is it washing powder/tablet which is used in a high temperature cycle, what is the expected time of the cycle? How does the consumer choose to use the product – based on best practice or in a more wasteful fashion?
- ▼ End of life treatment – how is the end product disposed of including packaging?

Standards are in place to measure life-cycle analysis related to PCFs with the latest ISO 14067 standard published in 2018 which specifies the principles, requirements and guidelines for qualification and reporting of the carbon footprint of a product. ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies. The British Standards Institution (BSI) has also published a comprehensive specification and guide on the life-cycle greenhouse gas emissions of goods and services.⁽¹⁵⁾ BSI 2050 sets a high standard on capturing the life-cycle emissions of products and services with detailed guidelines on scoping out the boundaries and activities in all stages of life-cycle assessment and includes 63 GHGs in their specification. The robustness of the standard is illustrated for example by their treatment of products dependent on agricultural commodities where BSI 2050 includes calculation of GHG emissions related on land use change.⁽¹⁶⁾

While these standards provide the basis for how product carbon footprints can be measured, the translation of this to labelling on consumer products in a standardised manner is still being developed with countries adopting a variety of approaches from voluntary to mandatory labelling.⁽¹⁷⁾

Figure 35: CO₂ emissions per country

Country	CO ₂ emissions (tonnes per capita)		Change (2000-2014)
	2000	2014	
China	2.7	7.5	180%
Vietnam	0.7	1.8	170%
India	1.0	1.7	77%
Indonesia	1.2	1.8	46%
Brazil	1.9	2.6	39%
Saudi Arabia	14.3	19.5	37%
South Africa	8.3	9.0	8%
Sub-Saharan Africa	0.8	0.8	0.0%
Nigeria	0.6	0.6	0.0%
Japan	9.6	9.5	-1.0%
Mexico	3.9	3.9	-1.0%
Australia	17.2	15.4	-11%
Canada	17.4	15.1	-13%
USA	20.2	16.5	-18%
France	5.9	4.6	-23%
OECD members	11	9.5	-14%
World	4	5	23%

Source: World Bank

The PCF puts the spotlight on consumption and while there are no defined scenarios on how to translate this into what would be compatible with achieving targets to stabilise temperatures to 2-degrees, it is estimated that this would require a reduction to two tonnes of CO₂ per capita by 2050 at the global level. This would mean a 150% decline from the levels estimated of five tonnes of CO₂ per capita (estimated for 2014). As Figure 35 illustrates, looking at 2014 estimates for tonnes of CO₂ per capita by the World Bank for different countries and regions, this would require different patterns with CO₂ emissions per capita falling overall for large developed economies with the new large developing economies such as China and India growing rapidly.

How to achieve changes in consumption, either absolute or intensity, should remain in the mix for climate change solutions to reduce the overall footprint for consumers. How the group of FMCG companies in this report address this challenge will depend on a combination of offering consumers the choice of product and delivery, as well as consumer education to change habits and practices.

This has led companies in this report to introduce a range of solutions from washing powders that work more efficiently in lower temperatures to using shampoos with timers included. Solutions are also being found in packaging from the greater use of recycled material to moving to re-fillable bottles. These trends need to step up to meet the overarching challenge to cut personal carbon footprints.

14. Product Carbon Footprint Pilot Project Germany - Product Carbon Footprinting

15. British Standards Institution: The Guide to PAS 2050:2011 – How to carbon footprint your products, identify hotspots and reduce emissions in the supply chain

16. Carbon Trust: Product Carbon Footprint Certification and ISO 14050

17. Ipsos MORI, London Economics and AEA for EU Commission, 2012: Research on EU product label options

Physical risks

- ▼ Water stress has the potential to drive volatility in the price and supply of key agricultural raw materials by disrupting yields.
- ▼ Operational and reputational risks associated with high levels of water withdrawal and consumption in manufacturing will impact Beverage and Household & Personal Care companies the most.
- ▼ Diageo ranks first overall in the Food & Beverage sub-sector for Physical Risks, while L'Oréal ranks first in the Household & Personal Care sub-sector with the lowest water withdrawal and consumption intensity.
- ▼ Coca-Cola and P&G rank last in their respective sub-sectors, while Estée Lauder are the only company within the sample that did not respond to the CDP 2018 water questionnaire.

Overview

Exposure to the physical risks of climate change has the potential to significantly impact the Consumer Goods sector. These impacts are likely to hit companies at different points, and to varying degrees along the value chain depending on their business models. In this section we take a holistic, value chain approach to explore the different points of vulnerability to physical risks. We analyze these risks through the supply chain and directly in company's operations and production.

A reliance on agricultural raw materials particularly exposes Food & Beverage companies to physical risks in their supply chain. Risks of heat and water stress have the potential to impact the price and availability of key commodities due to direct impacts on yields. To an extent, companies are able to manage risks through engagement with suppliers and the sourcing of materials from appropriate growing regions yet may never fully decouple the risks of water stress and depletion from the commodities that sustain their business models. While we were able to explore risks associated with water stress due to the availability of granular country and commodity level data from the WRI and the Water Footprint Network, we were unable to analyze risks associated with heat stress, due to a lack of consistent climate modelling data across a broad range of commodities, and a high level of variability and uncertainty in existing data.

Water stress also has the potential to disrupt company operations. While all companies could be impacted by water stress in their operations, this is particularly material to those with water intensive manufacturing processes or those which use water as a key ingredient in their products – namely Beverage and Household & Personal Care companies. Water stress poses not only operational risks by constraining production but also reputational risks if companies are seen to be large water consumers in water stressed communities.

For Household & Personal Care companies, the most material physical risks are associated with downstream water stress, due to the water intensive nature of consumption of their products. With half the global population expected to live in areas of water stress by 2025,⁽¹⁸⁾ future water stress has the potential to cause product demand to contract, where product delivery systems involving high water intensities are no longer feasible. This is particularly significant where water stress aligns with high growth markets such as India, the Middle East and parts of Africa.

These physical risks are assessed in this chapter using the following four metrics:

Metric 1) Supply chain physical risk (40% for Food & Beverage companies, 10% for Household & Personal Care companies): This metric evaluates how dependent companies are on commodities grown in water stressed regions and commodities with high water intensities. Key commodity lists are derived from public reporting and CDP disclosure and mapped to global growing patterns based on country level data from the Food and Agriculture Organization of the United Nations (FAO). We assess both the water stress index of the countries in which each commodity is grown using the "WRI Aqueduct Projected Water Stress Country Rankings" dataset and the agricultural water intensity of each commodity based on Water Footprint Network data to produce a weighted water stress score.

Metric 2) Operational physical risk (40% for all companies): This metric identifies the companies with the lowest exposure to water related risks to their operations. We assess facility level water stress, water withdrawal intensity and consumption intensity. To assess water stress at a facility level we use the data from the 2018 CDP Water questionnaire and the WRI Aqueduct tool to calculate the water stress of the facilities deemed to be at risk by companies. We also conduct a gap analysis to highlight any potential gaps in disclosure. Withdrawal and consumption intensities are calculated by normalizing absolute figures by both revenue and COGS and a CAGR is calculated over the period 2013-17.

Metric 3) Downstream physical risk (5% for Food & Beverage companies, 35% for Household & Personal Care companies): This metric evaluates how dependent companies are on revenues generated in regions with high water stress risk. Regional revenue breakdowns are mapped against current (2020) and future (2040) water stress indices using the WRI Aqueduct country rankings to assess risk exposures.

Metric 4) Water governance and targets (35% for all companies): This metric identifies how well set up companies are to respond to water related risks and how ambitious their targets are for reducing water impacts both at an operational level and at a product level. Our assessment is based on both CDP disclosed information and publicly reported data.

Overall highlights

- Water stress has the potential to drive volatility in both the price and supply of key agricultural raw materials by disrupting yields. This is particularly material for Food & Beverage companies, which are most at risk from the impacts of increasingly unpredictable weather patterns and longer-term fluctuations in water availability.
- Companies with diversified food portfolios reliant on a range of agricultural commodities are more exposed to water related risks in their supply chain. Conversely, companies reliant on a limited suite of low water intensive cereal crops such as brewers, are less exposed to water stress risks in their raw material supply chain.
- Operational and reputational risks associated with high levels of water withdrawal and consumption in manufacturing can impact both sectors. This is particularly material for Beverage and Household & Personal Care companies where water is a key product ingredient.
- Our water stress gap analysis suggests that the majority of companies are not disclosing a number of facilities that may be located in water stress regions. Four companies identified less than 10% of countries with high stress scores as containing facilities at risk.
- A lack of transparency in relation to facility level data is problematic in terms of tracking the impact that companies are having on respective watersheds in which they operate and the relative water-stress at a facility level. Furthermore, we find poor disclosure of the relative water impacts that the use of products has downstream in relation to water stress in key end-markets.
- All companies excluding Estée Lauder responded to CDP's 2018 water questionnaire. Limited disclosure from Estée Lauder has resulted in the company ranking last in water governance, due to a lack of transparency and comparable data in its company reporting.

- Overall, the sector demonstrates strong water governance compared to other sectors underpinned by a widespread acknowledgement of water related exposures. 12 of the 16 companies integrate water related issues into their financial planning and 15 out of 16 into their long-term business objectives.
- The sector is also unique in how it sets water related targets. Due to the distribution of water impacts across the value chain, 81% of companies look beyond operational water consumption, setting water stewardship targets or targets specifically relating to water use in their supply chains or in consumption.

Food & Beverage

- Diageo ranks first overall. It is less exposed to supply chain water stress due to its reliance on a limited suite of low water intensive commodities. The company performs best of all beverage companies in terms of withdrawal and consumption and has the most comprehensive set of water targets as part of its "Water Blueprint" stewardship framework (Figure 36).
- Coca-Cola ranks last overall. It has the highest operational water consumption intensity which is four times higher than the second highest water consumer in the sub-sector. The company has poor disclosure of water stressed sites, only deeming two facilities to be at risk in its CDP disclosure.

Household & Personal Care

- L'Oréal ranks first overall, leading the group in terms of operational water use. It has the lowest water withdrawal and consumption intensity and ranks second in water governance and targets (Figure 37).
- P&G ranks last overall. Its supply chain water stress exposure is higher than pureplay Personal Care companies due to its paper products business. It also generates a high proportion of revenue from water stressed regions.

Figure 36: Food & Beverage - Physical risks summary

Company	Supply chain physical risks	Operational physical risks	Downstream physical risks	Governance and targets	Overall weighted rank	Physical risks rank
Diageo	2	1	7	2	3.3	1
AB InBev	1	7	5	3	4.0	2
Danone	7	4	4	1	4.1	3
Heineken	3	3	6	7	4.1	4
PepsiCo	4	5	1	4	4.2	5
Nestlé	8	6	2	6	4.6	6
Kraft Heinz	9	2	9	9	5.3	7
Mondelez	5	8	8	8	5.6	8
Coca-Cola	6	9	3	4	6.4	9
Weighting	40%	40%	5%	15%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

Figure 37: Household & Personal Care - Physical risks summary

Company	Supply chain physical risks	Operational physical risks	Downstream physical risks	Governance and targets	Overall weighted rank	Physical risks rank
L'Oréal	1	1	4	2	2.9	1
Unilever	7	3	1	3	2.9	2
Colgate-Palmolive	6	6	2	1	3.7	3
Henkel	1	4	5	6	4.4	4
Estée Lauder	1	7	3	7	4.5	5
RB	4	2	7	4	4.7	6
P&G	4	5	6	5	5.2	7
Weighting	10%	40%	35%	15%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

Supply chain physical risks

Agricultural supply chains are increasingly vulnerable to physical risks associated with climate change. While we appreciate the breadth of physical risks that could impact agricultural supply, we focus this analysis on water stress due to data availability. Our analysis of water stress looks at two sub-metrics:

Water stress (40%): Current (2020) and future (2040) country level water stress risk scores are derived from the WRI Aqueduct Projected Water Stress Country Rankings dataset. These are mapped against global growing patterns of key commodities that each company is dependent on to produce a water stress index score normalized by world production (0-5).

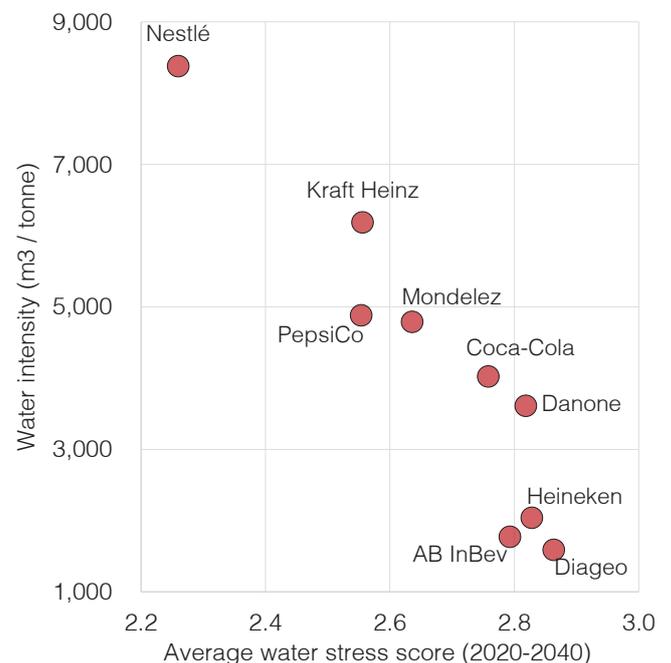
Water intensity (60%): Commodity level water intensities are derived from the Water Footprint Network database. These are mapped against the key commodities that each company is dependent on.

For a number of commodities water intensity and water stress have an inverse relationship. For example, cocoa which has a very high water intensity also has one of the lowest water stress scores across all the commodities assessed. Due to the water intensive nature of producing these commodities they have traditionally been cultivated in areas with high rainfall and therefore low water stress. The most high-risk commodities are those that have both relatively high intensities and are grown in relatively high water stress countries, these include meats, dairy, nuts and tea.

Food & Beverage

- Pure play brewers – AB InBev, Diageo and Heineken lead the group due to a dependency on a limited suite of agricultural commodities such as barley, rice and maize with lower water intensities and water stress scores. These cereal crops are predominately rain fed and grown in large volumes throughout the world, offering more flexibility in sourcing and supply (Figure 38).
- PepsiCo and Mondelez perform towards the middle of the group. These companies are more diversified and dependent on a larger range of agricultural commodities, yet do not produce any meat-based products or rely on any other high water risk commodities.
- Danone ranks third last due to a dependency on dairy products and water intensive nut commodities for their dairy-free milk alternatives.
- Kraft Heinz and Nestlé rank last and second last respectively, due to a reliance on meat products in their food and pet care divisions. They are also the most diversified companies in the sub-sector and therefore are reliant on the broadest range of agricultural commodities and growing regions, increasing the likelihood of exposure to water stress regions.

Figure 38: Water stress vs. water intensity for key commodities

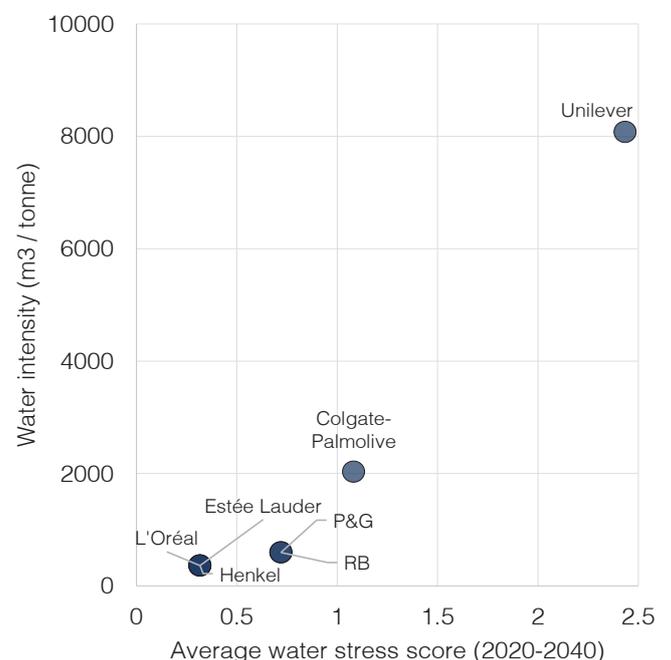


Source: CDP, WRI, FAO, Water Footprint Network

Household & Personal Care

- Pure-play beauty companies L'Oréal and Estée Lauder and Household & Personal Care and adhesives company Henkel have limited exposure to agricultural commodities and therefore lead the group in water stress and water intensity (Figure 39).
- However, these companies will have chemical heavy supply chains associated with their own water intensities. These intensities were not able to be assessed due to lack of data.
- RB and P&G perform towards the middle of the group due to their exposure to timber in the production of tissue products. While all companies are exposed to timber for packaging we have only included it for these two companies as it forms a key input into one of their largest product categories representing a much higher level of exposure.
- Colgate-Palmolive ranks second last overall due to its reliance on meat and dairy products for its pet care division.
- Unilever ranks last due to its reliance on tea, soy, dairy and meat. As the most diversified company in the sub-sector it is exposed to the widest range of agricultural commodities, sourced from the largest number of growing regions making it more likely to be exposed to supply chain water risks.

Figure 39: Water stress vs. water intensity for key commodities



Source: CDP, WRI, FAO, Water Footprint Network

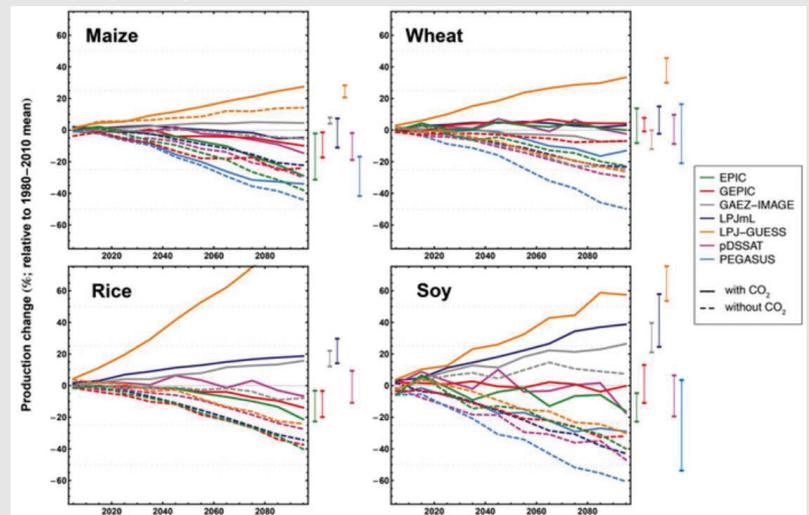
Risks to supply chains are heating up

Acute and chronic physical risks of climate change as defined by the TCFD⁽¹⁹⁾, present significant challenges to essential backbone of the products and brands on Consumer Goods companies. Agricultural production of raw materials forms the basis of the products of the majority of Food & Beverage companies and a large proportion of Household & Personal Care companies. Mitigating against physical risks and sustaining supply is achievable to an extent, but an ever changing climate has the potential to impact resources in number of interlinked ways across time and space. While water availability is the most fundamental risk, the effects of heat stress can not only amplify the impacts of water stress, but also lead to significant reduction in the yields and quality of agricultural produce.

Studies have shown that both acute impacts of heat stress, namely the frequency and severity of extreme heat-waves, as well as chronic longer-term changes in average temperatures can have serious effects on crop production. The productivity of key agricultural crops has been shown to be dramatically reduced when exposed to short episodes of extreme temperatures during the reproductive period.⁽²⁰⁾ For example, exposing crops such as wheat, groundnut, sunflower, maize and rice to temperature thresholds exceeding 32-36°C for a few hours (optimum temperatures sit around 20-30°C) around flowering may strongly affect fertility and result in yield damages and losses, depending on the frequency and intensity of the stress.⁽²¹⁾ Projected increases in extreme heat conditions are also expected to lead to heat stress for livestock, which can result in large economic losses for producers.

Taking a longer term view, field experiments have shown that consistently higher temperatures can weaken the protective systems in plant life and induce more persistent heat stress. For example, wheat has an optimal seasonal growing range of 15-32°C. Global wheat production is estimated to fall by 6% for each degree of further temperature increase and become more variable over time.⁽¹³⁾ Furthermore, by the middle of the 21st century, temperatures in the Southern Plains of the US, a prominent growing region for maize and other cereal crops will likely be 2.2°C to 3.3°C higher than the 20th century average. The effects of this are twofold. Firstly warmer temperatures can sap yield potential by impairing heat-tolerance protective mechanisms and secondly, high temperatures will add to the evaporative demand on crop systems, increasing the water requirement for crop growth.⁽²²⁾

Figure 40: Relative change (%) in RCP 8.5 decadal mean production for multiple global gridded crop models

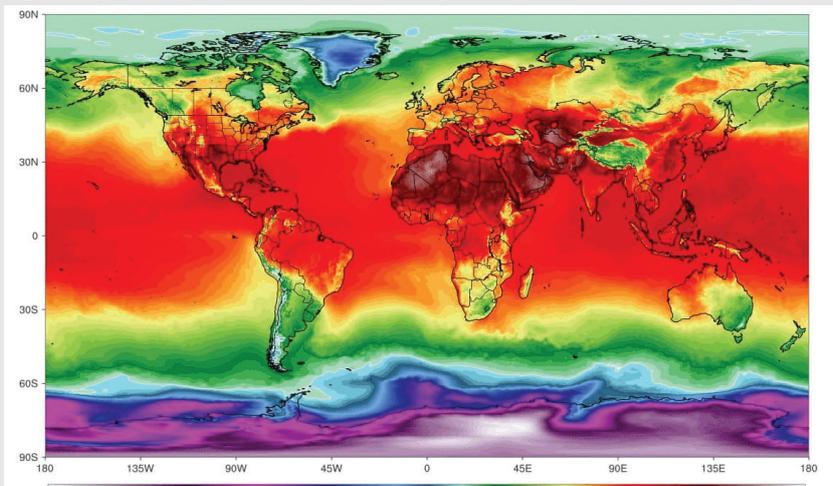


Source: Rosenzweig et al. 2013

While uncertainties exist in crop modelling due to the potential that warmer temperatures may extend the growing season and certain crops may benefit from elevated CO2 concentrations, it is clear, especially in regard to the spike in the frequency of heatwaves that temperature changes will have major detrimental impacts on yields.

The summer of 2018 saw record-breaking high temperatures across the globe (see Figure 41). In New South Wales in Australia, the heatwave peaked at 47°C near Sydney, while Portugal, Japan, Greece and parts of the US saw temperatures exceeding 40°C.

Figure 41: A simulation of maximum temperatures on 21 July 2018



Source: Climate Reanalyzer/Climate Change Institute/University of Maine

A higher food import bill will also likely contribute to faster inflation in some regions with knock-on effects to consumers, while crop failures will lead to a shift in trade flows affecting global import and export prices. Large-scale shifts in the availability and prices of many agricultural products as a result of heat and water stress will become an ever-increasing risk for Consumer Goods companies, and one that cannot be easily rectified without as much as 100% of core products reliant on agricultural raw materials.

A weak global harvest, especially in terms of wheat have had widespread knock-on effects. Poor harvests in the large wheat growing regions Russia, Australia and the European Union has meant that the world is heading for the first wheat deficit in six years.⁽¹³⁾ The prolonged summer heatwave caused devastating effects on crop harvest throughout Europe, causing countries in Central and Eastern Europe – predominately food exporting countries – to import for the first time in decades.

As a result, benchmark wheat futures have soared to a three-year high as traders bet on diminished supplies.⁽²³⁾

19. The TCFD categorize physical impacts as acute near-term weather events (storms, drought) and chronic long-term climatic changes (sea-level rise, heat-waves).

20. Teixeira et al. 2013, Global hot-spots of heat stress on agricultural crops due to climate change

21. Food & Agriculture Organization of the United Nations- Global assessments and implications for food security and trade

22. Nielsen-Gammon et al. 2017: Resilient Southern Plains Agriculture and Forestry in a Varying and Changing Climate

23. Bloomberg, 2018: Why Ravaging Heatwaves Matter to World's Dinner Table

Operational physical risks

Acute and chronic changes in weather patterns are presenting increasing risks to company operations and have the potential to disrupt production. Water is a fundamental resource not only in the processing and use of products but as a key raw ingredient for a number of beverage and Personal Care products. The way in which companies utilise and manage this finite resource must consider the viability of maintaining supply against the physical and reputational impacts that water consumption has on the surrounding communities, watershed and environment. To measure exposure to operational physical risks associated with water stress we look across three sub-metrics:

Facility level water stress (40%): This metric is assessed using data disclosed in the 2018 CDP water questionnaire and covers sites deemed to be at substantive water stress risk by the companies. The water stress scores of these locations are derived from the WRI Aqueduct tool and weighted by water withdrawals at each facility to produce a 'disclosed water stress risk score' out of five. We have also conducted a gap analysis to ensure this score is representative of all sites exposed to current and future water stress risk. Our gap analysis compares the WRI country level water stress risk scores against the countries in which companies operate in and determines if any high risk countries have not been disclosed.

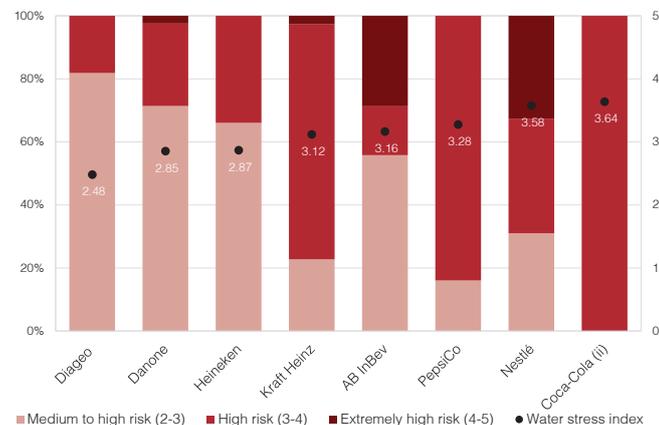
Water withdrawal intensity (30%): Water withdrawal refers to the total volume of water removed from any water source. We calculate water withdrawal intensity by normalizing absolute current water withdrawals by revenue and COGS. We also calculate a CAGR to determine whether water withdrawal intensity has been reduced over the period 2013-17.

Water consumption intensity (30%): Water consumption refers to the net impact on a watershed or aquifer after discharge is accounted for. We calculate water consumption intensity by normalizing absolute current water consumption levels by revenue and COGS. We also calculate a CAGR to determine whether water consumption intensity has been reduced over the period 2013-17.

Food & Beverage

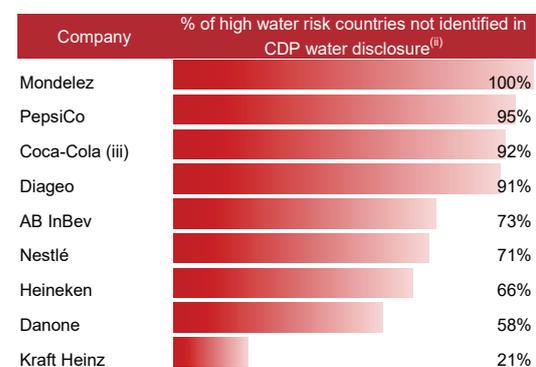
- Of the company's wholly reliant on water for its products, Diageo ranks top, outperforming other brewers in terms of water withdrawal and consumption intensities, with improvements in water efficiency and wastewater discharged at production sites. It also leads the group in terms of facility level water stress, with five facilities disclosed as being at risk. It also acknowledges a further 41 sites at risk in its annual reporting, however this is not reflected in its CDP water reporting and therefore the company performs poorly in our gap analysis (Figure 42).
- Kraft Heinz ranks second overall. This is driven by relatively low withdrawal and consumption intensities due to producing a very limited suite of beverage products. Kraft Heinz also perform well in terms of water stress, ranking first in the gap analysis with only one undisclosed high-risk operation (Figure 43).
- Coca-Cola rank last overall due to poor performance across all sub-metrics. It has high water withdrawal and consumption figures which are more than two and four times greater than the second worst performers respectively. This is fundamentally driven by the fact that water forms a key ingredient in all its products. However, both withdrawal and consumption intensities have also increased over the period 2013-17 (Figure 44 & 45). Despite having manufacturing operations all over the world (excluding bottlers), the company has only identified two plants in India as being at risk.
- For water withdrawal intensity, a clear pattern emerges with companies with more food-based portfolios (Mondelez, Nestlé and Kraft Heinz) outperforming pureplay beverage companies (and also Danone which has a large water business). For water consumption intensity the same pattern emerges with the exception of Diageo which outperforms Nestlé and Kraft Heinz.
- In terms of facility level water stress, of the sites identified by the companies as being at risk, Coca-Cola has the greatest risk exposure with both of its India plants located in high risk regions, while 84% of PepsiCo's sites are also high risk. AB InBev also has a number of sites located in extremely high-risk regions in South America and the US, while 33% of Nestlé's sites are located in extremely high-risk regions in the Middle East.

Figure 42: % breakdown of disclosed high risk sites⁽ⁱ⁾



(i) The % breakdown refers only to sites disclosed as at risk in companies' 2018 CDP water response and is not representative of total company facilities.
(ii) Facility level data relates to the Coca-Cola Company only and does not incorporate its suppliers, independent or franchise bottling partners, or other entities that are not part of Company manufacturing operations.
(iii) Mondelez do not disclose any facility-level data of sites at risk.
Source: CDP, WRI

Figure 43: Water stress risk gap analysis⁽ⁱ⁾



(i) The gap analysis is based on country-level data not facility-level data, derived from companies' 2018 CDP responses
(ii) High water risk refers to "high risk" and "extremely high risk" categorizations within the WRI Water Stress Country Rankings dataset
(iii) The gap analysis is in relation to the Coca-Cola Company only and does not incorporate its suppliers, independent or franchise bottling partners, or other entities that are not part of Company manufacturing operations.
Source: CDP, WRI

Figure 44: Water withdrawal intensity

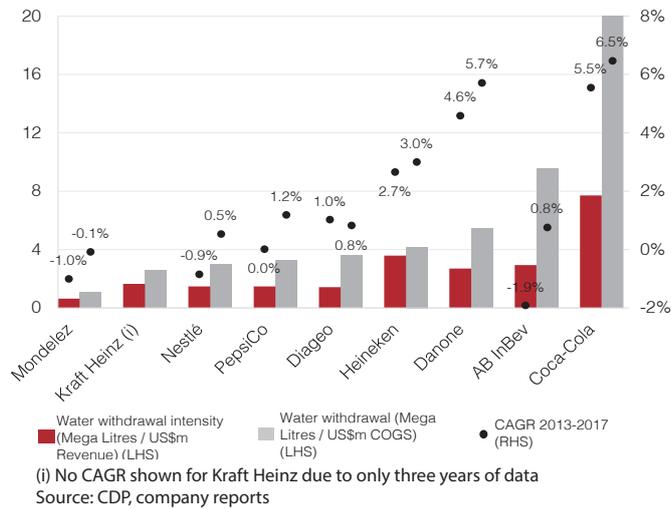
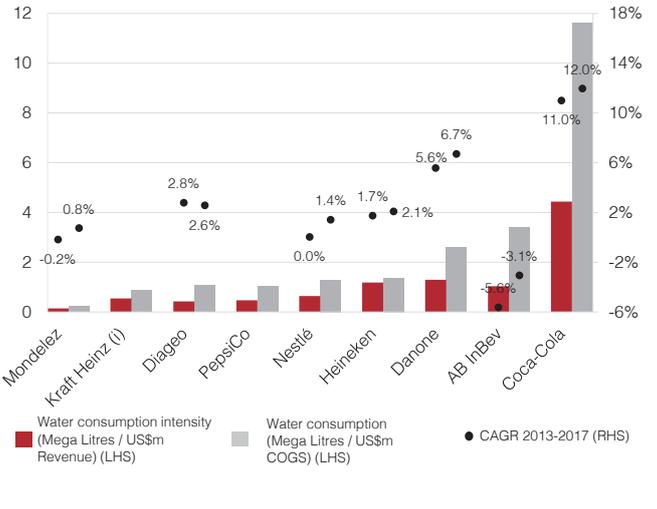


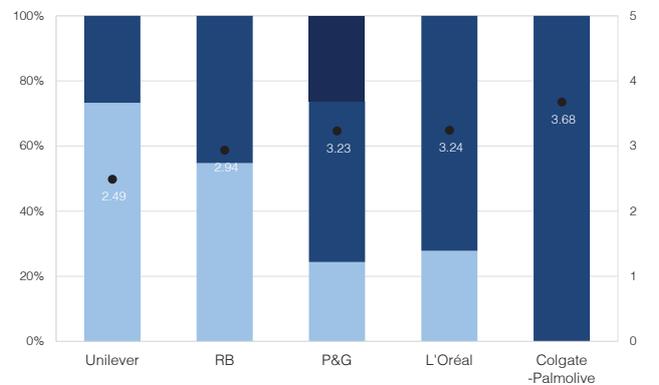
Figure 45: Water consumption intensity



Household & Personal Care

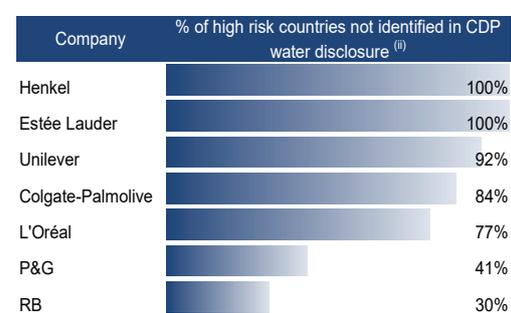
- ▼ L'Oréal ranks first overall, leading the group in both water withdrawal and consumption intensity. It also delivered a 6% reduction in water withdrawal intensity over the period 2013-17 (Figure 48).
- ▼ RB ranks second overall, with low water stress exposure and withdrawal and consumption intensities that have both reduced since 2013. 55% of its identified sites fall within the medium to high risk categorization and the company ranks first in the gap analysis, with only three undisclosed potentially high risk countries (Figure 47).
- ▼ Colgate-Palmolive ranks second last overall due to poor performance across all sub-metrics. Both water consumption and withdrawal intensities are high compared to the rest of the group and have increased over the period 2013-17. Of all the companies disclosing facility level data, Colgate-Palmolive also ranks last in terms of water stress with its three disclosed sites in India and Mexico located in high risk areas and a further 14 high risk countries in which the company operates in, not identified as at risk (Figure 46).
- ▼ Estée Lauder ranks last overall due to lack of disclosure in both water consumption intensity and water stress.

Figure 46: % breakdown of disclosed high risk sites⁽ⁱ⁾



(i) The % breakdown refers only to sites disclosed as at risk in companies 2018 CDP water response and is not representative of total company facilities.
 (ii) Henkel do not identify any inherent water-related risks at its facilities. Estée Lauder do not respond to the 2018 CDP water questionnaire.
 Source: CDP, WRI

Figure 47: Water stress risk gap analysis⁽ⁱ⁾



(i) The gap analysis is based on country-level data not facility-level data, derived from companies' 2018 CDP responses
 (ii) High water risk refers to "high risk" and "extremely high risk" categorizations within the WRI Water Stress Country Rankings dataset
 Source: CDP, WRI

Figure 48: Water withdrawal intensity

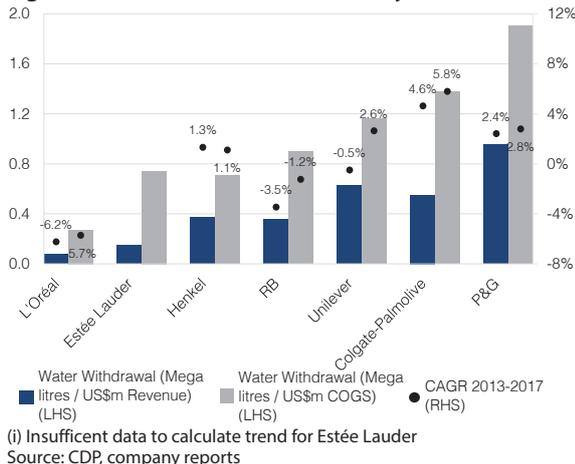
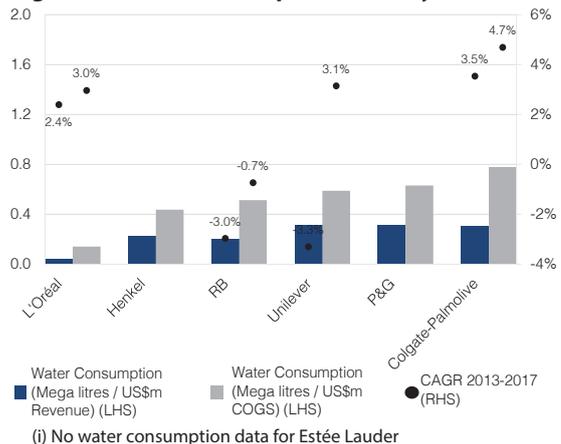


Figure 49: Water consumption intensity⁽ⁱ⁾



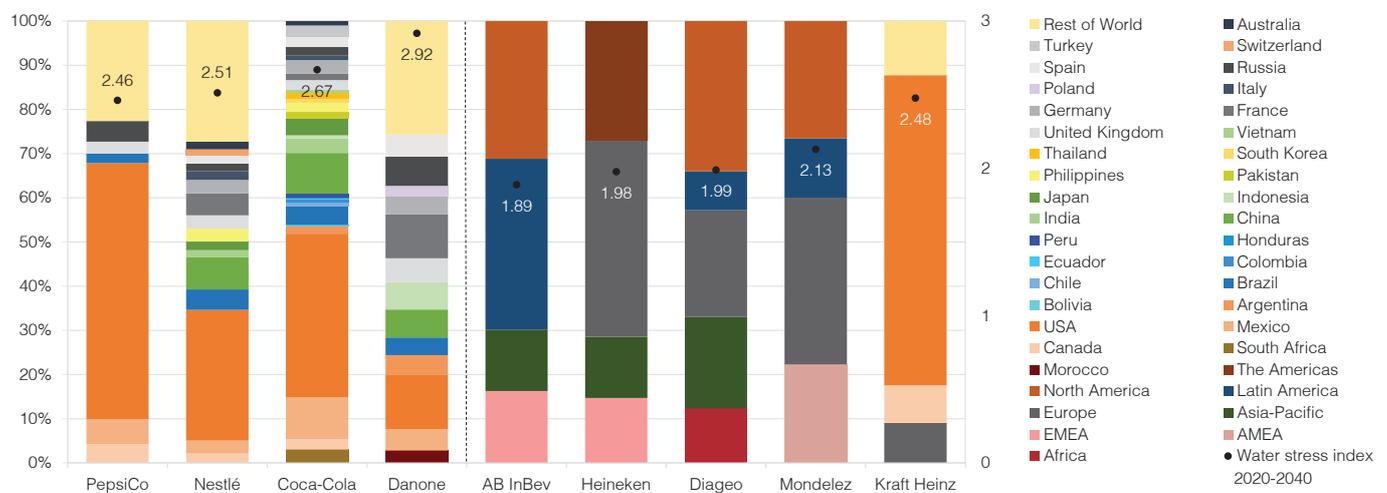
Downstream physical risks

Water stress in downstream markets has the potential to significantly limit the feasibility of consuming water intensive products undermining demand. This risk is particularly material for Household & Personal Care companies and for those companies generating a high proportion of revenue from regions affected by water stress. We measure exposure to this risk by looking at revenue break-downs per region and using WRI Aqueduct to determine current (2020) and future (2040) water stress indices per region. While we understand the very local nature of water stress impacts, we were unable to conduct this analysis at a municipality or country level due to a lack of granular data for most companies. Companies that did disclose at a country level were automatically scored higher than companies that disclosed on a regional level.

Food & Beverage

- Four of the nine Food & Beverage companies disclose revenue at a country level, allowing for greater identification of end markets and better identification of country level water stress (Figure 50).
- Of these companies, PepsiCo rank first, with North America making up 65% of its revenue stream. Though pockets of the US are highly water stressed, on aggregate, the region has a relatively lower water stress score compared to other regions.

Figure 50: Revenue split by region and downstream water stress risk exposure 2020-2040⁽ⁱ⁾

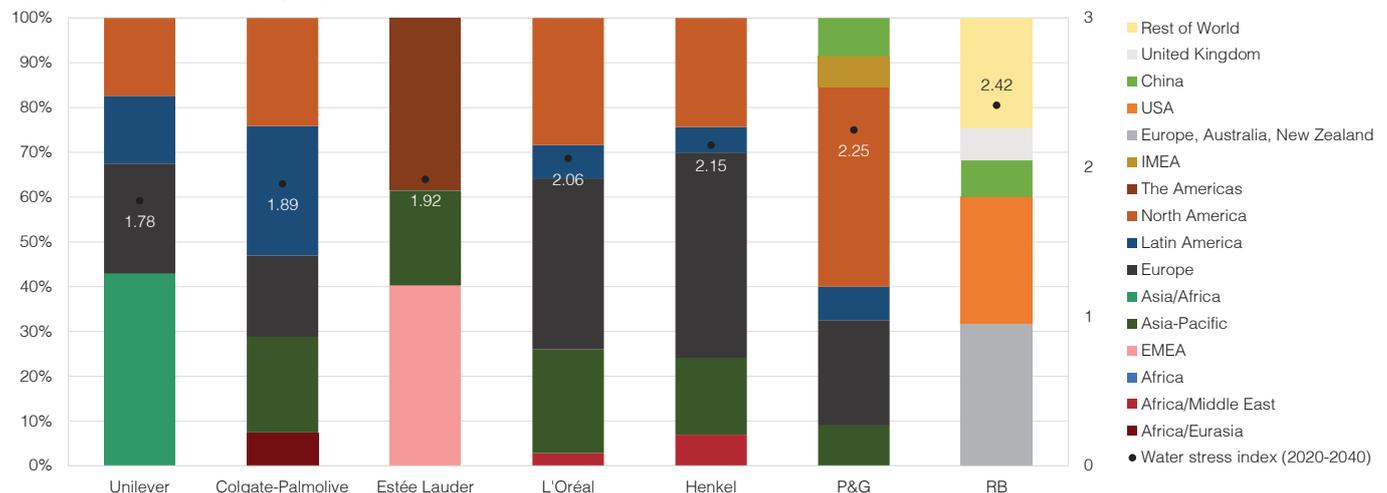


(i) Companies that provided revenue split by country were scored separately. Where regions are displayed, an aggregate score was taken of all countries in the region.
Source: CDP, WRI, company reports

Household & Personal Care

- Unilever and Colgate-Palmolive rank first and second for downstream risk. Revenue streams for both companies are spread relatively evenly across regions and have limited revenue exposure to high water stress areas such as the Middle East and North Africa (Figure 51).
- A lack of revenue breakdown at a country or municipality level limits our ability to assess downstream water stress at a sufficiently granular level. Companies should look to undergo their own water risk assessments across their downstream end-markets to better identify and manage their impact in water stressed regions.

Figure 51: Revenue split by region and downstream water stress risk exposure 2020-2040⁽ⁱ⁾



(i) Companies that provided revenue split by country were scored separately. Where regions are displayed, an aggregate score was taken of all countries in the region.
Source: CDP, WRI, company reports

Water governance

Those companies which have integrated a physical risk analysis into their risk management processes will be best positioned to respond to disruptions caused by acute and chronic changes in weather patterns across their value chain. When looking at water stress specifically, companies which have set ambitious targets to reduce water consumption in their operations and the water intensity of their products will be more likely to grow along a sustainable and resilient trajectory. We assess these two elements of water governance in the following sub-metrics:

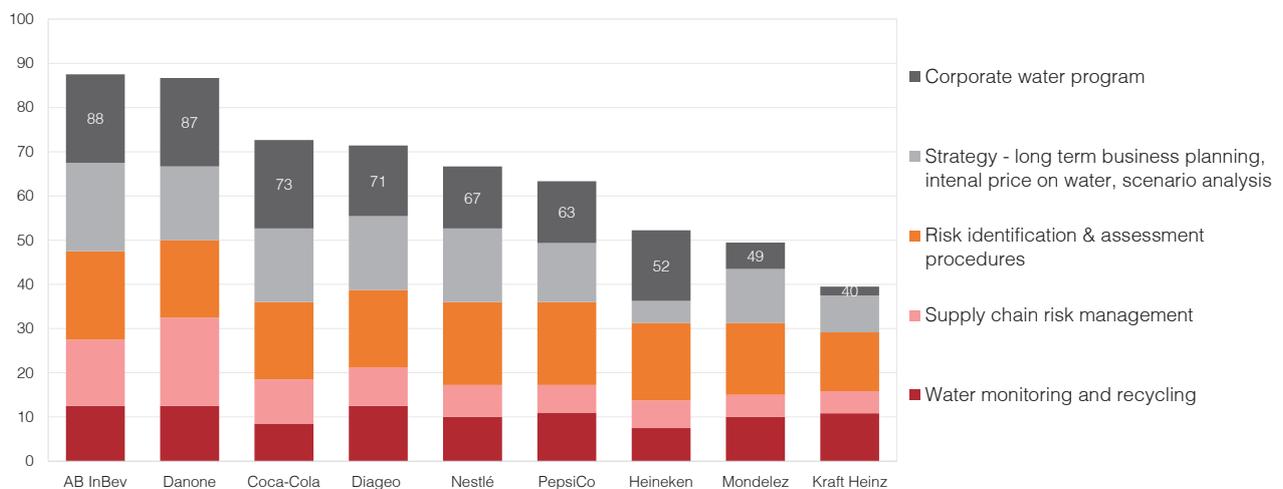
Water governance scorecard (50%): Using 2018 CDP Water disclosures we assessed the mechanisms in place to manage water related risks including what water metrics are measured and monitored, how water related risks are identified, and how they are integrated into strategic planning. We also conducted an in-depth assessment of each company's public facing water program. We assessed company activities across a hierarchy of water management efforts from improving operational water efficiency and innovating products to collaborating with other players at a catchment level to develop water stewardship plans. These assessments were aggregated in a water governance score.

Water targets (50%): Using 2018 CDP Water disclosure and publicly available information we assess companies' water targets and goals across categories of water impact reductions, water stewardship and supplier and community engagement.

Food & Beverage

- ▼ Danone and Diageo rank in the top two, performing consistently in both metrics. Danone is the only Food & Beverage company to engage with 75-100% of its suppliers and has a comprehensive set of water targets encompassing water intensity reductions, compliance with clean water standards and measures to regulate and management aquifers and groundwater in the watershed it operates in (Figure 53).
- ▼ Diageo's "Water Blueprint" has the most extensive set of targets and goals across the four major themes identified. By 2020 the company aims to facilitate improved water stewardship in key agricultural communities supplying its operations, achieve a 50% improvement in water use efficiency and develop a "Water of Life" community project in the water stressed watersheds where its production sites are located.
- ▼ AB InBev has the most comprehensive water governance policy. The company engages with 26-50% of its suppliers and carries out a company-wide water risk assessment on a six-monthly basis. By 2025, it aims to provide 100% of communities in high water stress areas with measurably improved water availability and quality (Figure 52).
- ▼ Mondelez and Kraft Heinz rank in the bottom two. Their water governance strategies are less well defined. Both companies do not disclose on their engagement with suppliers within their value chains, and key aspects of their water risk assessments such as the implications of water on key commodities and water availability at a basin level have not been included or are only partially included in their risk assessments. Both companies only have single water targets relating to minor reductions in water consumption in their direct operations.

Figure 52: Water governance scorecard



Source: CDP, company reports

Figure 53: Water targets

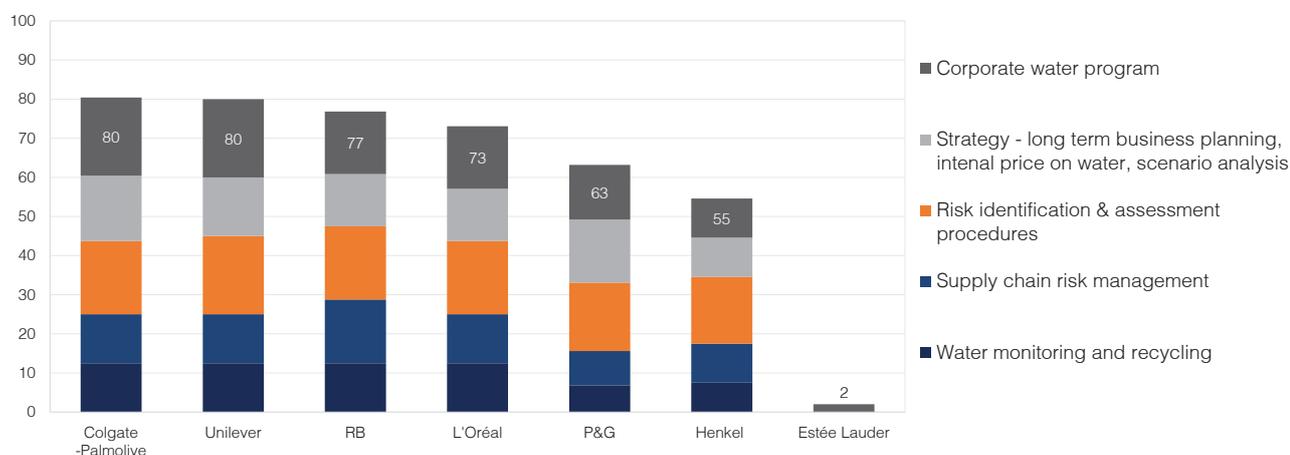
Company	Product innovation	Water impact reduction	Water Stewardship	Community engagement	Supplier engagement	Rank
Diageo	x	✓	✓	✓	✓	1
Danone	x	✓	✓	✓	✓	2
PepsiCo	x	✓	✓	✓	✓	3
Nestlé	x	✓	✓	✓	x	4
Heineken	✓	✓	✓	x	x	4
Coca-Cola	x	✓	✓	x	✓	6
AB InBev	✓	x	x	✓	✓	7
Kraft Heinz	x	✓	x	x	x	8
Mondelez	x	✓	x	x	x	8

Source: CDP, company reports

Household & Personal Care

- Colgate, L'Oréal and Unilever rank in the top three overall. All three have comprehensive company-wide water governance policies and multiple water targets encompassing water reduction, water stewardship, supplier and community engagement (Figure 55). Of note, Unilever have set a target to halve the water associated with the consumer use of its products by 2020.
- RB have the highest recycling rate of any company across both sectors at 26-50% and requests over 75% of its suppliers to report on their water use, risks and management.
- Henkel are the only company within the entire sample to state that direct freshwater use is "not very important", at odds with its competitors, yet it performs a company-wide risk assessment annually. Estée Lauder rank last with no response to the 2018 water questionnaire (Figure 54).

Figure 54: Water governance scorecard



Source: CDP, company reports

Figure 55: Water targets

Company	Product innovation	Water impact reduction	Water Stewardship	Community engagement	Supplier engagement	Rank
L'Oréal	✓	✓	x	x	✓	1
Colgate-Palmolive	x	✓	✓	✓	✓	2
P&G	✓	✓	✓	✓	x	3
Unilever	✓	✓	x	✓	x	3
RB	✓	✓	x	✓	x	5
Henkel	✓	x	x	✓	x	6
Estée Lauder	x	x	x	x	x	7

Source: CDP, company reports

Transition opportunities

- 15 out of 16 companies have delivered some form of transformative innovation; however, these tend to be deployed by smaller brands and are limited in scale.
- R&D expenditure is low for the sector and on average Food & Beverage companies spend half that of Household & Personal companies.
- Danone leads the Food & Beverage sub-sector in terms of Transition Opportunities and Kraft Heinz ranks last.
- Unilever leads the Household & Personal Care sub-sector in terms of Transition Opportunities and Estée Lauder ranks last.

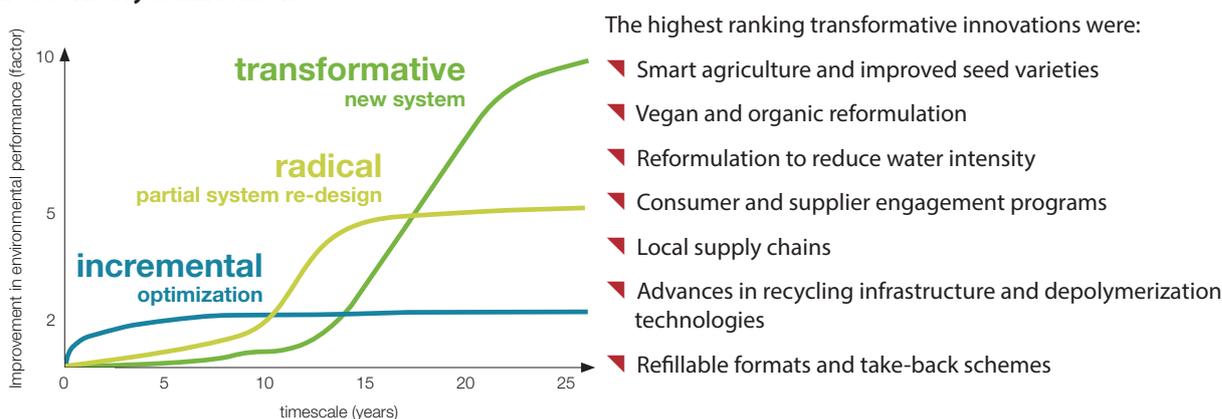
Overview

As consumers begin to shift towards more conscious consumption, significant opportunities emerge for companies who are able to position themselves ahead of changing preferences. Furthermore, this sector's proximity to the consumer means that companies have the ability to shape preferences before they are mainstreamed, building brand loyalty and longevity.

In order to capitalize on these opportunities, companies must invest in innovation. However, while incremental product innovations have historically been sufficient to keep ahead of the market, we now see consumers demanding more transformative innovations that require fundamental shifts in business models and collaborative innovation designed to shape the systems in which companies operate. For Food & Beverage companies for example, the current food system which relies on low cost, high impact production is beginning to be called into question, as consumers increasingly move away from meat, seek out organic products and demand traceability of origin. In terms of packaging, linear, single use models are also facing scrutiny in favor of circular, zero-waste business models.

As such companies must rethink not only the operating models on which they rely but also their role in the wider system. Leading companies have begun to use their influence to broaden the traditional role of business from providers of goods and services, to consumer educators, finance and infrastructure providers and policy advocates. In this section, we explore innovation in this broader sense, beyond technical product level innovation to highlight where companies are investing in transformative and collaborative innovation associated with step changes in decarbonization. We do this using transformative change theory which defines technological changes as 'incremental, radical or transformative' depending on their impact and distribution. We also assess the scale of the innovation depending on whether it has been rolled out across a brand, region or at group level.

Figure 56: Theory of innovation



Source: CDP, Weterings 1997

Figure 57: Transformative change theory

Company	Percentage revenue dependent	Percentage physically certified
Incremental	'Incremental innovations' occur more or less continuously in any industry to improve price and performance.	The 'first horizon' system losing strategic fit and therefore dominance over time.
Radical	'Radical innovations' are discontinuous events, which are unevenly distributed over sectors and over time. Whenever they occur they are important as the potential springboard for the growth of new markets, and for the surges of new investment associated with booms. They often involve a combined product, process and organizational innovation.	The 'second horizon' of innovations seeking to exploit the opportunities emerging in a changing world.
Transformative	'Transformative innovations' are far-reaching changes in technology, affecting several branches of the economy, as well as giving rise to entirely new sectors. It can be distinguished from 'radical' innovations in that while the latter disrupt existing technical competences, the former also involve substantial changes in markets and linkages with users.	The 'third horizon' in tune with deeper trends in society that eventually emerges as the new dominant system.

Source: CDP, Weterings 1997

We used this framework to assess innovation towards both a low-carbon economy and a circular economy in two separate metrics. In addition, we assessed companies based on the level and trend of their R&D expenditure as well as the total volume of patents filed for technologies that relate to key low-carbon themes such as vegan alternatives, cold water reformulation, biodegradable formulations, depolymerization technologies and bio-plastics.

Changing consumer preferences have also allowed opportunities to emerge for companies investing in renewable energy. Operational energy use by the sector is low and therefore changes to the energy mix yield limited decarbonization benefits. However, leading companies have used their renewable energy programs to role model best practice to their suppliers driving value chain shifts that are associated with much more significant decarbonization impacts. Furthermore, some advanced companies are not only consuming renewable energy but also producing their own renewable energy with the potential to feed any surplus back to the grid. This again echoes a commitment to broadening the role of the business and shaping the transformation of the energy system and is increasingly well-received by consumers. 'Powered by renewable energy' statements have begun to emerge as powerful branding tools attracting the ever-growing green consumer segment.

These transition opportunities are assessed in this chapter using the following five metrics:

Metric 1) Low-carbon innovation (40%): We compiled a list of low-carbon innovations across the entire portfolio of each company and assigned each innovation two scores. The first assessed whether the innovation was incremental,

radical or transformative as per the definitions in Figure 57. The second assigned a scale score depending on whether the innovation had been rolled out across a brand, region or at group level. These two scores were aggregated to produce a final innovation score and the top 30 innovation scores were summed to produce a company score.

Metric 2) Circular innovation and packaging (25%): We compiled a list of circular economy innovations across the entire portfolio of each company and assigned each innovation two scores. The first assessed whether the innovation was incremental, radical or transformative as per the definitions in Figure 57. The second assigned a scale score depending on whether the innovation had been rolled out across a brand, region or at group level. We categorized these innovations into a number of key solution pathways, such as increasing recycled content, bioplastics, recycling infrastructure, circular business models etc. and summed the scores in each category. We also assessed packaging disclosure and targets.

Metric 3) Renewable energy (25%): This metric looks at current renewable energy consumption and production as a percentage of total energy consumption and the timeframe and ambition of renewable energy targets.

Metric 4) R&D spend (5%): This metric looks at annual R&D expenditure as a percentage of sales where we assess both the level and trend.

Metric 5) Patent analysis (5%): This metric analyses the number of high quality patent applications submitted by companies in product categories that align with the transition to a low-carbon economy. We look at the number of patents filed between 2000 – 2017, normalizing by employee numbers for each respective year and calculating a weighted sum of the total patent count. We determine the quality of the patents based on the number of citations it receives in scholarly publications.

Overall highlights

- Some of the most transformative low-carbon innovations delivered by the Food & Beverage sub-sector include the development of vegan and organic product ranges. Excluding brewers AB InBev and Heineken, which have traditionally plant based portfolios, five out of the remaining seven Food & Beverage companies have innovated originally dairy or meat based products to offer vegan options.
- Similarly, in the Household & Personal Care sub-sector, companies have been innovating towards plant-based, natural formulations. Six out of the seven companies are actively innovating to replace petrochemicals in their formulations with natural, biodegradable ingredients and four have developed vegan Personal Care product ranges.
- Other transformative low-carbon innovations for the Food & Beverage Sector include investments in smart agriculture technologies and new seed varieties. Leading companies such as AB InBev and Danone have coupled these innovations with extensive supplier engagement programs and funding programs to drive responsible agriculture.
- For the Household & Personal Care sub-sector, other transformative low-carbon innovations include reformulation of products to reduce water intensity in consumption or reduce the temperature requirements of water in consumption. Leading companies such as Unilever, Henkel and Colgate-Palmolive have coupled these innovations with consumer education campaigns to drive responsible consumption.

- In terms of circular innovation for the sector, 73% of companies have been experimenting with circular business models led by L'Oréal in the Household & Personal Care sub-sector and Coca-Cola in the Food & Beverage subsector. These tend to be experimental in nature and predominately deployed by smaller 'niche' brands.
- Opportunities also exist to drive circularity through investments in advancing depolymerization technology and recycling infrastructure. This requires collaborative innovation and has been led by Unilever in the Household & Personal Care sub-sector and Danone in the Food & Beverage sub-sector.
- While 15 out of 16 companies have delivered some form of transformative innovation, these tend to be deployed at a small scale and are experimental in nature. Only 14% of transformative innovations have been rolled out at group level across the two sub-sectors.
- On average, Household & Personal Care companies outperform Food & Beverage companies in terms of both low-carbon innovation and circular innovation with the most transformative innovations being delivered by Unilever, L'Oréal and Danone across both categories.
- This is also reflected in R&D spend which is very low for the sector compared with other sectors such as Capital Goods. On average Household & Personal Care companies invest double (around 2%) that of Food & Beverage companies (around 1%) in R&D as a proportion of sales.
- Household & Personal Care companies have also submitted more patents since 2000 than Food & Beverage companies with a large majority of these focusing on reformulation innovations.

- ▼ The role of chemistry in the development of Household & Personal Care formulations means that this sub-sector has traditionally been aligned with advances in science. In recent years there has also been a trend in M&A and partnerships towards more science and technology based brands such as Unilever's collaboration with loma and L'Oréal's acquisition of Modiface.
- ▼ Innovations in the Food & Beverage sub-sector towards plant based, organic products are also driven by increasing momentum around 'healthy living' which has resulted in an overlap between environmentally and health conscious consumers. This is also reflected in recent M&A trends with Nestlé's acquisition of Sweet Earth and PepsiCo's acquisition of Bare Foods.
- ▼ Household & Personal Care companies also outperform Food & Beverage companies in terms renewable energy consumption lead by L'Oréal which procures more than half of its energy requirements from renewable sources.
- ▼ Food & Beverage companies outperform Household & Personal Care companies in terms of renewable energy production with Diageo leading the group. The business case for renewable energy production is particularly strong for brewers due to the production of biofuels as a by-product of the alcohol production process.

Food & Beverage

- ▼ Danone leads the sub-sector in terms of Transition Opportunities, ranking first in terms of circular innovation and packaging and second in terms of low-carbon innovation (Figure 58).
- ▼ Nestlé leads the subsector in terms of R&D expenditure with an expenditure level close to 2% as a proportion of sales, double the subsector's average (Figure 78). This underpins strong performance in both low-carbon and circular innovation for which they rank third.
- ▼ Kraft Heinz ranks last in the sub-sector in terms of Transition Opportunities. It performs at the bottom of the group across all metrics with the exception of the patent analysis where it ranks first in the sub-sector.

Household & Personal Care

- ▼ Unilever leads the sub-sector in terms of Transition Opportunities, ranking first for low-carbon innovation, circular innovation and packaging and renewable energy (Figure 59).
- ▼ L'Oréal ranks second overall in the sub-sector, leading the group in terms of R&D spend and ranking second in terms of low-carbon innovation, circular innovation and packaging and renewable energy.
- ▼ Estée Lauder ranks last overall in terms of Transition Opportunities. It performs at the bottom of the group in terms of low-carbon innovation, circular innovation and packaging and the patent analysis.

Figure 58: Food & Beverage - Transition Opportunities summary

Company	Low carbon innovation	Circular innovation and packaging	Renewable energy	R&D spend	Patent analysis	Overall weighted rank	Transition risks rank
Danone	2	1	4	3	5	2.7	1
Nestlé	3	3	2	1	4	3.2	2
AB InBev	1	6	5	8	6	3.8	3
Coca-Cola	4	2	7	5	2	4.3	4
Diageo	8	4	1	7	6	5.2	5
Heineken	5	8	3	5	6	5.5	6
PepsiCo	6	5	6	4	3	5.9	7
Mondelez	6	7	8	2	6	6.7	8
Kraft Heinz	9	9	9	9	1	8.4	9
Weighting	40%	25%	25%	5%	5%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.
Source: CDP

Figure 59: Household & Personal Care - Transition Opportunities summary

Company	Low carbon innovation	Circular innovation and packaging	Renewable energy	R&D spend	Patent analysis	Overall weighted rank	Transition risks rank
Unilever	1	1	1	7	4	1.6	1
L'Oréal	2	2	2	1	3	2.0	2
Henkel	3	4	6	6	1	4.2	3
Colgate-Palmolive	4	3	7	3	5	4.4	4
P&G	5	5	4	2	2	4.9	5
RB	6	6	5	4	6	5.8	6
Estée Lauder	7	7	3	5	7	6.4	7
Weighting	40%	25%	25%	5%	5%		

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.
Source: CDP

Low carbon innovation

In response to changing consumer preferences, we assessed each company's ability to take low-carbon innovations to market. Our analysis looked across each company's entire portfolio and assessed not only the number of low-carbon innovations but also the decarbonization impact of those innovations and their transformative potential. We did this by assigning each innovation two scores:

Impact score (50%): we assessed whether the innovation was 'incremental, radical or transformative' as per the definitions in Figure 57.

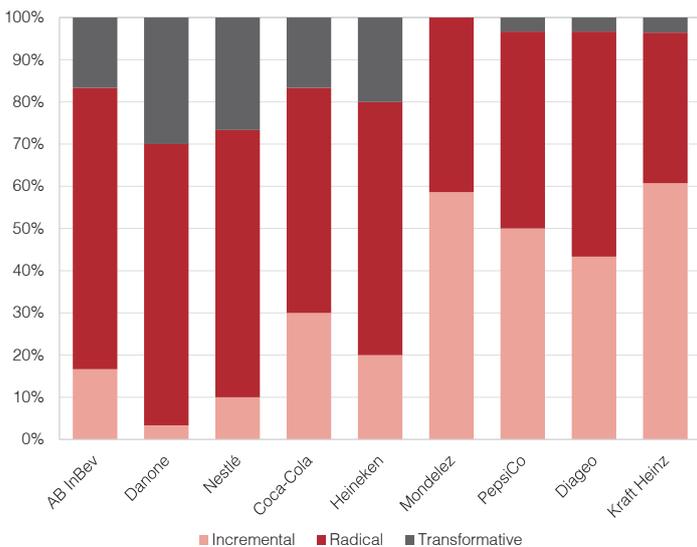
Scale score (50%): we assigned a score depending on whether the innovation had been rolled out across a brand, region or at group level.

We aggregated these scores to produce an innovation score and summed the top 30 innovations per company. This allowed us to identify the mix of low-carbon innovations that companies have invested in and their willingness to take transformative innovations to market.

Food & Beverage

- AB InBev ranks first for low-carbon innovation having invested a lot in cutting edge supply chain innovations including the Smart Barley Program (Figure 62). This resulted in the development of barley varieties that require 40% less water and developed AI algorithms to find more sustainable barley growing regions around the world. 50% of AB InBev's top 30 innovations were at a group level delivering significant scale and 83% were identified as being either radical or transformative.
- Danone ranks second overall investing heavily in regenerative agriculture through the Soil Health Initiative and setting up innovative funding solutions including the Livelihoods Carbon Fund. Of the group, Danone have the highest proportion of transformative innovations (30% of their top 30) (Figure 60).
- Kraft Heinz ranks last overall with only one innovation within their low-carbon portfolio being categorized as transformative. Its innovation efforts are focused largely around improving operational efficiency.
- Diageo ranks second last in terms of low-carbon innovation also having only one innovation categorized as transformative. Only 20% of its top 30 low-carbon innovations have been rolled out at group level (Figure 61). However, these innovations cover a diverse range of low-carbon themes including supply chain, operations and packaging.
- Mondelez have no low-carbon innovations categorized as transformative but have the second largest proportion of top 30 innovations at group level.

Figure 60: Impact distribution



Source: CDP, company reports

Figure 61: Scale distribution

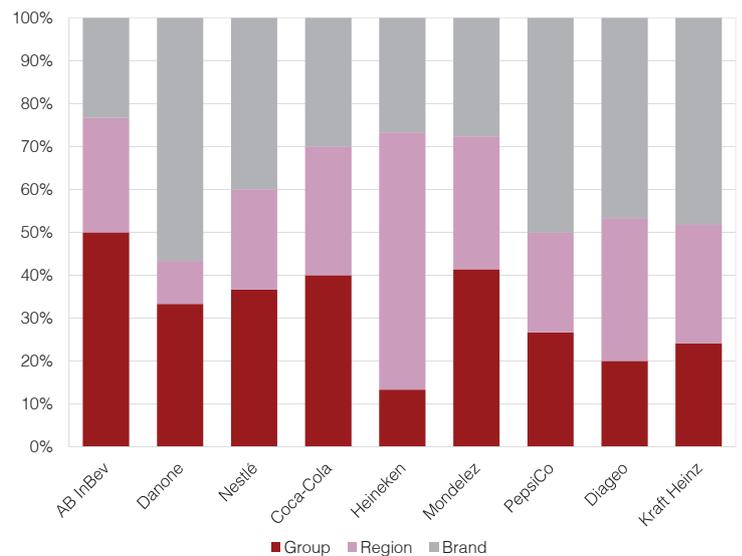


Figure 62: Low-carbon innovations

Company	Top performing innovations	Score	Rank
AB InBev	<ul style="list-style-type: none"> • Developed new barley varieties through the Seed Research facility & Smart Barley Program which can use up to 40% less water • Sends all spent grain and yeast to local farms for feedstock feeding • AB InBev's 100+ Accelerator provides \$100k investment to start ups working to address environmental challenges • Bud analytics Lab develops AI algorithms to find better, more sustainable barley regions around the world 	67	1
Danone	<ul style="list-style-type: none"> • Launched a Soil Health Initiative committing US\$ six million to soil health research • Set up the Livelihoods Carbon Fund which uses the carbon economy to finance low-carbon projects and water funds to fund water stewardship programs • Feed the Cow project helps dairy farmers reduce their water impact • Vegan and organic product ranges 	66	2
Nestlé	<ul style="list-style-type: none"> • Farmer Connect provides farmer training, improved seed varieties, tree breeding and soil mapping • Partnered with Airbus and The Forest Trust to launch a satellite designed to monitor deforestation in palm oil production • Investing in "Developed", a zero withdrawal manufacturing technology which uses water extracted from milk processing rather than fresh sources • Vegan product ranges developed 	65	3
Coca-Cola	<ul style="list-style-type: none"> • Replenish 100% of the water used in products back to the local community • Coca-Cola Freestyle machines dispense beverages into micro-chipped refillable ValidFill© containers which reduce packaging • Transitioned to HFC-free insulation foam for cooling equipment reducing 75% of emissions 	63	4
Heineken	<ul style="list-style-type: none"> • CREATE program designed to help farmers increase barley yields through improved seed varieties, agronomic training and access to finance • SmartDispense cools beer as it leaves the barrel rather than cooling an entire cellar, generated energy savings of 20% • Partnering with cassava producers in Nigeria and the IFDC to build a resilient and sustainable local supply chain 	54	5
PepsiCo	<ul style="list-style-type: none"> • Launched the Naked ReNEWabottle made from recycled bottles and set up a take back scheme • Sustainable Farming Program invests in building local supply chains and reducing impacts through irrigation technology and seed varieties and digital smart agricultural tech 	51	6
Mondelez	<ul style="list-style-type: none"> • Harmony program and Cocoa Life program provide training to promote sustainable wheat and cocoa production and the conservation of biodiversity • Logistics optimization 	51	7
Diageo	<ul style="list-style-type: none"> • Invests building local supply chains through farmer training, improving access to seed varieties, finance and crop insurance • Designed new refrigerators which are free from HFCs and use an intelligent management device to reduce energy requirements 	50	8
Kraft Heinz	<ul style="list-style-type: none"> • Launched Springboard Brands, an incubator program that intends to focus on growing certified-organic, vegan/plant-based, and locally-made food start-ups • Invested in operational efficiency improvements 	46	9

Source: CDP, company reports

Household & Personal Care

- ▼ Unilever ranks first for low-carbon innovation having successfully brought the highest proportion of transformative innovations to market (57%) (Figure 63). It also leads the group in terms of scale with 50% of its top 30 low-carbon innovations being rolled out at group level (Figure 64). The company has invested in collaborative innovation across their value chain from supply chain programs employing digital platforms to drive resource efficiency to its WaterSavers program focused around consumer education.
- ▼ L'Oréal ranks second overall with 90% of its top 30 innovations being categorized as either radical or transformative. Almost half of these innovations have been executed at brand level compromising scale but utilizing the platform of its brands to drive change. Many of its smaller brands have demonstrated an aptitude for transformative innovation, reformulating products to provide vegan alternatives or experimenting with circular formats such as refillables and take-back schemes.
- ▼ Estée Lauder ranks last focusing its innovation efforts around incremental or radical product innovations. The company executes over 75% of its top 30 low-carbon innovations through its brands with no transformative innovations being deployed at group level.
- ▼ RB ranks second last overall despite recently announcing the up-coming launch of three 'sustainable product ranges' (Figure 65). 50% of its top 30 innovations (inclusive of these new products ranges) were categorised as being incremental and most were focused around product redesign. It also has the second lowest proportion of innovations being deployed at group level at 23%.

Figure 63: Impact distribution

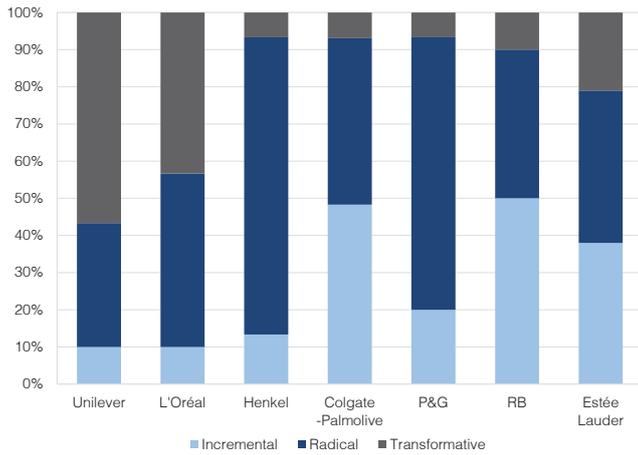
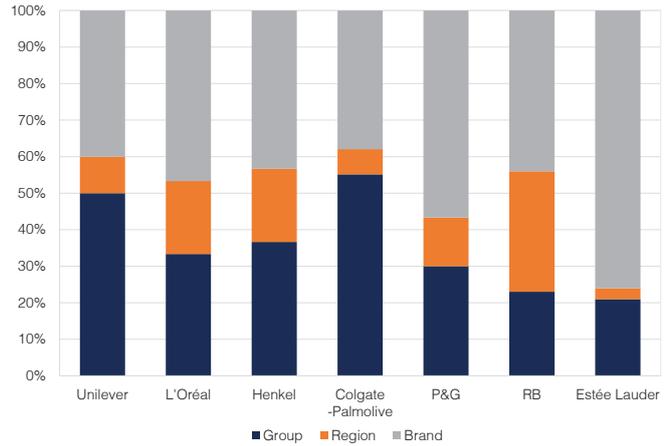


Figure 64: Scale distribution



Source: CDP, company reports

Figure 65: Low-carbon innovations

Company	Top performing innovations	Score	Rank
Unilever	<ul style="list-style-type: none"> Supply chain water stewardship programs involving improved crop varieties, irrigation techniques and soil management Smart agriculture programs using digital platforms to drive resource efficiency, soil protection and improved yields Vegan and organic product ranges The SmartFoam technology is a patented anti-foam molecule, which reduces the number of rinses needed by up to half WaterSavers program providing consumer education driving sustainable consumption 	74	1
L'Oréal	<ul style="list-style-type: none"> Smart agriculture programs using online platforms to drive best practice farming Consumer education campaign encouraging responsible water usage in consumption phase Vegan and organic product ranges across several Personal Care brands Refillable formats and take back schemes Innovating to replace petrochemicals with natural ingredients to improve biodegradability 	68	2
Henkel	<ul style="list-style-type: none"> BeSmarter initiative and cold wash logos to encourage responsible water use Vegan product ranges Capacity building projects to improve yields and encourage sustainable palm oil production Concentrated home care formulations 	61	3
Colgate-Palmolive	<ul style="list-style-type: none"> Consumer engagement programs focused around water savings including launching an Amazon Alexa skill for teeth brushing Concentrated refill packs developed across several products Cleaning products designed to work without creating foam reducing water requirements 	59	4
P&G	<ul style="list-style-type: none"> Investing in advances in cold water washing products and consumer education programs such as 'Turn to 30' Increasing bio-based ingredients across several products Developed products to reduce water consumption - dry shampoo, leave in conditioner 	58	5
RB	<ul style="list-style-type: none"> Replacing petroleum-based solvents with natural ingredients and improving biodegradability Designing products that reduce water use in consumption Designing packaging to reduce plastic volume required 	53	6
Estée Lauder	<ul style="list-style-type: none"> Increasing bio-based ingredients to replace petrochemicals across several products Vegan product ranges Take back schemes such as Back-to-M.A.C. 	52	7

Source: CDP, company reports

Circular innovation and packaging

In response to changing consumer preferences, we assessed each company's ability to integrate circular principles into the innovation process, particularly with regards to packaging. Our assessment is based on two sub-metrics:

Circular innovation (60%): We looked at the scale and impact of current circular innovations relating to packaging using the same methodology as was applied in the low-carbon innovation metric assigning each innovation two scores:

- ▼ Impact score: we assessed whether the innovation was 'incremental, radical or transformative' as per the definitions in Figure 57.
- ▼ Scale score: we assigned a score depending on whether the innovation had been rolled out across a brand, region or at group level.

These scores were aggregated to produce an innovation score and each innovation was categorized across several circular themes to demonstrate where companies were focusing their efforts. The sum of all innovation scores across all themes determined a company score.

Packaging disclosure and targets (40%): We assessed the quality of packaging disclosure based on public reporting and number of packaging targets across different solution pathways.

Food & Beverage

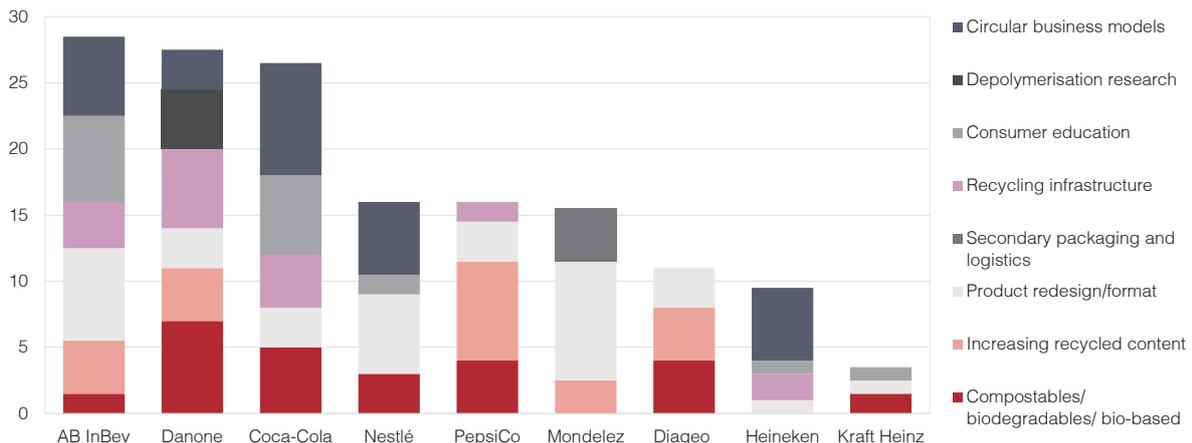
- ▼ Danone ranks first overall, leading the group in terms of packaging disclosure and targets (Figure 66) and ranking second in terms of circular innovation (Figure 67). Danone is collaborating with local governments in markets with low recycling rates to improve recycling infrastructure and education. It has also invested in advancing research into depolymerization and bio-plastics. It has five packaging related targets and is a New Plastics Economy signatory.
- ▼ AB InBev ranks first in terms of circular innovation but third last in terms of packaging disclosure and targets driving a sixth rank overall. It has invested in collaborative innovation with governments, retailers and consumers to drive recycling and piloted circular business models such as bottle collection schemes. However, it only has one packaging related target, partial disclosure and is not a New Plastics Economy signatory.
- ▼ Kraft Heinz ranks last overall driven by a ninth rank for circular innovation and an eighth rank for packaging disclosure and targets. It has delivered only a limited number of circular innovations, provides limited packaging disclosure and has only one packaging related target.
- ▼ Heineken ranks second last overall driven by an eighth rank for circular innovation and a ninth rank for packaging disclosure and targets. It has invested in a limited number of circular innovations mostly in the area of circular business models piloting returnable bottle schemes for example. It does not have any packaging targets and provides very limited disclosure.

Figure 66: Packaging disclosure and targets

Company	Packaging disclosure	New Plastics Economy signatories	Recycled content target	Volume reduction target	Target to increase recycling rates	Total number of packaging related targets	Disclosure and targets score
Danone	Partial	✓	✓	✗	✓	5	50
Nestlé	Thorough	✓	✗	✓	✓	4	46
Diageo	Thorough	✓	✓	✓	✓	4	46
PepsiCo	Partial	✓	✓	✗	✓	3	35
Coca-Cola	Partial	✓	✓	✗	✓	3	35
Mondelez	Partial	✗	✗	✓	✓	2	23
AB InBev	Partial	✗	✗	✗	✗	1	15
Kraft Heinz	Limited	✗	✗	✗	✗	1	12
Heineken	Limited	✗	✗	✗	✗	0	4

Source: CDP, company reports

Figure 67: Areas of circular innovation



Source: CDP, company reports

Figure 68: Circular innovations

Company	Top performing innovations	Score	Rank
AB InBev	<ul style="list-style-type: none"> • Collaborating with distributors on consumer education campaigns • Working with local governments to improve recycling infrastructure • Launched bottle collection schemes in partnership with retailers • Developed a new format of beer barrel suitable for smaller retailers that consists of less material than bottles and cans 	57	1
Danone	<ul style="list-style-type: none"> • Working with local governments to improve recycling infrastructure • Investing in R&D with third party packaging suppliers to advance depolymerization • Partnership between Nestlé Waters and PepsiCo to introduce the first 75% bio-based bottle • Bulk formats and subscription services available for some brands 	55	2
Coca-Cola	<ul style="list-style-type: none"> • Coca-Cola Freestyle machines dispense beverages into micro-chipped refillable ValidFill® containers which reduce packaging • Invested in consumer education campaigns including the Zero Waste Cities program • Initiated a buyback and recycling scheme for used PET bottle in collaboration with Alkem Nigeria Limited 	47	3
Nestlé	<ul style="list-style-type: none"> • Consumer education programs to increasing plastic bottle recycling rates • Partnership between Nestlé Waters and PepsiCo to introduce the first 75% bio-based bottle Redesigning products to reduce packaging volume and facilitate recycling 	32	4
PepsiCo	<ul style="list-style-type: none"> • Developed Recyclable CleanFlake label technology, which enables labels to cleanly separate from the bottle during the PET recycling process • Partnership between Nestlé Waters and PepsiCo to introduce the first 75% bio-based bottle • Launched the UK's first nationwide recycling scheme in partnership with TerraCycle 	32	5
Mondelez	<ul style="list-style-type: none"> • Increasing use of recycled materials • Redesigning products to reduce packaging volume and facilitate recycling • Piloted the removal of shippers and the placement secondary packs directly on pallets 	31	6
Diageo	<ul style="list-style-type: none"> • Sourcing bio-plastics from local sugarcane supply chains • Increasing the use of recycled materials • Redesigning products to reduce packaging volume and facilitate recycling 	22	7
Heineken	<ul style="list-style-type: none"> • Piloting returnable bottle schemes • Working with local governments to increase recycling rates • Redesigning products to reduce packaging volume and facilitate recycling 	19	8
Kraft Heinz	<ul style="list-style-type: none"> • Rolling out packaging that incorporates 100 percent compostable technology for some of its coffee varieties • Redesigning products to reduce packaging volume and facilitate recycling 	7	9

Source: CDP, company reports

Household & Personal Care

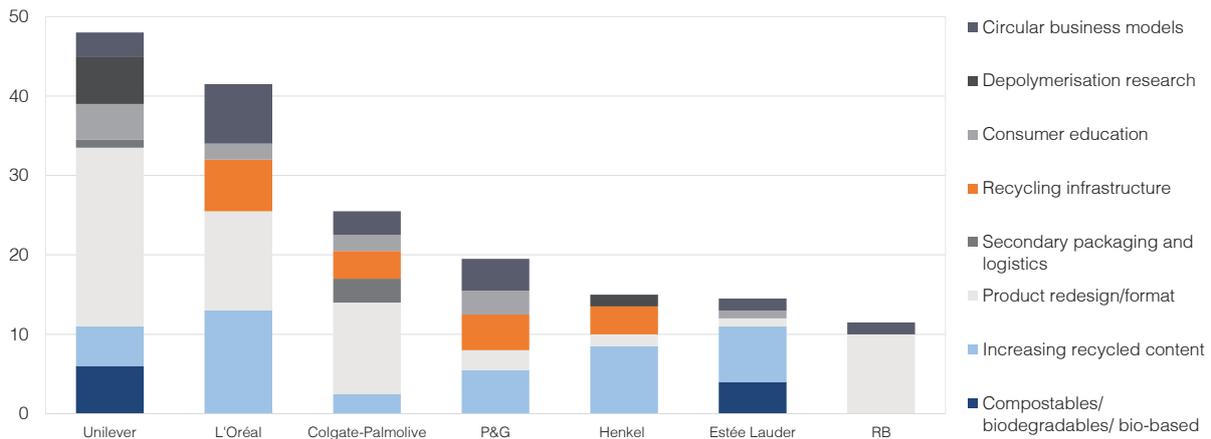
- Unilever ranks first overall, leading the group in terms of circular innovation (Figure 71) and coming joint first with Henkel for packaging disclosure and targets (Figure 70). Unilever is particularly strong in product design and format innovation as well as investing in research to advance depolymerization. It has co-developed a number of break-through patented technologies such as CreaSolv®, a chemical process that recycles sachet waste and MuCell® a bottle design technology that reduces density and plastic requirements. It also provides thorough packaging disclosure, has four packaging related targets and is a signatory of the New Plastics Economy.
- L'Oréal ranks second overall, coming second for circular innovation and joint third for packaging disclosure and targets, tying with Colgate-Palmolive. It is investing in technological advances to improve the feasibility of using high proportions of recycled content and exploring circular business models such as refillable product formats and take back schemes. It has three packaging related targets and is a signatory of the New Plastics Economy.
- Henkel ranks joint first with Unilever in terms of packaging disclosure and targets, yet ranks third last in terms of circular innovation driving an overall rank of fourth.
- Estée Lauder ranks last overall performing worst in the group in terms of packaging disclosure and targets and second last for circular innovation. Most of its innovations are incremental and focused at the product level with only one demonstration of circular business model thinking in their Back to M.A.C. take back scheme. It has no packaging targets and is not a signatory of the New Plastics Economy.
- RB ranks second last overall, coming last in terms of circular innovation and second last in terms of packaging disclosure and targets. Nearly 90% of its circular innovations have been delivered at product level focusing on product design and format with no activities across the transformative innovation themes such as consumer education, recycling infrastructure or depolymerization research. It does however have two timebound packaging targets and two non-timebound packaging targets and the company are signatories of the New Plastics Economy.

Figure 69: Packaging disclosure and targets

Company	Packaging disclosure	New Plastics Economy signatories	Recycled content target	Volume reduction target	Target to increase recycling rates	Total number of packaging related targets	Disclosure and targets score
Unilever	Thorough	✓	✓	✓	✗	4	46
Henkel	Thorough	✓	✓	✓	✓	4	46
L'Oréal	Partial	✓	✗	✓	✗	3	35
Colgate-Palmolive	Partial	✓	✓	✗	✗	3	35
P&G	Partial	✗	✓	✓	✗	3	31
RB	Limited	✓	✓	✗	✗	2	23
Estée Lauder	Limited	✗	✗	✗	✗	0	4

Source: CDP, company reports

Figure 70: Areas of circular innovation



Source: CDP, company reports

Figure 71: Circular innovations

Company	Top performing innovations	Score	Rank
Unilever	<ul style="list-style-type: none"> • CreaSolv® is a breakthrough chemical process that recycles sachets into high-quality polymers • Collaborating with Indorama Ventures, to pioneer a new technology, which converts PET waste back into virgin grade material • Partnered in the development of MuCell Technology, a breakthrough in bottle technology which reduces bottle density and the amount of plastic required • Various consumer education campaigns 	100	1
L'Oréal	<ul style="list-style-type: none"> • Refillable packaging and take back schemes • Waste recycling project developed in partnership with the Indian cosmetics industry • Working to industrialise the bio-recycling technology developed by Carbios • Investing heavily in technology to allow increased recycling content 	84	2
Colgate-Palmolive	<ul style="list-style-type: none"> • Invests in local recycling infrastructure via the Closed Loop Fund • Partnering with Terracycle to upcycle waste products • Collaborating with Amazon to ensure 'frustration free packaging' • Product innovation away from PVC towards more concentrated formats 	52	3
P&G	<ul style="list-style-type: none"> • Investing in recycling infrastructure and consumer education • Using reclaimed beach plastic to form part of packaging across key brands • Converting Pampers waste into absorbent fertiliser and Always waste into absorbent cat litter • Partnering with Terracycle to upcycle waste products 	40	4
Henkel	<ul style="list-style-type: none"> • Partnered on the development of an innovative solvent-based process, called Newcycling®, that enables the recovery of high-quality clean-grade materials from complex multi-layer packaging • Involved in the RafCycle program which recycles labels into graphic printing paper 	30	5
Estée Lauder	<ul style="list-style-type: none"> • Take back schemes e.g. Back to M.A.C. • Increasing use of recycled materials • Using bio-plastics made from sugarcane in some packaging 	30	6
RB	<ul style="list-style-type: none"> • Product redesign to reduce packaging volume • Converting Briquette ash into building bricks 	24	7

Source: CDP, company reports

Renewable energy

We assessed each company's integration of renewable energy into their business model across three sub-metrics:

Renewable energy consumption (30%): We calculated consumption of renewable energy (inclusive of electricity and fuel) as a percentage of total energy consumption for the year 2017 based on CDP disclosure.

Renewable energy production (40%): We calculated the production of renewable energy (inclusive of electricity and fuel) as a percentage of total energy consumption for the year 2017 based on CDP disclosure.

Renewable energy targets (30%): We assessed the timeframe, Scope and ambition of renewable energy targets across all companies.

Food & Beverage

- Diageo leads the group in renewable energy, ranking first in terms of both renewable energy consumption (Figure 72) and production (Figure 73). It produces and consumes over a quarter of its total energy requirements using renewable energy, a significantly larger proportion than most of its peers. For brewers, the business case for renewable energy production and consumption is strong due to the production of biofuels as a by-product of the alcohol production process. Diageo ranks third in terms of renewable targets with a strong target to achieve 100% renewable electricity by 2030 (Figure 74).
- Nestlé ranks second overall, taking second place for both renewable energy production and consumption. It also has a strong business case for producing and consuming renewables due to the availability of spent coffee grains from its Nescafé business, which is used as a source of direct renewable energy. However, Nestlé rank fifth in terms of renewable targets. Its target focuses on renewable electricity only and has no defined timeframe for maturity.
- Kraft Heinz ranks last overall, it does not produce or consume any renewable energy and has set no renewable targets.
- Mondelez ranks second last overall. Only 2% of its total energy consumption is generated from renewable sources and less than 1% is produced from renewable sources. It also has set no renewable targets.

Figure 72: Renewable energy consumption

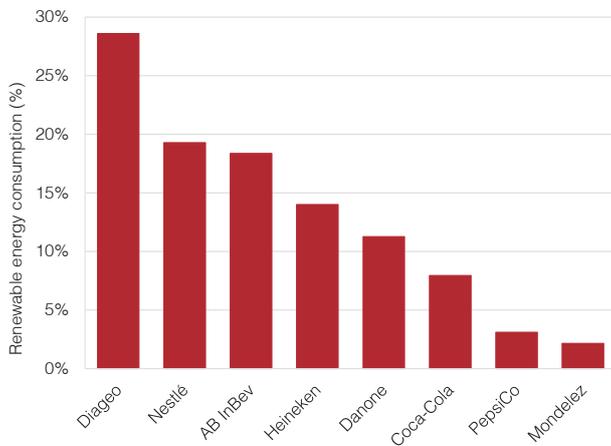
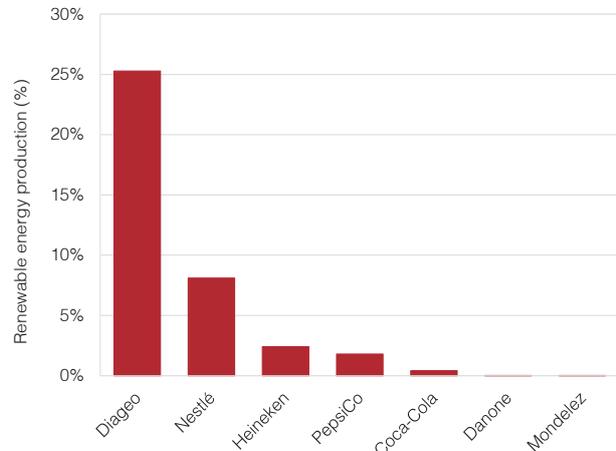


Figure 73: Renewable energy production⁽ⁱ⁾



(i) AB InBev do not produce any renewable energy

Source: CDP, company reports

Figure 74: Renewable energy targets

Company	Target covering all energy sources	RE100 target	% of electricity to be generated by renewable sources	Maturity year of electricity target	Number of roadmap targets
Danone	✗	✓	100%	2030	2
AB InBev	✗	✓	100%	2025	1
Diageo	✗	✓	100%	2030	1
Heineken	✓	✗	70%	2030	1
Nestlé	✗	✓	100%	No timeframe	0
Coca-Cola	✗	✗	No target	No target	0
PepsiCo	✗	✗	No target	No target	0
Mondelez	✗	✗	No target	No target	0
Kraft Heinz	✗	✗	No target	No target	0

Source: CDP, company reports

Household & Personal Care

- Unilever ranks first overall, leading the group in terms of renewable energy production (Figure 76) and renewable targets (Figure 77) and ranking second in terms of renewable energy consumption (Figure 75). Its targets commit the business to generating 100% of electricity from renewable sources by 2020 and 100% of total energy from renewable sources by 2030. These commitments are part of the company's broader ambition to becoming carbon positive in their operations by 2030.
- L'Oréal ranks second overall, leading the group in terms of renewable consumption and ranking second in terms of renewable production and targets. Currently over half of its energy is generated from renewable sources. This effort is being led by its US operations where already 100% of electricity is generated from renewable sources.
- Colgate-Palmolive ranks last overall, driven by poor performance in terms of renewable production and renewable targets for which it ranks second last and last respectively. Its target commits the business to acquiring only 25% of electricity from renewables by 2020, which is relatively unambitious compared to its peers. It has not set a target for all energy sources, is not part of the RE100 and does not have roadmap targets. Colgate-Palmolive ranks fifth in terms of renewable consumption, sourcing less than 10% of energy consumed from renewables.
- Henkel ranks second last overall, performing the worst in the group in terms of both renewable consumption and production. It is the only company in the sub-sector which produces no renewable energy. Henkel ranks fifth in terms of renewable targets with the business committing to 100% renewable electricity by 2030 and 50% by 2020.

Figure 75: Renewable energy consumption

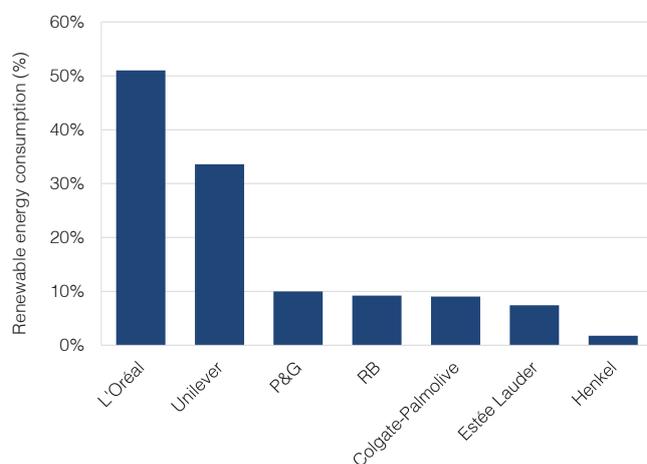
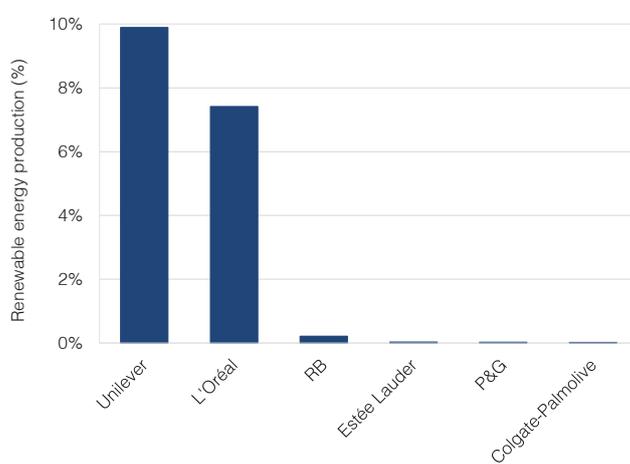


Figure 76: Renewable energy production⁽ⁱ⁾



(i) Henkel do not produce any renewable energy

Source: CDP, company reports

Figure 77: Renewable energy targets

Company	Target covering all energy sources	RE100 target	% of electricity to be generated by renewable sources	Maturity year of electricity target	Number of roadmap targets
Unilever	✓	✓	100%	2020	3
L'Oréal	✓	✗	100%	2025	2
Estée Lauder	✗	✓	100%	2020	1
P&G	✓	✓	30%	2020	2
Henkel	✗	✗	100%	2030	2
RB	✗	✓	100%	2030	1
Colgate-Palmolive	✗	✗	25%	2020	1

Source: CDP, company reports

Research and development

To measure the extent to which companies are investing in innovation we looked at R&D expenditure as a percentage of total sales. We assessed this at its current level and also calculated a CAGR looking at how expenditure had changed over the period 2013-17. R&D spend is surprisingly low for the sector at around 1% of sales for Food & Beverage companies and around 2% for Personal Care companies.

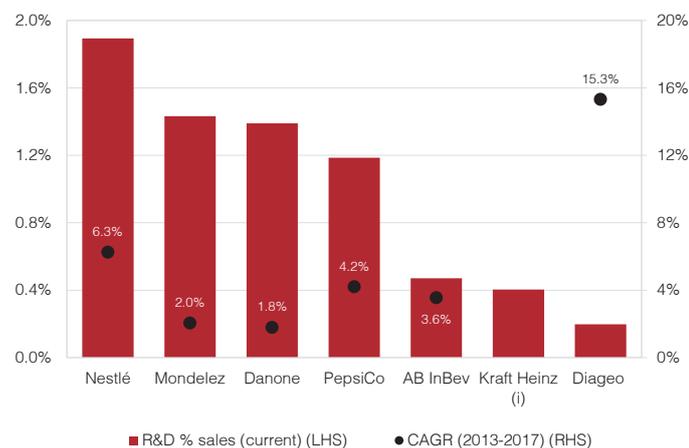
Food & Beverage

- ▶ Nestlé ranks first in terms of R&D spend with the highest current percentage spend at 1.9% (Figure 78). Nestlé have also increased its percentage of R&D expenditure by over 6% p.a. over the period 2013-17.
- ▶ Mondelez ranks second overall with the second highest expenditure as a percentage of sales at 1.4%. It has also delivered increases in expenditure of 2% over the period.
- ▶ While Diageo have delivered the strongest growth in R&D expenditure over the period of just over 15% p.a., it ranks third last overall due to having the lowest current percentage expenditure.

Household & Personal Care

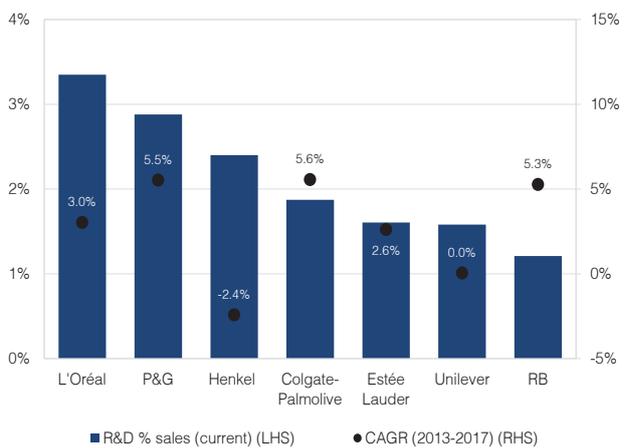
- ▶ L'Oréal ranks first in terms of R&D spend with the highest current percentage spend at 3.4% (Figure 79). It has also increased this percentage spent by 3% p.a. over the period 2013-17.
- ▶ P&G ranks second overall with a current R&D spend percentage of 2.9%, the second highest in the group. It has increased this percentage expenditure by 5.5% p.a. over the period.
- ▶ RB ranks last in terms current R&D spend with current expenditure at 1.2%. It however has increased this percentage spend by 5.3% p.a. and therefore ranks fourth overall.
- ▶ Henkel ranks last in terms of their R&D spend CAGR, reducing expenditure by 2.4% p.a. over the period. It ranks fourth in terms of their current spend and second last overall.
- ▶ Unilever ranks last overall, coming second last in terms of both R&D expenditure level and trend. It has increased its percentage spend by less than 1% p.a. over the period.

Figure 78: Food & Beverage - R&D as % of sales



(i) No CAGR shown for Kraft Heinz due to only three years of data
Source: CDP, company reports

Figure 79: Household & Personal Care - R&D as % of sales



Patent analysis

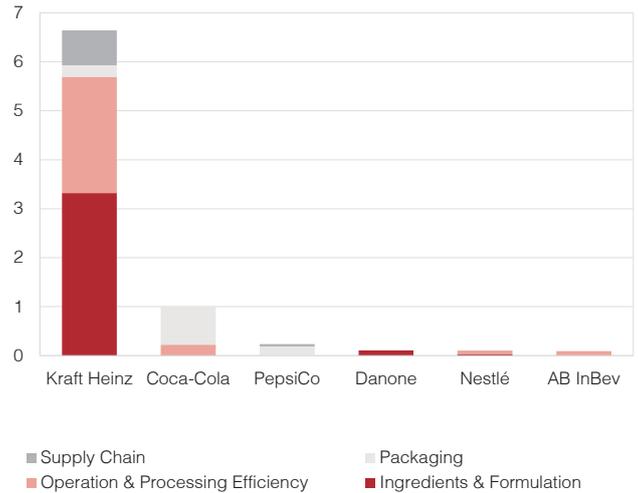
To measure the extent to which companies are investing in low-carbon innovation we looked at the patents submitted since 2000 across four key low-carbon categories - ingredients and formulation, supply chain, packaging and operation and processing efficiency. We normalized the absolute number of patents by employee numbers to determine the innovation productivity of each company.

Compared to other sectors, the volume of patents filed by the Consumer Goods companies is low. It is helpful to view this sector as the procurer of low-carbon technologies and solutions rather than the source of these innovation. Most of the patents filed relate to the ingredients & formulation (I&F) group with organic cosmetics the largest sub-category for the Household & Personal Care companies. Vegan substitutes were the only I&F sub-category considered for the Food & Beverage companies.

Food & Beverage

- Kraft-Heinz are ranked in first position and come top across all but the packaging related group (Figure 80). Kraft-Heinz have a number of vegan substitutes that involve using soy-based products as an alternative for dairy. Around 36% of the patents filed by Kraft Heinz relate to operation & processing efficiency. Here Kraft-Heinz have filed patents for different ways of preserving food; increasing its longevity. For the Supply chain group, Kraft-Heinz also have a handful of patents for developing high-yield crop varieties.
- Coca-Cola are ranked in second position with majority of their patents relating to sustainable packaging solutions such as Bio-PET and recycling methodologies for PET.

Figure 80: High quality patents by technology theme (2000-2018)⁽ⁱ⁾

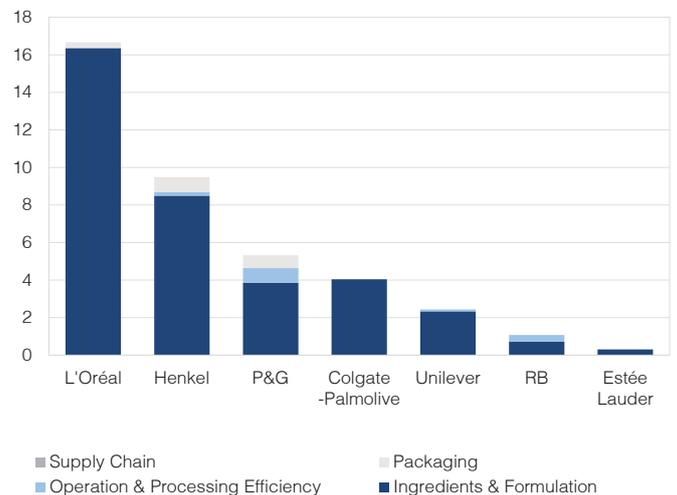


(i) No high-quality patents found for Diageo, Heineken and Mondelez
Source: CDP, company reports

Household & Personal Care

- Henkel is ranked in first position overall, with a large volume of patents filed for organic cosmetics whilst also possessing some patents for cold water detergents and dry shampoos (Figure 81). Henkel rank in second position for all the areas in which they have filed patents.
- P&G have the largest volume of packaging related patents and rank second overall when normalised by employee numbers. P&G have been exploring ways of incorporating reclaimed polyethylene and polypropylene into packaging as well as approaches that can be taken to purify contaminated polymers. Sustainable packaging related patents are the second highest group within the household and personal care subsector with P&G ranking top in this field.
- L'Oréal are ranked third overall with the majority of their patents filed for products.

Figure 81: High quality patents by technology theme (2000-2018)



Source: CDP, company reports

The 'Conscious Consumer'

Big data and the rise of social media have enabled the emergence of the 'conscious consumer.' This informed and savvy consumer segment has begun directing their purchasing power towards products and services that align with their values. Momentum has particularly accelerated where consumer trends regarding environmental considerations align with 'healthy living' trends creating a "lucrative intersection"⁽²⁴⁾ for those brands that position themselves ahead of the curve. Once niche movements such as veganism and zero-waste living are increasingly becoming mainstreamed creating potentially significant disruption for large incumbent Consumer Goods players.

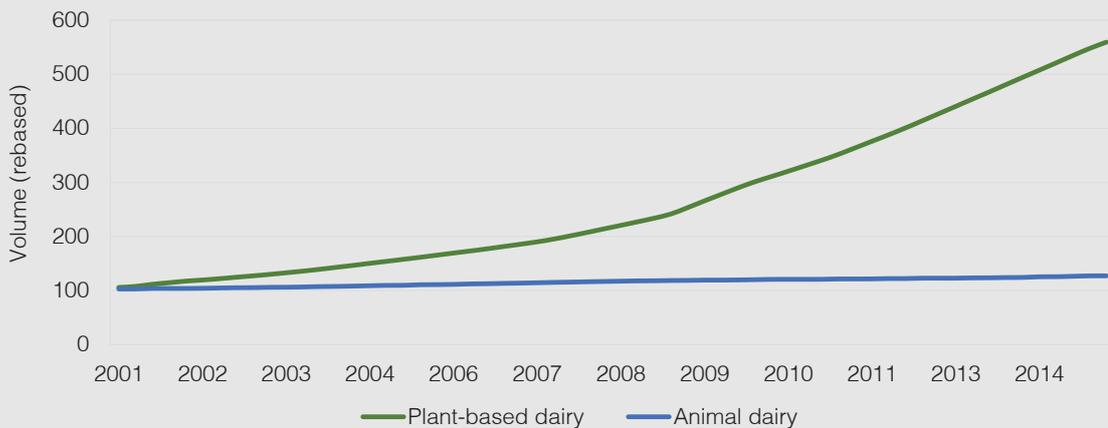
Plants over animals

Food businesses which rely on livestock production systems have historically enjoyed uninterrupted growth at the expense of the environment. Food and agricultural emissions account for around a quarter of global emissions, two-thirds of which come from the livestock sector.⁽²⁵⁾ The livestock sector is also responsible for large-scale deforestation with cattle grazing accounting for 71% of forest clearing across seven South American countries.⁽²⁶⁾ In addition, meat consumption has recently been linked to a range of health concerns, most notable being The World Health Organization's high-profile announcement in 2015 classifying red and processed meat as carcinogenic.

Greater transparency around these environmental and health considerations has created reputational and market risks for companies reliant on animal proteins. Consumers have begun shifting consumption away from traditional meat products with annual global sales of plant-based alternatives growing by double the rate of processed meat since 2010.⁽²⁾ The pace of this transition is particularly pronounced in Europe where alternative proteins could represent a third of protein demand growth in the next five years.⁽²⁷⁾ While this trend is currently associated with developed economies, the Asia Pacific region is projected to experience the highest growth CAGR of 6.3% between 2017 and 2025⁽²⁸⁾. Longer-term projections see plant based 'meats' beginning to penetrate other emerging economies and ultimately staking out a third of the global protein market by 2050.⁽²⁹⁾

The movement away from animal proteins has also had a significant impact on the dairy market. While sales of animal dairy products have plateaued since 2009, plant-based dairy sales have more than doubled⁽²⁴⁾.

Figure 82: Animal dairy and plant-based dairy consumption 2001-2015



Source: FT, Euromonitor

From a carbon emissions perspective, plant based dairy substitutes are much less intensive than traditional dairy products (cattle milk production is associated with more than 100 times more kg CO₂ equivalent than substitutes such as soy, almond and oat milk according to a study by the University of Oxford).⁽¹³⁾ However, it is important to note that there are other environmental trade-offs that must be considered. Almond production is extremely water intensive for example, it takes 6,098 litres of water to produce one litre of almond milk. Almonds are also often grown in water stressed regions with 80% of global production coming from California⁽³⁰⁾. Soy is also associated with deforestation impacts with nearly 100 million hectares of the Brazilian Cerrado biome cleared as a result of soy production since the 1950s. We have considered these trade-offs in our innovation analysis, rewarding companies higher impact scores where they have been able to reformulate their products towards lower impact substitutes such as oats and rice.

Natural over chemical

In a similar trend, on the Household & Personal Care front, there has been a movement away from chemical heavy products towards natural, plant based and organic formulations. This trend is again strengthened by the intersection between environmental and health considerations. Plant based agricultural commodities tend to have lower carbon intensities than petrochemicals and as such replacing petrochemical ingredients with bio-based ingredients reduces the carbon intensity of manufacturing inputs and also improves biodegradability ensuring that wastewater does not pollute natural ecosystems.

24. FAIRR, 2018: Plant-based profits

26. Global Forest Coalition, 2018: The big four drivers of deforestation, beef, soy, wood and palm oil

28. Persistence Market Research, 2017: Asia-Pacific to be the fastest growing region in the global plant-based proteins market

30. University of California, Los Angeles, 2018

25. Food and Agriculture Organization of the United Nations, 2014

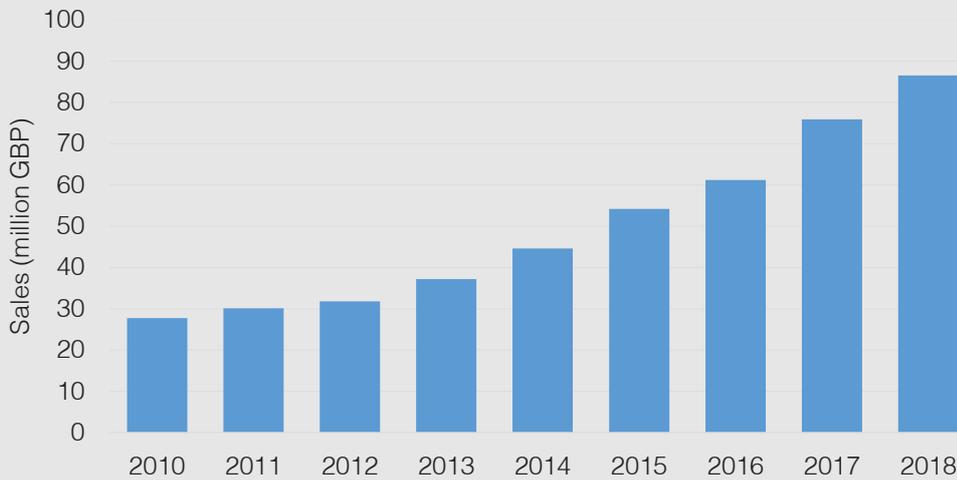
27. Rabobank, 2017: Watch out or they will steal your growth

29. Lux Research, 2014: Plant sources are changing the protein landscape

In addition, switching to regenerative organic farming increases the organic carbon content of soils enabling carbon sequestration. According to a recent study published by the Rodale Institute more than 100% of current annual global carbon dioxide emissions could be sequestered if global agriculture transition to a regenerative organic system.⁽³¹⁾

On the health side, concerns around harmful ingredients such as parabens have driven innovation to reformulate and remarket products in line with natural preferences. In 2018, the certified organic and natural beauty market in the UK enjoyed 14% growth in sales, significantly outperforming conventional beauty product sales. In 2017, products featuring natural claims generated US\$1.3 billion in annual sales in the United States alone, represented 3.1% of the U.S. Personal Care market. In China, 45% of female consumers using a facial skincare plan used products with natural claims in 2017. Globally, vegan beauty product launches have increased by 175% since 2013.⁽³²⁾

Figure 83: UK certified organic and natural beauty sales (2010-18)

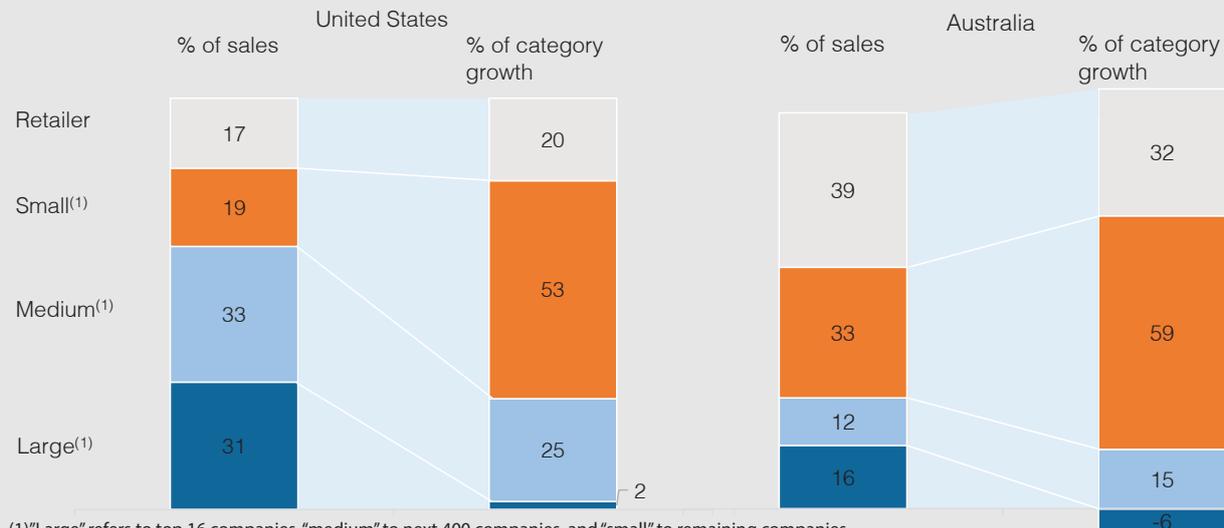


Source: FT, Euromonitor

Niche over mass produced

Conscious consumption is also increasingly aligned with a mis-trust for big business and preferences which favour smaller brands with local artisanal narratives. Between 2011 to 2016, large brands in the US lost 3 percentage points of market share to smaller companies, according to Boston Consulting Group, equating to US\$22 billion of sales.⁽³³⁾ Smaller, niche brands are also being favoured by retailers as they offer higher margins and as a result have enjoyed up to three times their share of growth while legacy brands have flatlined.⁽⁵⁾

Figure 84: Consumer Goods industry share of sales and of growth 2016-17



(1) "Large" refers to top 16 companies, "medium" to next 400 companies, and "small" to remaining companies.

Source: McKinsey 2018

Circular over linear

Consumer action and in some cases activism around plastic packaging has gained widespread momentum in recent years. Single use business models which take no responsibility for the end of life treatment of products are increasingly being targeted in consumer boycotts in favour of circular models such as take-back schemes, products as a service and closed loop systems. In a recent survey of 7000 consumers across 7 European countries, 36% stated they were already boycotting brands over packaging sustainability concerns (this rises to 53% among millennial consumers). Consumers are also shifting away from bottled water with the global reusable water bottles market to forecast to expand at a CAGR of 3.6% between 2017 and 2025, driving a market valuation of US\$10.4 bn by the end of 2025.⁽³⁴⁾ Packaging is the only area in which Consumer Goods companies can innovate to achieve complete circularity and as such this is assessed in Transition Opportunities.

31. Rodale Institute, 2017: Regenerative organic agriculture and climate change

32. Soil Association, 2019: Organic beauty and wellbeing market

33. Boston Consulting Group, 2017: How big companies can fight back

34. Transparency Market Research, 2017

Climate governance & strategy

- While all companies have set emissions reduction targets, only nine companies have set targets covering Scope 3 emissions.
- Nearly all companies have climate-related committees at either board or executive levels. Nestlé and Unilever have both.
- Danone leads the Food & Beverage sub-sector in terms of Climate governance & strategy with Kraft Heinz ranking last.
- Unilever leads the Household & Personal Care sub-sector in terms of Climate governance & strategy with Estée Lauder ranking last.

Overview

The combination of consumer preference shifts, increasing acute and chronic physical risks and intensifying regulatory pressure has made the Consumer Goods sector ripe for disruption. Ultimately, companies with strong governance structures and corporate strategies aligned with a 2-degree pathway will be best positioned to capitalize on this disruption. Management efforts must be directed towards building resilience across the entire value chain through innovation and collaboration to ensure products and brands remain 'future fit'.

The public facing nature of these companies and the growing demand for transparency means that climate strategies and targets are increasingly under scrutiny. These strategies however also offer a platform to directly communicate with consumers and have been increasingly utilized as marketing opportunities for climate leaders. Strong strategies are those that look across the value chain, incorporate scenario planning and are integrated into all business activities from innovation to policy engagement and M&A.

The presence of climate experts on the board and an active management of Scope 3 emissions intensity also provides insight into how companies are positioning themselves for the transition to a low-carbon economy. A number of companies have started to set Scope 3 emission reduction targets and have climate expertise at the board-level. However, more needs to be done with regard to Scope 3 emissions measurement and management.

We evaluate the strength of company governance and strategy in this section based on the following metrics:

Metric 1) Strategy scorecard (30%): We assess the integration of climate-related factors into business decision making and evaluate the sophistication of strategic planning associated with a low-carbon transition. This is based on a number of forward looking indicators such as scenario analysis, science based targets, internal carbon pricing, policy positioning and M&A activity.

Metric 2) Emission reduction targets (20%): We assess the coverage and strength of companies' emissions reduction targets with a focus on Scope 3 emissions.

Metric 3) Board & executive climate management (20%): Companies are assessed on a number of factors relating to board and executive climate responsibility performance including the level of directors on the board with climate-related experience, the presence of climate-related committees (at board and/or executive levels) and the overall quality of climate-risk management systems.

Metric 4) Climate-related remuneration (20%): We assess the alignment between climate-risk management and remuneration across short-term annual bonus schemes and long-term incentive programs at the senior executive and board-level as well as other climate-risk remuneration practices at broader corporate levels.

Metric 5) CDP Score (10%): The 2018 CDP climate change and water scores provides an aggregate measure of the quality of climate and water-related disclosure and management systems addressing climate risks.

Overall highlights

- On average, the two sub-sectors perform relatively in line in terms of our strategy analysis. Household & Personal Care companies however demonstrate more varied performance with leaders such as Unilever and L'Oréal developing climate strategies which are highly integrated into corporate planning, while companies such as Estée Lauder lag in strategy development.
- While all companies have set emission reduction targets, only 10 of these cover Scope 3 emissions. Household & Personal Care companies outperform Food & Beverage companies in terms of Scope 3 coverage with 71% of companies setting life-cycle targets versus 67% for the Food & Beverage sub-sector.
- In addition, three Household & Personal Care companies have set net zero or net positive carbon targets for their operations (Scope 1+2). No Food & Beverage companies have set such targets.
- Unilever and Danone come top in their respective subsectors in terms of climate-related remuneration and are the only companies to provide long-term climate-related incentives to their executives.
- Nearly all companies have a climate-related committee at either the board or executive levels with Nestlé and Unilever the only companies to have such a committee at both board and executive levels.

- The level of climate competence across the sector is fairly low with 78% of all directors with climate expertise deemed to have low (50%) or very low (28%) experience.
- Kraft Heinz and Estée Lauder come bottom in terms of board and executive climate management. Kraft Heinz and Diageo do not have a climate-related committee at the board or executive levels.

Food & Beverage

- Danone ranks first in terms of Climate Governance and Strategy leading the Food & Beverage sub-sector in terms of climate-related remuneration and ranking second in terms of board-level climate expertise and emission reduction targets (Figure 85).
- Kraft Heinz come last in terms of Climate Governance and Strategy, performing at the bottom of the sub-sector in terms of strategy, board & executive climate management and second last for targets and climate-related remuneration.

Household & Personal Care

- Unilever ranks first in terms of Climate Governance and Strategy, leading the Household & Personal Care sub-sector across three out of five metrics – strategy, climate-related remuneration and board & executive climate management. It ranks second in terms of CDP score due to scoring a B in the Water program (Figure 86).
- Estée Lauder ranks last in terms of Climate Governance and Strategy, performing worst in the sub-sector for strategy and board-level expertise. They also rank second last for targets and remuneration and CDP score.

Figure 85: Food & Beverage – Climate governance & strategy summary

Company	Strategy scorecard	Targets & Goals	Board & executive climate management	Climate-related remuneration	CDP Climate score 2018	CDP Water score 2018	Overall weighted rank	Climate governance & strategy rank
Danone	3	2	2	1	A	B	2.4	1
Nestlé	1	6	1	4	A	C	3.4	2
Diageo	4	1	8	3	A	A	4.2	3
PepsiCo	2	4	5	6	A-	B	4.3	4
AB InBev	6	3	3	2	B	A-	4.9	5
Coca-Cola	5	7	4	7	B	A-	6.0	6
Heineken	8	5	5	9	C	B	6.8	7
Mondelez	7	9	5	4	D	D	7.3	8
Kraft Heinz	9	8	9	8	D	C	8.6	9
Weighting	30%	20%	20%	20%	10%			

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

Figure 86: Household & Personal Care – Climate governance & strategy summary

Company	Strategy scorecard	Targets & Goals	Board & executive climate management	Climate-related remuneration	CDP Climate score 2018	CDP Water score 2018	Overall weighted rank	Climate governance & strategy rank
Unilever	1	2	1	1	A	B	1.3	1
L'Oréal	2	1	2	2	A	A	2.6	2
RB	3	4	4	3	A-	B	4.2	3
Colgate-Palmolive	4	3	5	4	A-	A-	4.4	4
P&G	5	7	3	7	B	B-	5.9	5
Henkel	6	5	6	5	C	B-	5.9	6
Estée Lauder	7	6	7	5	B	F	6.4	7
Weighting	30%	20%	20%	20%	10%			

Note: In calculating the weighted rank in this table, we use the weighted ranks for each area. We display non-weighted ranks in this summary for simplicity only.

Source: CDP

Strategy scorecard

The sophistication of climate strategy development varies widely across the sector. While some companies are still assessing climate factors in isolation to the corporate planning process, others have fully integrated their climate and corporate strategy mechanisms and are leveraging this integrated approach as a key market differentiator for their brands. We assess strategic planning associated with the transition to a low-carbon economy using a number of forward-looking indicators taken from CDP disclosure and public reporting. More specifically, we look at:

Contribution to sector decarbonization (30%): We assessed the extent to which companies were calculating their contribution to sector decarbonization by conducting scenario analysis and setting Science-based Targets. We also looked at whether companies were official supporters of the TCFD.

Value chain approach (30%): We assessed the extent to which companies were engaging across their value chains with suppliers, consumers and other key players and the extent to which they were undertaking life-cycle assessments of their products to understand their impact exposure at different points.

Policy positioning (20%): We assessed how companies were engaging with policy makers on climate-related issues and how they were positioning themselves internally to respond to emerging regulations.

M&A activity and B Corporations (20%): We assessed the extent to which companies were directing their M&A activities towards environmentally conscious brands and the prevalence of B Corporations in their portfolios. B Corporations are companies set up in accordance with the B Corp Declaration of Interdependence which requires the creation of benefits for a wider range of stakeholder beyond shareholders including the community and environment.

Food & Beverage

- Nestlé ranks first in our strategy analysis. It has an approved Science-based Target covering Scope 1,2 and 3 emissions and is an official supporter of the TCFD. It engages with suppliers, consumers and other key players in its value chain, covering 95% of its procurement spend and is active in direct policy advocacy on climate issues. The company has also recently invested in a number of smaller 'environmentally conscious' health food brands, including B Corp Garden of Life (Figure 87).
- PepsiCo ranks second overall in our strategy analysis. It engages with 100% of its suppliers as well as some of its consumers and key other players in the value chain. The company has an approved Science-based Target covering Scope 1, 2 and 3 emissions and is an official supporter of the TCFD. It also conducts extensive life-cycle assessments of products.
- Kraft Heinz ranks last in terms of strategy. It does not conduct scenario analysis, does not have a Science-based Target and is not an official supporter of the TCFD. The company only engages with 8% of their supply chain and is not involved in any direct policy advocacy relating to climate change.
- Heineken ranks second last in terms of our strategy analysis. It does not conduct scenario analysis, does not have an approved Science-based Target and has not officially supported the TCFD. It also has not set an internal carbon price and conducts only partial life-cycle assessments across its products.

Figure 87: Contribution to sector decarbonization scorecard

Company	Sector decarbonization			Value chain approach		Policy positioning		M&A and B Corps		Final Score
	Scenario analysis	Approved Science-based Targets	Official TCFD supporter	Supplier engagement as % of procurement	LCA	Internal carbon price (US\$ / tonne CO ₂)	Direct engagement with policy makers on climate issues	M&A of environmentally conscious brands ¹	B Corporations	
Nestlé	✗	✓	✓	95%	Extensive	16	7	6	1	85
PepsiCo	✗	✓	✓	100%	Extensive	0	2	4	0	74
Danone	✓	✓	✗	21%	Extensive	39	8	2	10	68
Diageo	✗	✓	✓	80%	Extensive	0	2	0	0	60
Coca-Cola	✓	✗	✓	80%	Extensive	0	1	4	1	59
AB InBev	✓	✓	✗	50%	Partial	0	1	7	0	44
Mondelez	✓	✗	✗	Not disclosed	Extensive	0	2	1	0	31
Heineken	✗	✗	✗	Not disclosed	Partial	0	3	0	0	23
Kraft Heinz	✗	✗	✗	8%	Extensive	0	0	1	0	22

Source: CDP, company reports

Household & Personal Care

- Unilever ranks first overall in terms of strategy, scoring significantly higher than the rest of their peers. It has conducted both quantitative and qualitative scenario analysis, has an approved Science-based Target covering Scope 1, 2 and 3 emissions and is officially supporting the TCFD. Unilever has also acquired eight environmentally conscious brands since 2012, three of which are B Corps (Figure 88).
- L'Oréal ranks second in our strategy analysis. It has conducted quantitative scenario analysis, has an approved Science-based Target covering Scope 1, 2 and 3 emissions and conducts extensive life-cycle assessments across its products. It also actively engages in policy advocacy on climate-related issues.
- Estée Lauder ranks last in our strategy analysis. It does not conduct scenario analysis, does not have an approved Science-based Target, and has not officially supported the TCFD. The company does not have an internal carbon price, only conducts partial life-cycle assessments of its products and does not engage with policymakers on any climate-related issues.
- Henkel ranks second last in terms of strategy. It does not conduct scenario analysis, does not have an approved Science-based Target, and has not officially supported the TCFD. It also does not have an internal carbon price and does not engage with policymakers on climate-related issues.

Figure 88: Contribution to sector decarbonization scorecard

Company	Sector decarbonization			Value chain approach		Policy positioning		M&A and B Corps		Final Score
	Scenario analysis	Approved Science-based Targets	Official TCFD supporter	Supplier engagement as % of procurement	LCA	Internal carbon price (US\$ / tonne CO ₂)	Direct engagement with policy makers on climate issues	M&A of environmentally conscious brands'	B Corporations	
Unilever	✓	✓	✓	42%	Extensive	45	6	8	4	100
L'Oréal	✓	✓	✗	39%	Extensive	0	3	4	0	60
RB	✓	✗	✗	30%	Extensive	80	0	0	0	58
Colgate-Palmolive	✓	✓	✗	46%	Extensive	0.76	0	0	0	51
P&G	✓	✓	✗	Not disclosed	Partial	0	0	3	1	38
Henkel	✗	✗	✗	15%	Extensive	0	0	2	0	30
Estée Lauder	✗	✗	✗	Not disclosed	Partial	0	0	1	0	19

Source: CDP, company reports

Emission reduction targets

Emission reduction targets provide an indication of the decarbonization trajectories that companies are pursuing. While all companies in our universe have set emission reduction targets, only nine company targets cover Scope 3 emissions. Given the significance of Scope 3 emissions for the sector, accounting for around 90% of life-cycle emissions, such targets are critical. Focusing solely on operational emissions will prevent companies from making a meaningful contribution to global decarbonization. Leading companies are setting the pace by not only setting life-cycle emission reduction target but also ramping up the ambition level of operational emission reduction targets to achieve net zero or net positive carbon emissions.

Food & Beverage

- Diageo rank in first position with the most ambitious Scope 1+2 emissions reduction target, aiming to reduce absolute emissions 50% by 2020, equivalent to a -5.2% CAGR (Figure 89). Diageo also rank first for their Scope 3 emission reduction target with a target to reduce absolute emissions by 30% out to 2020, with a focus on upstream and downstream emissions (Figure 90).
- Danone come second possessing the second highest Scope 1+2 emissions reduction target whilst also having an ambitious Scope 3 emissions intensity target equivalent to a 25% reduction in absolute emissions by 2030.
- Kraft Heinz and Mondelez come last possessing short-term Scope 1+2 targets that are not as ambitious when compared with their peers and have no scope 3 targets.

Figure 89: Scope 1+2 absolute emissions reduction targets

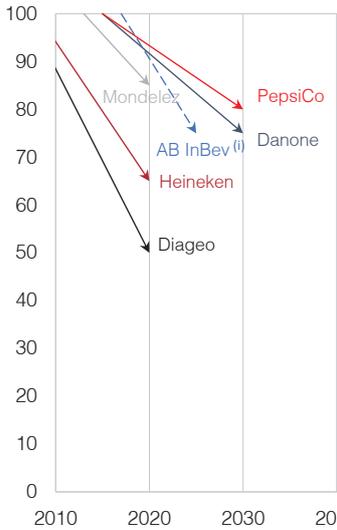


Figure 90: Scope 3 absolute emissions reduction targets

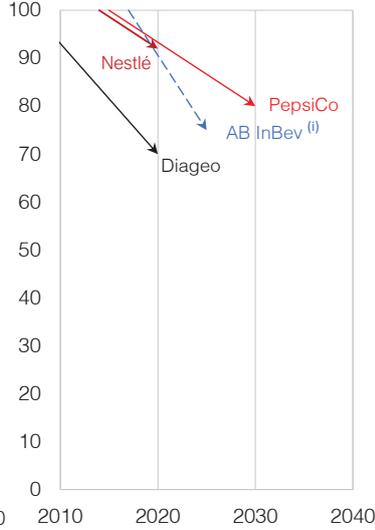


Figure 91: Scope 1+2 intensity emissions reduction targets

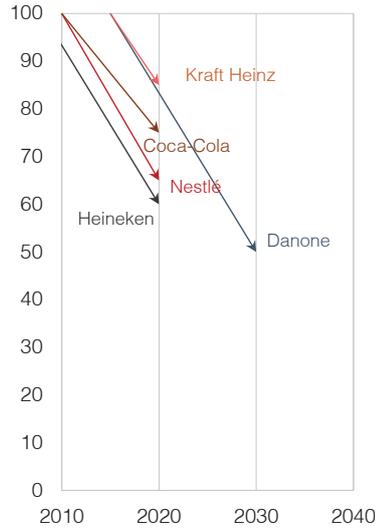
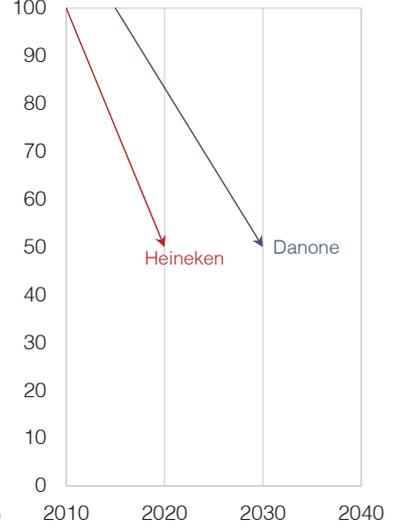


Figure 92: Scope 3 intensity emissions reduction targets



Note: base year indexed to 100

(i) AB InBev's Scope 1,2+3 emissions intensity reduction target is equivalent to a 25% reduction in absolute Scope 1+2 emissions and a 25% reduction in Scope 3 emissions.

Source: CDP, company reports

Household & Personal Care

- ▶ L'Oréal come in first position with an aim to eliminate all Scope 1+2 emissions on their operated sites by 2025 and to reduce absolute emissions across the full life-cycle (Scope 1-3) of their products by 25% (Figure 93).
- ▶ Unilever come second with a similar Scope 1+2 ambition to L'Oréal and a life-cycle emissions intensity target equivalent to a 5% reduction in absolute Scope 3 emissions by 2030 (Figure 96).
- ▶ Colgate-Palmolive are ranked third and plan to reduce Scope 1+2 emissions by 50% by 2050 whilst also having a Scope 3 (Use of Sold Products) emissions reduction target which plans to reduce absolute emissions by 5% by 2022 (Figure 94).
- ▶ Estée Lauder and P&G are ranked last and are the only Household & Personal Care companies not to have set a Scope 3 emissions reduction target.
- ▶ Unilever, L'Oréal and Colgate-Palmolive are the only companies whose Scope 3 targets have been approved by the Science-based Target initiative.

Figure 93: Scope 1+2 absolute emissions reduction targets

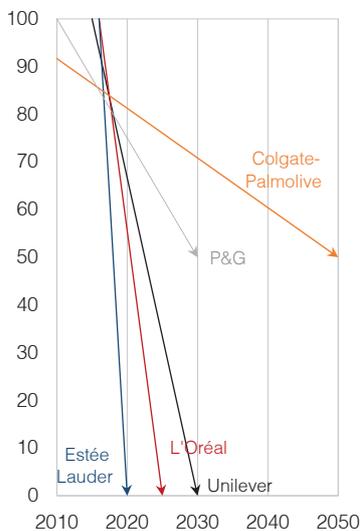


Figure 94: Scope 3 absolute emissions reduction targets

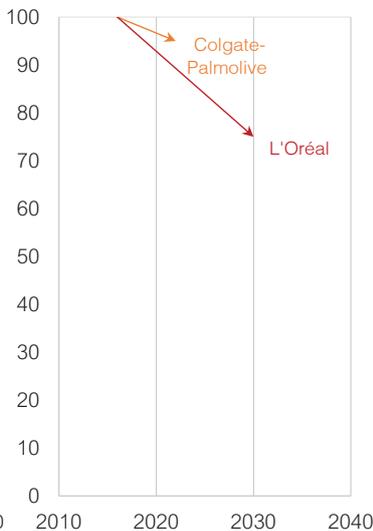


Figure 95: Scope 1+2 intensity emissions reduction targets

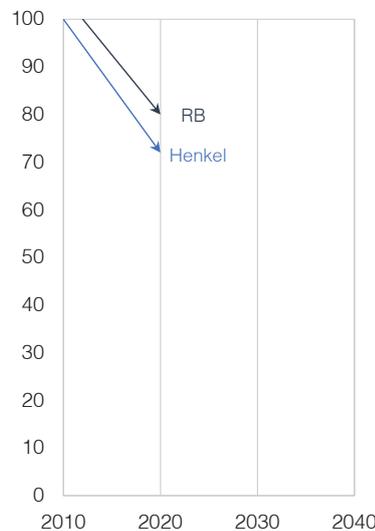
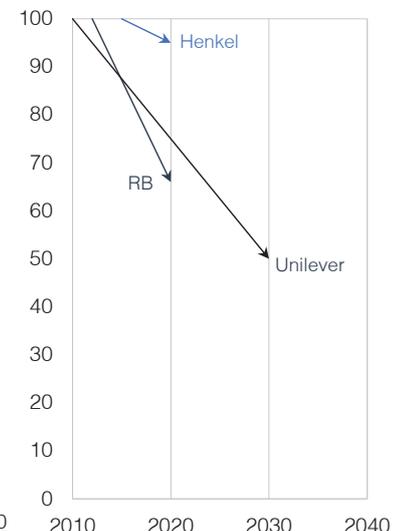


Figure 96: Scope 3 intensity emissions reduction targets



Note: base year indexed to 100

Source: CDP, company reports

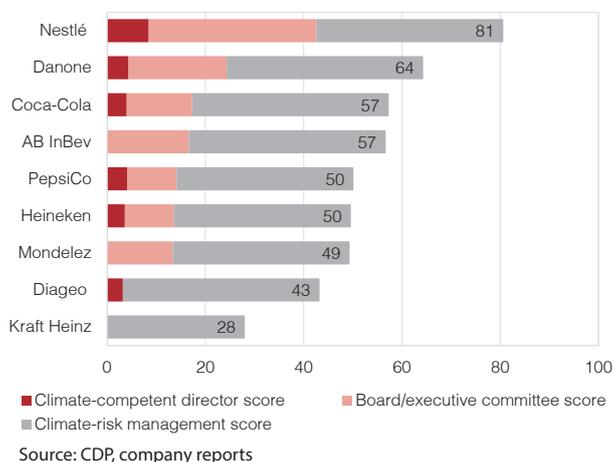
Board & executive climate management

Board-level climate expertise is important in ensuring that climate-related risks and opportunities are considered in senior decision making. This kind of leadership at the board-level also gives middle management the license to drive climate programs forward. In this metric, we assess the climate expertise of the board as well as the establishment of climate-related committees and the overall quality of climate-risk management system.

Food & Beverage

- ▼ Nestlé are ranked in first position with almost 40% of the board possessing some climate-related competency. The Nestlé in Society Board is also one of only three climate-related boards/committees at the executive level for the Food & Beverage sub-sector (Figure 97).
- ▼ Danone are ranked in second position with their board-level Social Responsibility Committee obtaining the maximum score for climate focus and board-level independence.
- ▼ Kraft Heinz and Diageo are the only Food & Beverage companies that do not have a climate focused committee at the board or executive level.

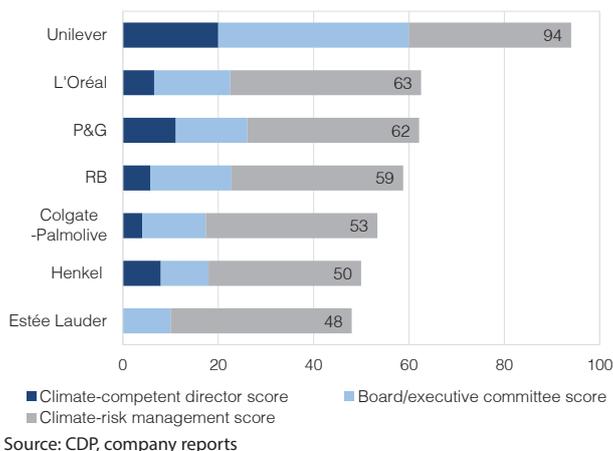
Figure 97: Food & Beverage – Board-level climate management



Household & Personal Care

- ▼ Unilever are ranked in first position and obtain the highest score for climate competent directors across the two subsectors, possessing individuals with a very high level of climate expertise. The most notable individuals include a non-executive director who is a Climate Leader for the World Bank and Chair of the High-Level Leadership Forum on Competitiveness and Carbon Pricing, and the CFO who is vice-chair for the TCFD. Unilever are also the only company to have a climate focused committee at both board and executive levels. The company's performance however would have been even stronger with the inclusion of ex-CEO Paul Polman who resigned in November 2018. Paul Polman is the Vice Chair of the UN Global Compact and former Chairman of the WBCSD (Figure 98).
- ▼ Estée Lauder and Henkel are at the bottom of the table and are the only companies not to have a climate-related committee at the board-level.

Figure 98: Household & Personal Care – Board-level climate management



Climate-related remuneration

Where companies offer remuneration linked to climate-related objectives, decarbonization performance tends to be strong due to the establishment of favourable incentive structures. In this metric, we assess both long-term (LTI) and short-term (STI) climate-related-remuneration.

Food & Beverage

- ▼ Danone are ranked in first position and are the only Food & Beverage company to provide an LTI with 20% of executives LTI linked to their CDP score. ~5% of Danone's STI is linked to progress against their climate commitments and is the only company to have a mid-term incentive linked to GHG emission reductions (Figure 99).

Figure 99: Climate-related remuneration

Company	Short term incentive	Long term incentive	Sub-exec incentive	Description	Score	Rank
Danone	✓	✓	✓	~5% of annual bonus is linked to Danone's climate commitment which forms part of the Social and Societal component of their STI. Multi-annual / mid-term incentives are also provided with up to €3 of the Group Performance Units (GPU) received linked to the achievement of a 4% emissions reduction over a three-year period. 20% of the LTI are determined by Danone's CDP score over a three-year period.	62	1
AB InBev	✓	✗	✓	Executive STIs linked to non-financial targets some of which include sustainability and CSR related targets. Energy and facility managers also have climate-related incentives linked to annual bonuses.	30	2
Diageo	✓	✗	✓	The Chief Operating and Procurement Officers both have emission reduction targets linked to their annual bonus. Both are assessed against Diageo's target of reducing emissions by 50% by 2020. Carbon reduction targets are also linked to the short-term bonuses of business unit managers.	28	3
Mondelez	✓	✗	✓	Achievement of sustainability goals are linked to monetary rewards through 'standard monetary incentives'.	24	4
Nestlé	✓	✗	✓	Performance against Nestlé's Sustainability and CSR strategy forms part of the non-financial component of executive's STI. Environmental managers' short-term bonus is also linked to the reduction of S1+2 emissions.	24	5
PepsiCo	✓	✗	✓	STI is linked to the individual performance component of selected employees, with strategic business imperatives such as improved operational efficiency and driving sustainable innovations key considerations. Lower level management also have climate-related incentives linked to their annual bonus.	20	6
Coca-Cola	✓	✗	✗	Short term bonuses of executives are linked to their individual performance factors, part of which include contributions towards Coca-Cola's strategic environmental initiatives.	16	7
Kraft Heinz	✓	✗	✓	Provide monetary incentives for all employees that are linked to energy reduction targets.	14	8
Heineken	✓	✗	✓	Selected Executive directors have sustainability objectives linked to their function as part of the individual component of their Short-term Incentives	12	9

Source: CDP, company reports

Household & Personal Care

- Unilever come top and are the only Household & Personal Care Company to offer a climate-related LTI, with 25% of their Management Co-Investment Plan (MCIP) linked to progress against their Unilever Sustainable Living Plan (USLP). As part of the MCIP, executives can invest up to 67% of their annual bonus into Unilever shares which is then matched based on their performance over a four-year period. This remuneration structure reflects what was disclosed in Unilever's 2017 Annual Report and may be subject to change with the new CEO (Figure 100).
- L'Oréal are in second position with ~8% of executives' annual bonus linked to progress against L'Oréal's "Sharing Beauty with All Sustainable Development program" which consists of a range of sustainability related targets out to 2020 such as reducing absolute emissions from plants and distribution centres and reducing the water intensity in finished products.
- P&G rank last with no evidence of climate-related incentives at the executive level and lack a systematic framework for incentives at the sub-executive level.

Figure 100: Climate-related remuneration

Company	Short term incentive	Long term incentive	Sub-exec incentive	Description	Score	Rank
Unilever	✓	✓	✓	Selected executives' STI is linked to emission reduction targets. 25% of Executive LTIP is linked to their Sustainability Progress Index. Senior Management also receive incentives for performance against this index with lower level management bonuses linked to sustainability related targets.	70	1
L'Oréal	✓	✗	✓	~8% of Executives' annual bonus is linked to progress against L'Oréal's "Sharing Beauty with All Sustainable Development Program". Energy / sustainability managers also receive monetary incentives for progress against energy, emission and other sustainability related targets.	44	2
RB	✓	✗	✓	Chief Sustainability Officer has energy and carbon reduction related targets linked to their annual bonus. Supply Strategy Project managers receive STIs for energy and emission reductions. Sustainability managers are also rewarded for innovative product development that reduce emissions over products life-cycle.	28	3
Colgate-Palmolive	✓	✗	✓	Achievement of Colgate-Palmolive's global sustainability initiatives and targets form part of the of the individual objectives of some directors and managers.	22	4
Estée Lauder	✓	✗	✓	CEO and President's STI is linked to Estée Lauder's Net Zero GHG goal. Facility managers' annual performance is also determined by energy and emission reductions.	20	5
Henkel	✓	✗	✓	Selected employees who are can influence the direction and outcome of Henkel's corporate sustainability performance are rewarded as part of the personal performance component of their short-term bonus.	20	5
P&G	✗	✗	✓	As part of the "Power of You" program, selected employees are offered gift certificates or cash awards for performance on energy / emission reduction projects.	6	7

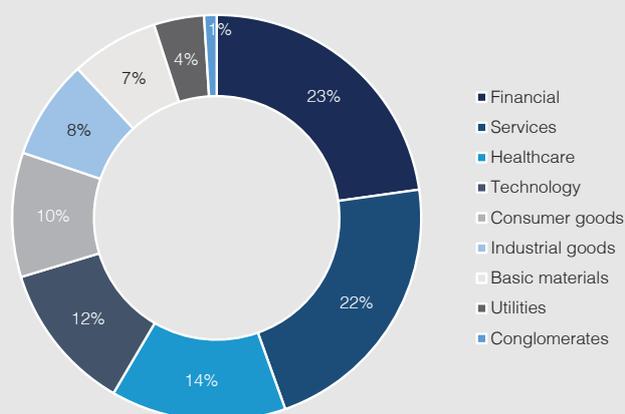
Source: CDP, company reports

Activist investors – friend or foe?

Activist investors are taking a keen interest in the Consumer Goods sector with a number of names under the headlight – Unilever with the recent aborted bid from Kraft Heinz supported by Berkshire Hathaway and 3G Capital, Nestlé with a stake from Third Point and Triun Partners engagement with P&G. These investors which have traditionally looked to drive better profitability are targeting the industry at a time when there is a question mark over whether big brands with high volumes are the way forward for the industry.

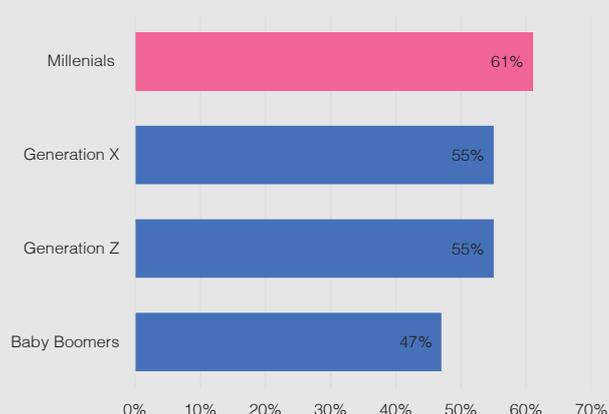
As our research finds there is a push by the large companies to buy up smaller brands which appeal to more health and environmentally conscious consumers with millennials thought to be at the forefront of this movement. Small brand start-ups are targeting this trend with more natural ingredients, less packaging and using digital strategies using social media to overcome previous barriers to entry such as large marketing budgets targeting traditional media channels.

Figure 101: Sector breakdown of large-cap targets 2017⁽ⁱ⁾



(i) Sector breakdown of companies with market caps over \$10 billion publicly subjected to activist demands in 2017. (Rounding may lead to summation errors).
Source: Active Insight 2018

Figure 102: % of respondents by generation who feel their actions and choices can make a difference



Source: FT, Euromonitor

Are activist investors trying to steer complacent bureaucratic companies to move away from big brands to a portfolio of smaller agile brands with higher top line growth potential attuned to the new drive for sustainability or are they going to put pressure on these companies to drive margins at a time where companies need to invest in brand portfolios and address the risks in their value chain? Our research shows that real risks lie in the supply chain from raw material constraints as a result of changing precipitation patterns leading to water stress. Downstream risks also exist for Household & Personal Care companies reliant on use of energy and more importantly on water – particularly in high-growth emerging markets that face water stress.

Steering companies through this sustainability challenge requires investors to support management teams that are willing to invest in new brands that have a lower environmental footprint while at the same time appealing to consumers. At the same time companies need to continue to invest in their value chains to ensure ongoing access to resources which could face constraints as a result of the physical risks related to climate change. This requires taking strategic views out to 2030 to 2050 where real resource constraints particularly water becomes an issue.

While the evidence so far is from qualitative rather than quantitative data disclosure, the leaders in this report have recognised the sustainability risks in their value chain as substantive and are investing in mitigation. Also, companies are investing in new artisanal brands recognising changing consumer preferences – although the pace of investment still leaves exposure to larger traditional brands. For long-term investors who are embracing sustainability themes, the strategic intentions of the activist investor should be put under the spotlight before heads roll on the board.

Appendix I: Company engagement traffic light system

Company Performance Overview League Table rank Companies	Food & Beverage									Household & Personal Care							Weighting Metric Area
	1 Danone	2 Nestlé	3 AB InBev	4 PepsiCo	5 Diageo	6 Heineken	7 Coca-Cola	8 Mondelēz	9 Kraft Heinz	1 Unilever	2 L'Oréal	3 Colgate-Palmolive	4 Henkel	5 RB	6 P&G	7 Estée Lauder	
Transition risks rank	3	1	5	2	6	4	7	8	9	4	1	2	3	6	7	5	30%
Scope 3 emissions performance	1	2	5	3	8	6	9	4	7	3	1	2	4	5	7	6	35%
Business resilience	4	1	6	2	3	5	7	8	9	3	1	2	4	7	5	6	25%
Brand analysis	7	1	5	4	6	3	2	8	9	2	7	5	1	4	6	3	20%
Raw material risk	6	9	1	5	4	3	2	8	7	4	1	6	2	5	3	7	15%
Emissions and energy intensity	7	6	5	8	2	1	9	3	4	7	3	6	5	1	4	2	5%
Physical risks: water resilience	3	6	2	5	1	4	9	8	7	2	1	3	4	6	7	5	20%
Supply chain physical risks	7	8	1	4	2	3	6	5	9	7	1	6	1	4	4	1	40% / 10%
Operational physical risks	4	6	7	5	1	3	9	8	2	3	1	6	4	2	5	7	40%
Downstream physical risks	4	2	5	1	7	6	3	8	9	1	4	2	5	7	6	3	5% / 35%
Water governance and targets	1	6	3	4	2	7	4	8	9	3	2	1	6	4	5	7	15%
Transition opportunities rank	1	2	3	7	5	6	4	8	9	1	2	4	3	6	5	7	30%
Low carbon innovation	2	3	1	6	8	5	4	6	9	1	2	4	3	6	5	7	40%
Circular innovation and packaging	1	3	6	5	4	8	2	7	9	1	2	3	4	6	5	7	25%
Renewable energy	4	2	5	6	1	3	7	8	9	1	2	7	6	5	4	3	25%
R&D	3	1	8	4	7	5	2	6	9	7	1	3	6	4	2	5	5%
Patent analysis	5	4	6	3	6	6	2	6	1	4	3	5	1	6	2	7	5%
Climate governance & strategy rank	1	2	5	4	3	7	6	8	9	1	2	4	6	3	5	7	20%
Strategy scorecard	3	1	6	2	4	8	5	7	9	1	2	4	6	3	5	7	30%
Emission reduction targets	2	6	3	4	1	5	7	9	8	2	1	3	5	4	7	6	20%
Board & executive climate management	2	1	3	5	8	5	4	5	9	1	2	5	6	4	3	7	20%
Climate-related remuneration	1	4	2	6	3	9	7	4	8	1	2	4	5	3	7	5	20%
CDP Score	2	5	4	3	1	7	6	9	8	2	1	3	6	4	5	7	10%
Total	8	7	3	3	7	2	2	1	2	7	9	3	3	1	2	2	
Green	7	7	7	8	4	7	7	3	1	7	7	5	4	3	0	2	
Yellow	4	4	8	7	6	6	7	6	2	2	2	7	8	13	13	5	
Orange	0	1	1	1	2	4	3	9	14	3	1	4	4	2	4	10	
Red																	

This heat map is designed to help investors pinpoint priority areas for engagement. We have not assigned a uniform number of green, yellow, orange and red colours across the metrics according to rank. Instead, we have reviewed the results of each metric in detail and assigned the above colours according to the underlying values for each metric.

Green = good performance
 Yellow = reasonable performance
 Orange = monitor performance, possible concern
 Red = area of concern, engage with company

Appendix II: Company summaries - Food & Beverage

Kraft Heinz

Country: USA

Average market cap 2018: US\$ 74 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
KHCUS	9 / 9	9	7	9	9

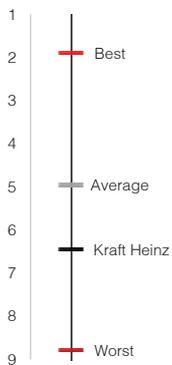
Company strengths

- ▼ Kraft Heinz come second overall in terms of operational physical risks. This is driven by low water consumption intensities at manufacturing sites. Given that the company's portfolio is largely made up of food brands with limited exposure to beverages, it is less exposed to operational water risks than its peers.
- ▼ Kraft Heinz have the lowest operational energy intensity for the sub-sector and the third lowest operational emissions intensity suggesting high levels of operational efficiency.
- ▼ The company has also submitted the largest number of patents per employee for the sub-sector. 36% of these patents refer to operational and processing efficiency improvements.

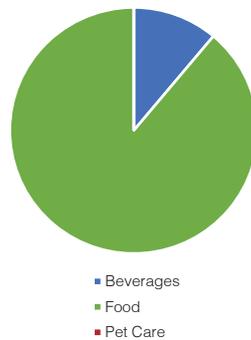
Company Weaknesses

- ▼ Kraft Heinz ranks last in terms of the brand analysis with 8 of its top 10 brands failing to deliver low-carbon innovations.
- ▼ Kraft Heinz ranks last in terms of supply chain physical risks. Its reliance on a range of agricultural commodities including meat and dairy exposes it to higher water related risks and carbon intensities than its peers.
- ▼ The company ranks last in terms of both low-carbon and circular innovation. 61% of the company's low-carbon innovations are considered to be incremental and they deliver no transformative innovations at group level.
- ▼ Kraft Heinz ranks last in terms of renewable energy with no renewable energy consumption, production or target.

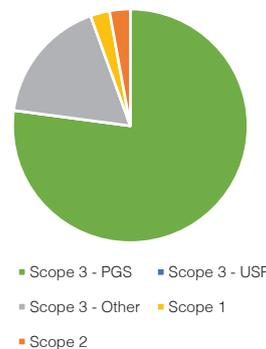
Scope 3 emissions performance weighted rank



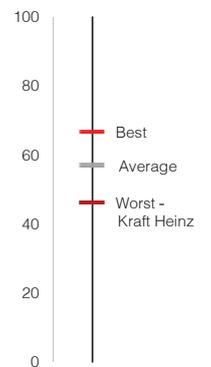
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Mondelez

Country: USA

Average market cap Q3 2018: US\$ 62 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
MDLZ US	8 / 9	8	8	8	8

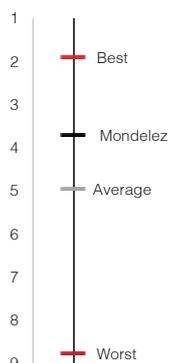
Company strengths

- ▼ Mondelez ranks first in terms of operational energy efficiency, having achieved the largest reduction in energy intensity in manufacturing of almost 5% since 2013.
- ▼ The company's portfolio is largely made up of food brands with limited exposure to beverages. As a result, it is less exposed to operational physical risks and has the lowest water withdrawal and consumption intensity of the sub-sector.
- ▼ Mondelez invests the second highest proportion of revenue into R&D at 1.43%
- ▼ Mondelez ranks fourth in terms of Scope 3 emissions performance with relatively robust calculation methodologies and lower than average intensities for Purchased Goods and Services and Use of Sold Products.

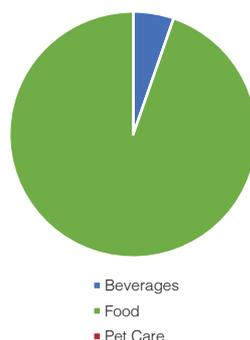
Company Weaknesses

- ▼ Mondelez ranks second last in terms of the brand analysis with 9 of its top 10 brands failing to deliver low-carbon innovations.
- ▼ The company ranks second last in terms of raw material risk performing last in the sub-sector in terms of palm oil exposure. Mondelez is the only company with palm oil exposure which has no target to achieve 100% physical certification of supply.
- ▼ Mondelez ranks second last in terms of renewable energy, sourcing only 2% of total energy consumed from renewable sources and failing to develop a renewable target.
- ▼ Mondelez ranks last in terms of emission reduction targets. The company has set relatively unambitious, short-term targets which cover only Scope 1 and 2 emissions.

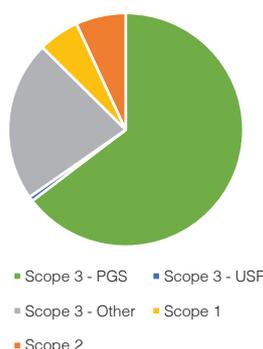
Scope 3 emissions performance weighted rank



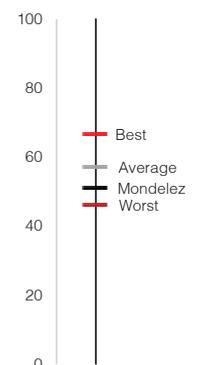
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Coca-Cola

Country: USA

Average market cap Q3 2018: US\$ 193 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
KO US	7 / 9	7	9	4	6

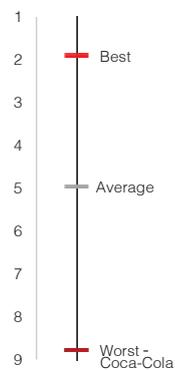
Company strengths

- ▶ Coca-Cola is very innovative relative to its peers, particularly with regards to innovations around packaging. It leads the group in terms of experimentation with circular business models for packaging and in advances in bioplastic development.
- ▶ The company ranks second in terms of the number of patents developed per employee, 80% of these relating to packaging.
- ▶ Coca-Cola ranks second in terms of the brand analysis with 4 of its top 10 brands successfully delivering low-carbon innovations to market, accounting for 65% of top 10 revenue.
- ▶ Coca-Cola ranks second in terms of raw material risk with relatively low exposure to carbon intensive agricultural commodities and no material exposure to palm oil.

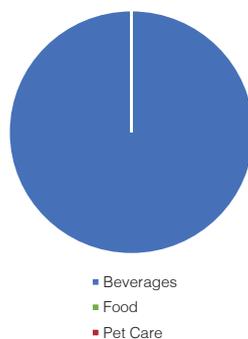
Company Weaknesses

- ▶ Coca-Cola ranks last overall for physical risks due to significant exposure to operational physical risks. As water is a key ingredient in Coca-Cola products, it has the largest water withdrawal and consumption intensities of the group, which are 4 times largest than the next largest consumer.
- ▶ Coca-Cola ranks last in terms of Scope 3 emissions performance. They have the least robust Purchased Goods and Services methodology relying on global averages and the highest intensity for this category.
- ▶ The company has the highest operational emissions and energy intensities of the group and these have risen since 2013.
- ▶ Coca-Cola ranks seventh in terms of emission reduction targets. Its target is relatively unambitious, short-terms and only covers Scope 1 and 2 emissions.

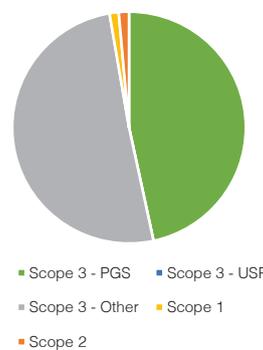
Scope 3 emissions performance weighted rank



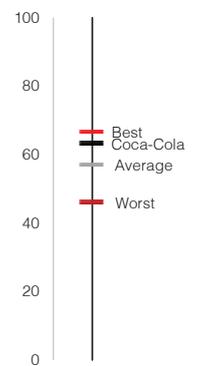
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Heineken

Country: Netherlands

Average market cap Q3 2018: US\$ 58 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
HEIA NA	6 / 9	4	4	6	7

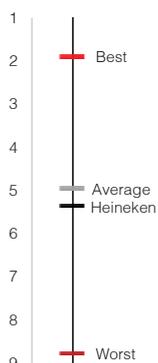
Company strengths

- ▶ Heineken ranks first in terms of operational emissions and energy, having the lowest emissions intensity in its manufacturing and second lowest energy intensity. These have also been reduced by around 4% since 2013.
- ▶ Heineken ranks third in operational physical risk. Despite being a brewer and therefore relatively more exposed to water risks in manufacturing, the company operates in relatively less water stressed sites and has the second lowest water consumption and withdrawal intensity of the pureplay beverage companies.
- ▶ Heineken performs well in terms of renewable energy with the fourth highest proportion of renewable energy consumption and the third highest proportion of renewable energy production.
- ▶ Heineken has comprehensive emission reduction targets, setting both intensity and absolute targets covering Scope 1, 2 and 3.

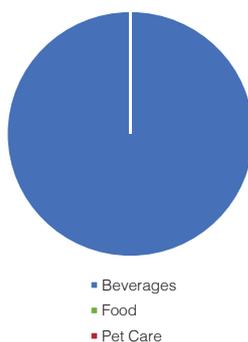
Company Weaknesses

- ▶ Heineken ranks sixth in terms of Scope 3 disclosure methodology. Both Purchased Goods and Services and Use of Sold Products calculations cover only 80% of beverage production and don't involve direct engagement with suppliers or customers.
- ▶ The company ranks seventh in terms of water governance despite water risks being material to manufacturing. Water related issues are not integrated into any part of the company's long-term strategic plan.
- ▶ Heineken ranks second last in terms of circular innovation and packaging. While it has piloted circular packaging schemes, these experiments have been small in scale and it has done very little packaging redesign and innovation beyond that.
- ▶ The company ranks second last in the strategy analysis. It does not conduct scenario analysis, is not an approved supporter of the TFC and does not have a internal carbon price.

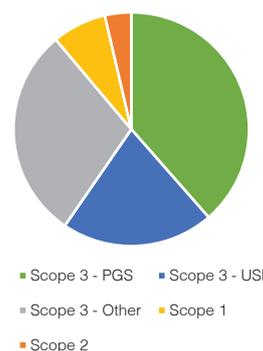
Scope 3 emissions performance weighted rank



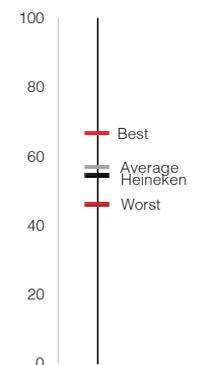
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Diageo

Country: UK

Average market cap Q3 2018: US\$ 87 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
DGE LN	5 / 9	6	1	5	3

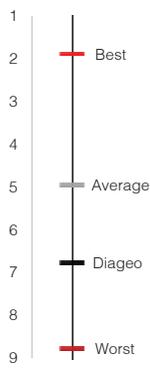
Company strengths

- Diageo rank first overall for the sub-sector in terms of Physical Risk. They are less exposed to supply chain physical risk due to a reliance on a small suite of relatively low water risk commodities.
- While operational water risk is material, they operate in relatively low water stress regions, and have the lowest water withdrawal and consumption intensities of the pureplay beverage companies. They also have the most comprehensive water targets of the group.
- Diageo leads the sub-sector in terms of renewable energy with 30% of energy consumption being sourced from renewable sources, 25% of which is self-generated.
- Diageo also ranks first in terms of emission reduction targets having set ambitious absolute emission reduction targets covering Scope 1, 2 and 3.

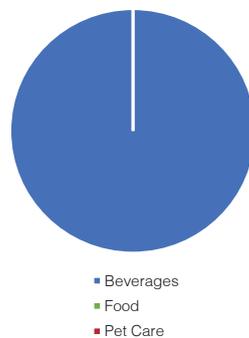
Company Weaknesses

- Diageo ranks second last in terms of Scope 3 emissions performance. While they have a relatively low Purchased Goods and Services intensity they fail to disclose Use of Sold Products.
- Diageo ranks sixth in the brand analysis with 7 top 10 brands failing to deliver low-carbon innovations. These brands account for 61% of top 10 revenue.
- Diageo ranks second last in terms of low-carbon innovation. Only 3% of low-carbon innovations are considered to be transformative and no transformative innovations have been deployed at group level.
- Diageo ranks second last in terms of board-level climate expertise with only one member of the board with low climate competency.

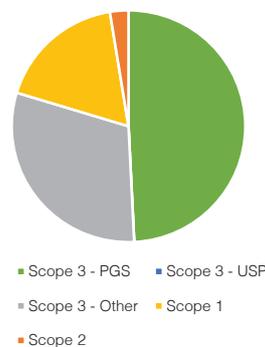
Scope 3 emissions performance weighted rank



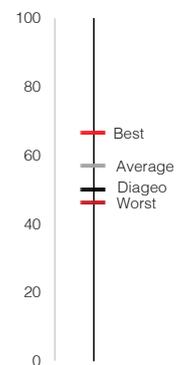
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



PepsiCo

Country: USA

Average market cap Q3 2018: US\$ 156 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
PEP US	4 / 9	2	5	7	4

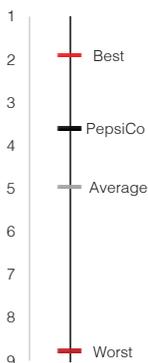
Company strengths

- PepsiCo ranks second in terms of Transition Risk due to strong Scope 3 emissions disclosure and low Use of Sold Products intensity.
- PepsiCo also perform well in business resilience, ranking second in terms of risk management processes.
- PepsiCo rank first in terms of downstream physical risk. They are only of only four companies that disclose country level revenue breakdowns allowing this to be assessed at granular level.
- PepsiCo ranks second in terms of strategy development. It is an official supporter of the TCFD, has a science-based emission reduction target and engages across the value chain with suppliers and consumers.
- The company ranks fourth in terms of emission reduction targets. It has set ambitious, relatively long-term absolute targets covering Scope 1, 2 and 3 emissions.

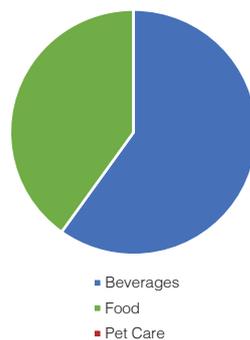
Company Weaknesses

- The company ranks joint third last with Mondelez in terms of low-carbon innovation with only 3% of low-carbon innovations being considered transformative. Of these transformative innovations none were deployed across the group.
- PepsiCo performs poorly in terms of renewable energy with only 3% of total energy consumption being sourced from renewables. The company also does not have a renewables target.
- The company have the third lowest EBITDA margins of the group although this has been on an improving trend over the last five.
- PepsiCo perform poorly in terms of operational emissions and energy, ranking seventh in terms of current operational emissions and energy intensities.

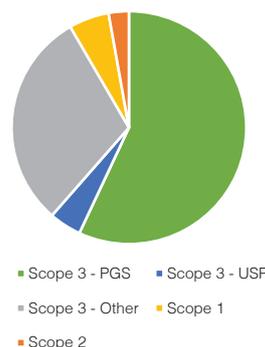
Scope 3 emissions performance weighted rank



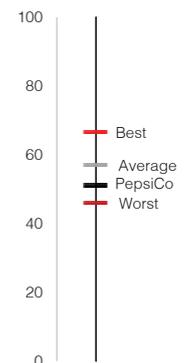
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



AB InBev

Country: Belgium

Average market cap Q3 2018: US\$ 194 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
ABI BB	3 / 9	5	2	3	5

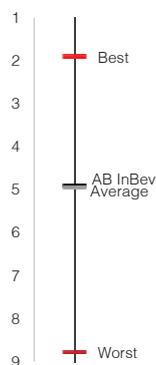
Company strengths

- AB InBev is relatively innovative, ranking first in terms of low-carbon innovation. They lead the group in terms of the scale of their innovations with 50% of low-carbon innovations being deployed at group level.
- AB InBev ranks first in terms of raw material risk. As a brewer they are reliant on a small suite of commodities with low-carbon and land use intensities. They also have no exposure to palm oil.
- This also drives strong performance in supply chain physical risk as the small suite of commodities AB InBev relies on are not associated with high water risks. They rank first for this metric.
- The company has the strongest water governance processes in the sub-sector conducting annual water risk assessments which feed into long-term strategic planning.

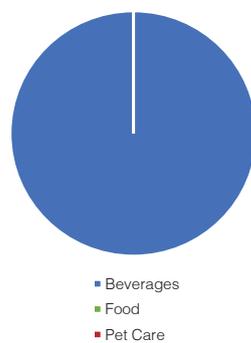
Company Weaknesses

- AB InBev ranks sixth in terms of business resilience. They have less robust risk management processes and do not quantify financial impacts associated with several substantive risks.
- AB InBev performs poorly in terms of packaging governance. It does not provide comprehensive packaging disclosure and has only one relatively unambitious packaging target.
- The company ranks second last in terms of R&D spend, investing less than 0.5% of revenue in R&D.
- AB InBev ranks sixth in terms of the strategy analysis. They are no official supporters of the TCFD, do not use an internal carbon price and do not engage with their consumers on climate.

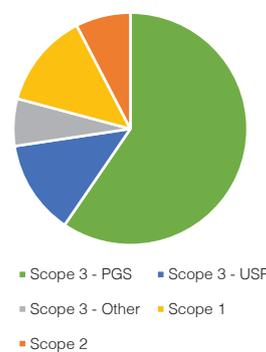
Scope 3 emissions performance weighted rank



2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Nestlé

Country: Switzerland

Average market cap Q3 2018: US\$ 250 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
NESN SW	2 / 9	1	6	2	2

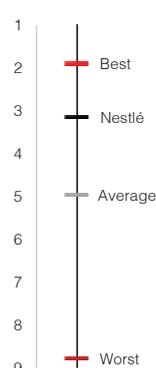
Company strengths

- Nestlé ranks first in terms of Transition Risk driven by strong performance in Scope 3 emissions, business resilience and brand analysis.
- It ranks first for in the brand analysis due to having a very diversified portfolio of brands. Four of its top 10 brands have delivered low-carbon innovations to market accounting for 62% of top 10 revenues.
- Nestlé ranks second in terms of Transition Opportunities, performing third best in terms of both low-carbon and circular innovation. The company also has the highest R&D expenditure of the sub-sector at nearly 2%.
- Nestlé ranks second in terms of Climate Governance & Strategy, leading the sub-sector in terms of strategy development. The company is an official supporter of the TCFD, has a science-based target, engages across their value, conducts extensive life-cycle analysis and uses an internal carbon price.

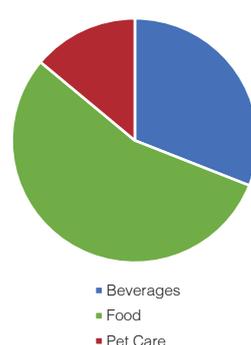
Company Weaknesses

- Nestlé ranks last in terms of raw material risk. As a diversified Food & Beverage company, it is reliant on a wide range of agricultural commodities including meat and dairy, associated with relatively high carbon and land use intensities. It also has the lowest percentage (25%) of physically certified palm oil supply.
- Its diversification also drives high exposure to supply chain physical risks due to a reliance on high water risk commodities.
- The company ranks sixth in terms of water governance. They report on the water use and management of less than 1% of their suppliers.
- Nestlé ranks sixth in terms of emission reduction targets. While they have an absolute target covering Scope 1, 2 and 3 emissions, this is less ambitious in terms of the absolute reduction compared to a number of their peers.

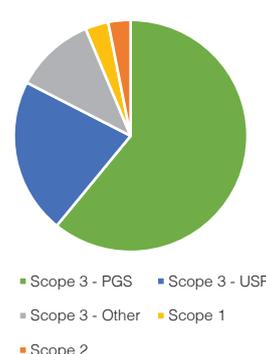
Scope 3 emissions performance weighted rank



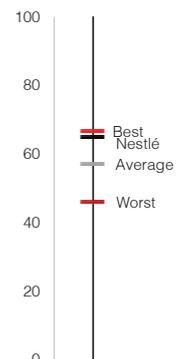
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Danone

Country: France

Average market cap Q3 2018: US\$ 53 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
BN FP	1 / 9	3	3	1	1

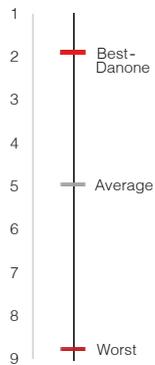
Company strengths

- ▼ Danone ranks first in terms of Scope 3 emissions. They have developed the most robust calculation methodology for Purchased Goods and Services based on a tool developed in collaboration with the French Livestock Institute.
- ▼ The company ranks first in terms of water governance due to having a comprehensive water management approach which involving engagement with over 75% of suppliers.
- ▼ Danone are highly innovative ranking second in terms of low-carbon innovation and first in terms of circular innovation. 30% of their low-carbon innovations were considered to be transformative and 67% of these were rolled out at group level.
- ▼ The company ranks first in terms of Climate Governance & Strategy driven by strong performance in strategy development, emissions reduction targets and remuneration.
- ▼ They are the only company in the sub-sector to provide an LTI with 20% of executives LTI linked to their CDP score

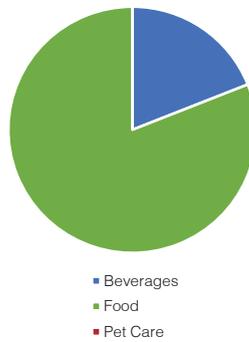
Company Weaknesses

- ▼ Danone ranks seventh in the brand analysis. Six of their highest revenue earning brands have not delivered low-carbon innovations to market, account for 65% of top 10 revenue.
- ▼ Danone ranks seventh in terms of operational emissions and energy. Both emissions and energy use in their manufacturing facilities have risen over a five-year period.
- ▼ Danone ranks seventh in terms of supply chain physical risk. A heavy reliance on dairy products exposes them to risks associated with water stress in their supply chain.
- ▼ This also drives Danone's performance in raw material risk where it ranks sixth. Dairy is associated with higher carbon and land use intensities that many other crops and therefore raw material intensities are high.
- ▼ Danone ranks fifth in terms of the patent analysis, filing a relatively low amount of low-carbon patents associated with ingredients and formulation.

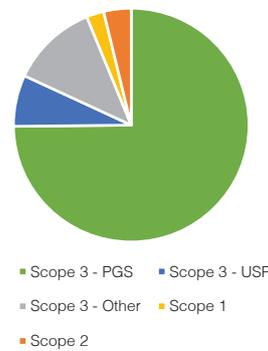
Scope 3 emissions performance weighted rank



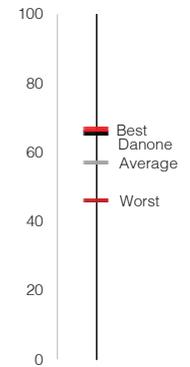
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Company summaries - Household & Personal Care

Estée Lauder

Country: USA

Average market cap Q3 2018: US\$ 51 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
EL US	7 / 7	5	5	7	7

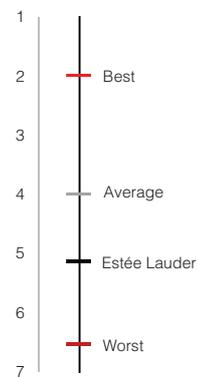
Company strengths

- Estée Lauder ranks third in terms of the brand analysis. Six of its higher revenue earning brands have delivered low-carbon innovations to market accounting for 85% of top 10 revenue.
- Estée Lauder ranks second in terms of operational emissions and energy. They have relatively low current emissions and energy levels and have delivered reductions in operational emission over a five-year period.
- Estée Lauder perform well in terms of supply chain physical risks. They have low exposure to water risks in their supply chain due to a reliance on a limited suite of agricultural commodities.
- Estée Lauder have lower exposure to downstream physical risks, ranking third. They do not have high proportions of revenue coming from very water stressed regions.

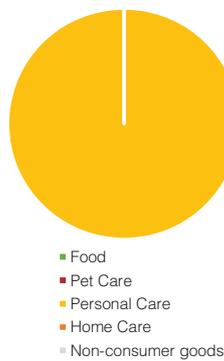
Company Weaknesses

- Estée Lauder comes second last in terms of Scope 3 emissions performance. Its Use of Sold products methodology is particularly weak, measuring only the emission associated with aerosols excluding emissions relating to water use in the consumption phase.
- The company also ranks second last in terms of business resilience driven by poor performance in the risk management analysis and relatively low EBITDA margins.
- Estée Lauder ranks last in terms of both low-carbon and circular innovation. It has failed to deliver any transformative low-carbon innovations at group level.
- It ranks last overall in terms of Climate Governance and Strategy driven by poor performance in strategy. It does not conduct scenario analysis, does not have an approved SBT, is not an official supporter of the TCFD, does not engage extensively across the value chain and does not have an internal carbon price.

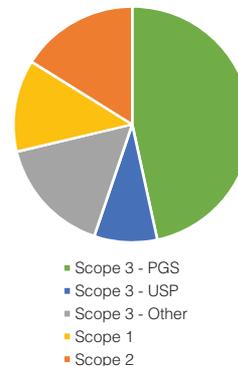
Scope 3 emissions performance weighted rank



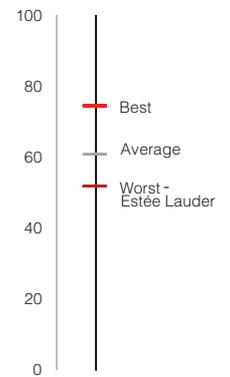
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



P&G

Country: USA

Average market cap Q3 2018: US\$ 207 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
PG US	6 / 7	7	7	5	5

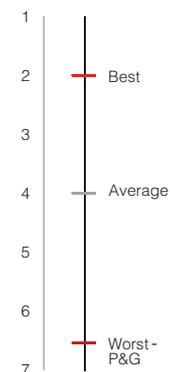
Company strengths

- P&G ranks third in terms of facility level water stress. It operates in areas of relatively low water stress and has good disclosure where operational water stressed risks are present compared to a number of its peers.
- P&G ranks second in R&D spend with the second highest level of expenditure at nearly 3% of sales. This has also increased over a five year period.
- P&G has also submitted the second highest number of patents per employee with over 70% of patents focusing around ingredients and reformulation.
- P&G ranks third in terms of board-level climate expertise. Three members of the board have some form of climate competency, two are considered to have limited relevant experience and one is considered to have a high level of relevant experience.

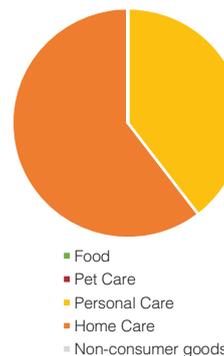
Company Weaknesses

- P&G ranks last for Transition Risks driven by poor performance in Scope 3 emissions and the brand analysis
- Their calculations for both Use of Sold Products and Purchased Goods and Services rely on 2015-16 financial data and are not updated annually.
- P&G also ranks last in terms of Physical Risks. It is relatively more exposed to supply chain physical risks due to a reliance on timber to supply its paper products business. It also has a higher proportion of revenue coming from water stressed markets than many of its peers exposing them to downstream physical risks.
- P&G ranks last in terms of emission reduction targets. It is one of only two companies in the sub-sector that have failed to set a Scope 3 emissions reduction target and its Scope 1 and 2 target is relatively unambitious.

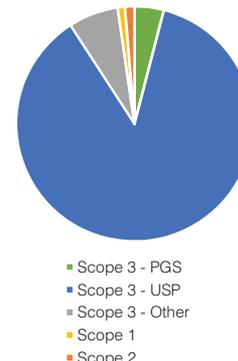
Scope 3 emissions performance weighted rank



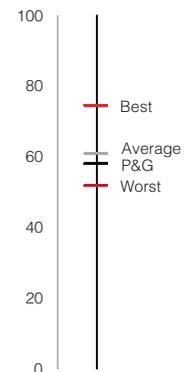
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



RB

Country: UK

Average market cap Q3 2018: US\$ 60 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
RB / LN	5 / 7	6	6	6	3

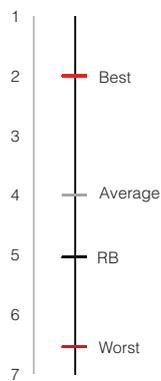
Company strengths

- RB ranks first in terms of operational emissions and energy. It has the third lowest manufacturing emissions and energy intensities and has achieved the highest reduction in the sub-sector over a five year period.
- RB ranks second in terms of operational physical risks. It operates in areas of relatively low water stress and has good disclosure where operational water stressed risks are present compared to a number of its peers. It also has the second lowest water consumption intensity.
- RB ranks third in terms of Climate Governance and Strategy driven by strong performance in our strategy analysis. It conducts quantitative and qualitative scenario analysis, extensive life-cycle analysis and has a strong internal carbon price.

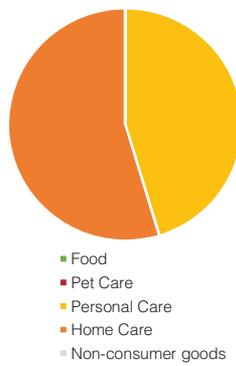
Company Weaknesses

- RB ranks second last in Transition Risks driven by poor performance in business resilience. Despite having the highest current free cash flows and EBITDA margins, it ranks last for risk management.
- RB also ranks second last in terms of Physical Risks. It is relatively more exposed to supply chain physical risks due to its paper products business. It also has a higher proportion of revenue coming from water stressed markets than many of its peers, ranking last in terms of downstream physical risk.
- RB ranks second last in terms of Transition Opportunities driven by poor performance in low-carbon and circular innovation. 50% of innovations are considered to be incremental and only one transformative innovation is deployed at group level.

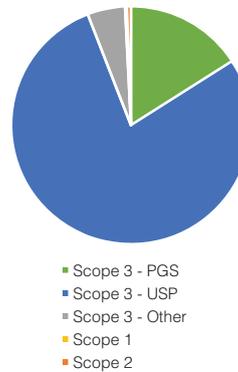
Scope 3 emissions performance weighted rank



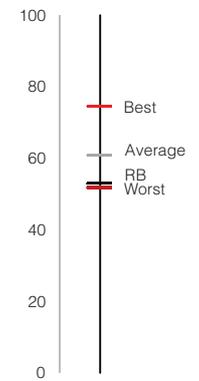
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Henkel

Country: Germany

Average market cap Q3 2018: US\$ 51 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
HEN GY	4 / 7	3	4	3	6

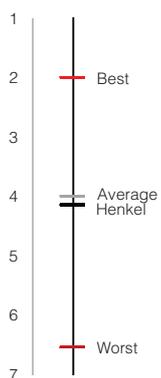
Company strengths

- Henkel ranks third in terms of Transition Risk leading the group in the brand analysis. This is predominately driven by its diversified brand portfolio in which no top 10 brand drives a significant proportion of group revenues.
- It also leads the group in terms of raw material risk driven by strong palm oil management and due to being exposed to a limited suite of agricultural commodities. This also drives good performance in supply chain physical risks for which it ranks second.
- Henkel ranks third for Transition Opportunities, achieving second place for patent analysis and third place for low-carbon innovation. 87% of low-carbon innovations were considered to be either radial or transformative and nearly 90% of patents submitted were focused around ingredients and reformulation.

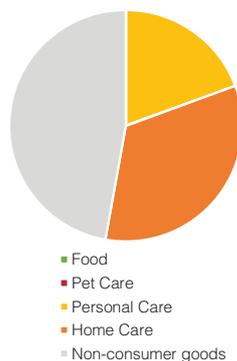
Company Weaknesses

- Henkel ranks second last in terms of water governance and targets. Its water data collection mechanisms and risk management processes are less comprehensive than most of its peers.
- It also ranks fifth in terms of downstream physical risk due to having a higher proportion of revenue coming from water stressed markets than many of its peers.
- Henkel ranks second last in terms of Climate Governance and Strategy. Poor performance in strategy development is underpinned by it failing to conduct scenario analysis, set an approved SBT, officially support the TCFD and use an internal carbon price.
- It also ranks second last in terms of board & executive climate management with three members of the board having low to medium levels of climate expertise.

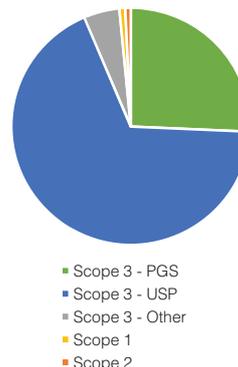
Scope 3 emissions performance weighted rank



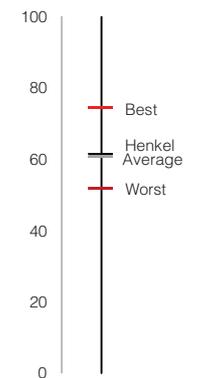
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Colgate-Palmolive

Country: USA

Average market cap Q3 2018: US\$ 58 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
CL US	3 / 7	2	3	4	4

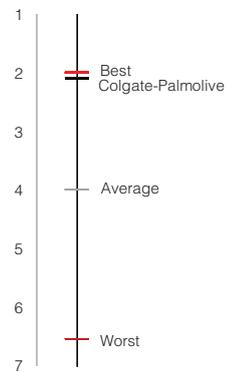
Company strengths

- Colgate-Palmolive ranks second in terms of Transition Risks driven by strong performance in Scope 3 emissions and business resilience.
- Colgate-Palmolive leads the group in the development of its Use of Sold Products methodology which uses country level consumer insight data resulting from consumer surveys.
- Colgate-Palmolive ranks first in terms of water governance and targets. Its water risk management processes are thorough, integrated into strategic planning and involve value chain engagement.
- Colgate-Palmolive ranks third in terms of circular innovation and packaging. It has three packaging related targets and is investing in product redesign to reduce packaging impacts.

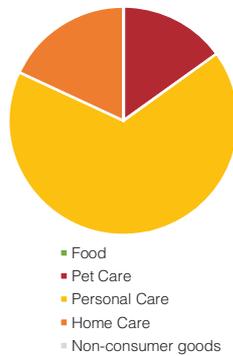
Company Weaknesses

- Colgate-Palmolive ranks second last in terms of raw material risks due to a reliance on meat and dairy products to supply its Pet Care business.
- This also drives poor performance in supply chain physical risks as use of meat and dairy exposes the company to greater water related risks compared to its peers which rely on a smaller suite of agricultural commodities.
- Colgate-Palmolive ranks last in terms of renewable energy. It sources only 9% of total energy consumed from renewables, produces no renewables itself and has the least ambitious renewables target of the sub-sector.

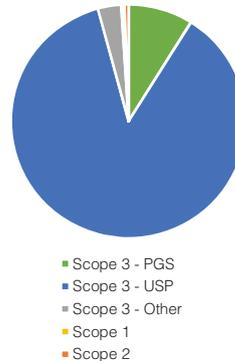
Scope 3 emissions performance weighted rank



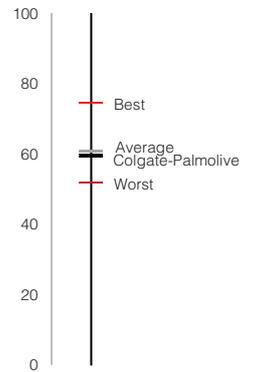
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



L'Oréal

Country: France

Average market cap Q3 2018: US\$ 130 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
OR FP	2 / 7	1	1	2	2

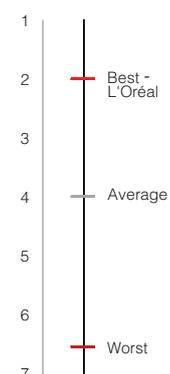
Company strengths

- L'Oréal ranks first in Transition Risk leading the group in Scope 3 emissions and business resilience. The company has relatively low Scope 3 emissions intensities coupled with sophisticated methodologies for Purchased Goods and Services and Use of Sold Products.
- The company ranks first in terms of Physical Risk, having the lowest exposure to supply chain and operational physical risks.
- L'Oréal ranks second in terms of Transition Opportunities leading the group in the integration of renewables into the business with over 50% of energy requirements being sourced from renewables. In addition it ranks second in terms of both low-carbon and circular innovation.
- The company also ranks second in terms of Climate Governance and Strategy, leading the group in target development.

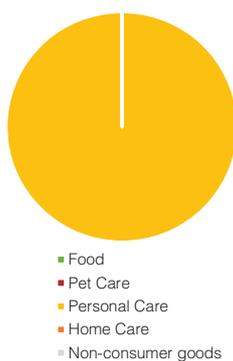
Company Weaknesses

- L'Oréal ranks last in terms of the brand analysis. Five of its top 10 brands are considered to be 'business as usual brands' including a number of high revenue earners which account for 44% of total revenue generated by the top 10 group.
- L'Oréal ranks fourth in terms of downstream physical risks deriving a relatively higher proportion of revenue from water stressed regions compared with a number of its peers.
- The company ranks fifth in terms of operational energy driven by increasing operational energy intensities over the five year period.

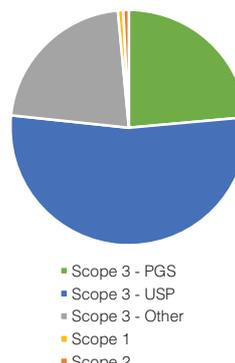
Scope 3 emissions performance weighted rank



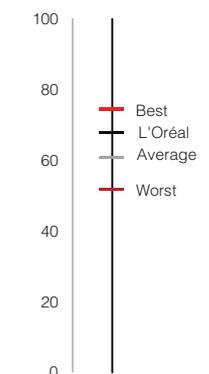
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



Unilever

Country: UK

Average market cap Q3 2018: US\$ 161 bn

Ticker	League Table rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
ULVR LN / UNA NA	1 / 7	4	2	1	1

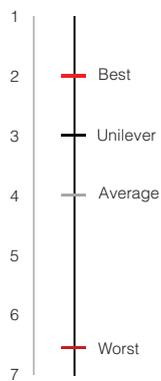
Company strengths

- Unilever ranks second in terms of Physical Risk with the lowest exposure to downstream physical risk.
- Unilever ranks first in terms of Transition Opportunities leading the group in low-carbon and circular innovation and renewable energy. It is responsible for almost 70% of the transformative innovations delivered by the sub-sector.
- Unilever ranks second in terms of the brand analysis. Seven of its top 10 brands have delivered low-carbon innovations to market accounting for 77% of top 10 revenue.
- Unilever ranks first in terms of Climate Governance and Strategy. It leads in strategy development with its climate work being bolstered by extensive scenario analysis, value chain engagement, and a strong internal carbon price.

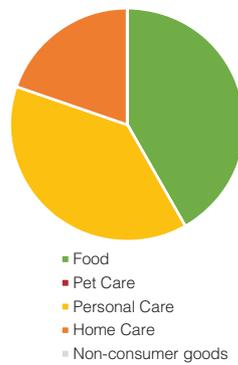
Company Weaknesses

- Unilever also ranks last in terms of raw material intensity. As a diversified business which also has a food division it is reliant on a much larger range of agricultural commodities than its pureplay Household & Personal Care peers. This drives greater exposure to carbon and land use intensive commodities.
- This also underpins its last place ranking in supply chain physical risk. A reliance on agricultural commodities such as meat, dairy and tea exposes the company to higher water related risks in its supply chain.
- Unilever ranks last in terms of operational emissions and energy. It has higher than average energy intensities and both energy and emissions intensities have grown over a five year period.

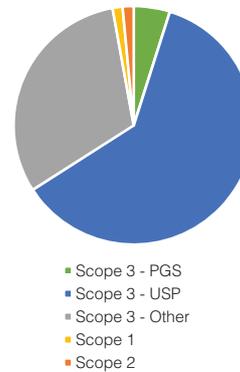
Scope 3 emissions performance weighted rank



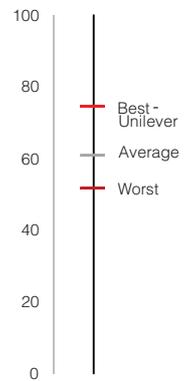
2017 Revenue split by business area



Emissions split by category



Low-carbon innovation score



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