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Science & Technology in childhood Obesity Policy

Science & Technology in childhood Obesity Policy

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Dissemination Level

PU	Public	☒
PP	Restricted to other programme participants (including the Commission Services)	

RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Abbreviation	Definition
ATNI	Access to Nutrition Initiative
BIA-Obesity	Business Impact Assessment on Obesity and Population Nutrition BIA-Obesity
BMI	Body Mass Index
CR4	four firm concentration ratio: The combined market share of the four biggest firms active in the market and country
ESM	European Single Market
EU	European Union
GBO	Global Brand Owner
HHI	Herfindahl-Hirschman Index: The summation of the squared market share of the firms active within the market and country
IFBA	International Food and Beverage Alliance
INFORMAS	The International Network for Food and Obesity / Non-communicable Diseases (NCDs) Research, Monitoring and Action Support
NBO	National Brand Owner
NCDs	Non-communicable Disease
QSR	Quick service restaurant
WHO	World Health Organization

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1 Overview

A number of governments and public health agencies have been urging the food industry to contribute to the development of a better food environment through changes in the quality and variety of foods and through changes in advertising and marketing practices, and some governments are partnering with the food industry and the retail sector to generate changes on the supply side. The work in this particular task is based on the framework from the International Network for Food and Obesity/NCDs Research Monitoring and Action Support (INFORMAS) and will involve the use of key INFORMAS tools, particularly the Business Impact Assessment on Obesity and Population-level Nutrition (BIA-Obesity), to generate comparisons across countries, stimulate industry engagement and ensure accountability.

In the first part of this deliverable, the results of a detailed mapping of the food industry in the European single market are outlined. Similarities and differences in market structure across countries and industries in the European Single Market were analysed. This study forms an important basis to understand key aspects of market structure of the European food industry, observing clear differences between food industries and European Single Market member states. This has potential implications for the implementation of food environment policies at different levels of jurisdiction.

In order to connect the companies with the largest market share per food industry with their nutritional commitments and performance to identify gaps between commitments and performance and point out areas that could be improved by the implementation of nutrition policies, in the second part of the deliverable, the Business Impact Assessment on Obesity and Population Nutrition (BIA-Obesity) was implemented and analyzed for companies, including packaged food and non-alcoholic beverage manufacturers, quick service restaurants (QSR) and supermarkets, at the European level. Companies' publicly available commitments in 2020 were quantitatively assessed. In addition, the proportion of sales from ultra-processed and ‘unhealthy’ food categories (product categories not-permitted to be marketed to children) and over time changes in the number of QSR transactions and QSR were calculated.

Further work, to be released later during the STOP project (not part of this deliverable), includes results from two case studies for Belgium and France, where the BIA-Obesity was implemented and analysed at the national level.

This allowed to engage with companies in relation to their scores, and to add some more detailed performance metrics (i.e. healthiness of company’s portfolios) to the analyses (not available at the European level).

Science and Technology in childhood Obesity Policy

A detailed mapping of the food industry in the European single market

Abstract

Background: Food environments are influenced by different food industries (packaged food and non-alcoholic beverage manufacturers; supermarkets and quick service restaurants). An important source of this influence is the significant market power held by a limited number of food companies. Market structure analysis, as part of a broader market power research agenda, has received limited attention from the public health community. The aim of this study was to analyse similarities and differences in market structure across countries and industries in the European Single Market.

Methods: The companies with the largest market share at the national level for each industry were identified from Euromonitor sales data in 2017/18. The market structure was assessed by the following metrics: the number of global brand owners with ≥1% market share per country, the number of companies unique for one European Single Market member state, the most sold packaged food and non-alcoholic beverage categories, the number of quick-service restaurants and supermarkets per 1000 inhabitants and market concentration by means of the Herfindahl-Hirschman Index (HHI) and the four firm concentration ratio (CR4). CR4-values > 40% and HHI-values > 2000 indicate concentrated markets with limited competition.

Results: The leading packaged food and non-alcoholic beverage manufacturers and the most sold food and beverage product categories were similar across countries in Europe. The observed levels of concentration were however different. Average CR4-values ranged from 21% to 72% among packaged food product markets and 60% to 76% for non-alcoholic beverage product markets. Average CR4-values for quick service restaurants and supermarkets were 50% and 60%, respectively. Across European countries the same leading quick-service restaurants were identified, while this was not the case for supermarkets.

Conclusions: This study forms an important basis to understand key aspects of market structure of the European food industry, observing clear differences in levels of concentration between food industries and European Single Market member states. This has potential implications for the implementation of food environment policies at different levels of jurisdiction.

Background

Since the second world war, diets and lifestyles in Europe have significantly changed together with the development of the European Single Market (ESM) [1]. In 2016, on average, 59% of the European adult population was classified as being overweight (Body Mass Index, BMI ≥ 25kg/m^2) [2,3]. Overweight is often seen as an issue of individual responsibility, but there are important determinants, such as those related to food environments, that are beyond the control of the individual [4–8].

Food environments are generally defined as: “The collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people’s food and beverage choices and nutritional status” [9]. In many areas around the world, current food environments can be described as environments that make the less healthy food choices the easiest choices, as less healthy foods are often more available, heavily marketed and cheaper [10]. Food companies, including food and beverage manufacturers, supermarkets and quick service restaurants, are considered to play a substantial role in shaping food environments [9,11,12]. Food companies directly influence food environments by manufacturing, distributing and marketing food products that are made available to consumers. Food companies also indirectly influence food environments, such as through the deployment of political strategies that serve to shape and influence public opinion and political decision making [12–14]. An important source of this influence – both direct and indirect - on food environments is the significant market power held by a limited number of food companies [12,13,15]. Substantial market power can confer dominant food companies with the ability to structure food retail environments and food supply chains to suit their own private interests, and can also allow for the generation of considerable profits above what would be possible in a competitive market environment. These profits can then be used to fund practices that undermine public health (e.g. lobbying, intense marketing) [16,17].

An important step in examining market power is to analyse the market structure in which firms operate [18]. Although market structure analysis alone does not provide a complete picture of the extent of market power held by firms, it is nevertheless useful in understanding the structural power of firms relative to other market-based actors. Market concentration, in particular, is an informative market structure metric, which, for decades, has been considered a key component of market structure analysis [19]. As market concentration increases, the level of competition in the market generally decreases.

In turn, given the inverse relationship between competition and market power, a decrease in the level of competition in a market is generally considered to increase the market power of incumbent companies [18,20]. However, market structure analysis has not received much attention by the public health community.

This study sets out to analyse similarities and differences in market structure across countries and industries (i.e. packaged food and non-alcoholic beverage manufacturers, supermarkets and quick service restaurants) in the European Single Market (ESM). Following metrics were used: the number of food companies with ≥1% market share per country, the number of companies unique for one ESM member state, the most sold packaged food and non-alcoholic beverage categories, the number of quick-service restaurant and supermarket outlets per 1000 inhabitants; and market concentration measured by the Herfindahl-Hirschman Index (HHI) and the four firm concentration ratio (CR4) [18,21] . Potential implications of the similarities and differences in market structure across countries and industries for the implementation of policies to improve the food environment at national and European level are discussed.

Methodology

A. Selection of countries

Sales and market share data from all countries within the European Single Market (European Union's 28 member states (including the UK at the time of date collection) and 4 EFTA – European Free Trade Association – members, ESM) were included. The Euromonitor International Passport Global Market Information Database was found to have the best available data for the majority of the selected countries and product markets. Euromonitor is the world's leading independent provider of strategic market research and collects volume sales data from various sources including trade associations, industry bodies, company financial reports, and official government statistics. These data are validated by food industry representatives.

For this study, data were obtained at the most fine-grained level (212 food subgroups in total) over the period 2009 – 2018 for packaged food and non-alcohol beverage manufacturers and supermarkets and over the period 2008-2017 for quick service restaurants [21].

For the following member states no Euromonitor data were available: Cyprus, Iceland, Liechtenstein, Luxembourg and Malta. As a result, a total of 27 EU countries were included in this study. For these 27 countries Euromonitor data for both packaged food and non-alcoholic beverage manufacturers and supermarkets were available. For quick-service restaurants, data were only available for 22 out of these 27 member states, of which eight (36%) were in Eastern Europe. Thus, for analyses related to quick service restaurants, Croatia, Estonia, Latvia, Lithuania and Slovenia were excluded.

B. Selection of food companies

To obtain a comprehensive overview of the food industry within the ESM, packaged food manufacturers, non-alcoholic beverage manufacturers, quick service restaurants and supermarkets were included in the analysis. Supermarkets were considered both as food and beverage manufacturers, through own-brand products placed on the market, as well as retailers. All food companies with ≥1% market share in at least one of the ESM member states were included. For each food industry, the company with the largest market share at the country level (hereinafter referred to as the leading company), as determined by Euromonitor sales and market share data, was identified. Country-level data on actual and percent retail sales values were sourced for both the national brand owners and the global brand owners. Throughout the article national brand owners were considered as those companies that have the rights to produce or distribute brands within a country (own brands or through licensing agreements) while global brand owners were considered as the ultimate brand owners, as defined by Euromonitor [22].

For quick service restaurants the Euromonitor category 'Chained Consumer Foodservice' and for supermarkets the Euromonitor category 'Grocery Retailers' was used. The average number of companies included per industry is presented in Table 1. Chained Consumer Foodservice is defined in Euromonitor by 10 or more units. An exception is made for international chains that have a presence of fewer than 10 units in a country. In this case, they are still considered to be chained units. Grocery Retailers are defined as selling predominantly food/beverages/tobacco and other everyday groceries. This is the aggregation of hypermarkets, supermarkets, discounters, convenience stores, independent small grocers, chained forecourt retailers, independent forecourt retailers, food/drink/tobacco specialists and other grocery retailers.

C. Data Analysis

Analyses were conducted separately for the four food industries using SAS 9.4 (Cary, USA, 2018). At time of data collection, in 2019, the latest available Euromonitor data were used, namely 2018 for packaged food manufacturers, non-alcohol beverage manufacturers and supermarkets and 2017 for quick service restaurants. Earlier data were used to observe changes over time, where relevant. An overview of all metrics used to assess aspects of market structure and their respective interpretation can be found in Table 2.

Data were first analysed by country and industry to obtain an overview of the market similarities and differences throughout the ESM. To compare market structure between food industries and across member states, analyses were conducted to identify the leading companies, and their respective market share for both national and global brand owners. In addition to the leading companies, the number of global brand owners with ≥1% market share and the number of unique companies per country and per food industry were identified to assess potential differences across countries. Unique companies were defined as companies having presence in only one ESM member state. The higher the number of global brand owners with ≥1% market share and the higher the number of unique companies, the more diverse the actors active within the respective food industry were assumed to be.

Additionally, data were pooled to obtain the total sales per global brand owner and product category across the ESM and as such identify companies that may not have appeared as leading company at national level, but overall hold a substantial market share at the European level. This was done by adding up the actual retail values per member state by year, by product category and by global brand owner.

Other analyses were conducted specific for different food industries. For packaged foods and non-alcoholic beverages, including own-brand products sold by supermarkets, the top three most sold product categories per country were identified based on retail sales value to understand whether these are similar throughout the ESM. For packaged foods, the 14 product categories based on Euromonitor's food categorization system were included, namely: 'Ready meals'; 'Sauces', 'Dressings and condiments'; 'Soup'; 'Sweet spreads'; 'Dairy'; 'Confectionery'; 'Ice cream and frozen desserts'; 'Savoury snacks'; 'Sweet biscuits', 'Snack bars and fruit snacks'; 'Baked goods'; 'Breakfast cereals'; 'Processed fruit and vegetables'; 'Processed meat and seafood'; and 'Rice, pasta and noodles'.

For non-alcoholic beverages, eight different product categories according to the Euromonitor 's food categorization system were included, namely: 'Carbonates'; 'Concentrates'; 'Juice'; 'Ready-to-Drink Coffee'; 'Ready-to-Drink Tea'; 'Energy drinks'; 'Sports drinks' and 'Asian speciality drinks'. The most sold product categories by retail sales value at the country level were in turn compared with the pooled data at the European level. The contribution of each product category to the total European sales of packaged foods and non-alcoholic beverages was calculated.

For both quick-service restaurants and supermarkets the number of outlets per 1000 inhabitants was obtained and compared between member states.

Specifically, for quick-service restaurants, data pertaining to the dominant type of quick-service restaurant, the amount of annual fast food transactions per 1000 inhabitants and the preferred way of ordering and eating fast food (i.e. eat in, take away, home delivery, drive through) per country were retrieved. Lastly, for supermarkets, the contribution of supermarket own-brand products to the overall sales of packaged foods and non-alcoholic beverages was examined for each country.

To assess levels of market concentration, the Herfindahl-Hirschman Index (HHI) and the four firm concentration ratio (CR4) were calculated. This was done by country for specific product markets within the packaged food and non-alcoholic beverage industries and for quick-service restaurants and supermarkets. Product markets were selected using Euromonitor's food categorization system, as highlighted above [23]. The HHI (calculated by summing the squared market shares) takes into account the market share of all players (with ≥1% market share) in the market. In comparison, the CR4 considers the combined market share of the four biggest firms active in the market. For the HHI the cut-off values as defined by the European Union (EU) merger regulations in 2004 (2004/C 31/03) were applied, with HHI-values below 1000 indicating unconcentrated markets and HHI-values above 2000 indicating concentrated markets [24]. CR4 values below 40% were in turn considered to represent a competitive market, values between 40% and 60% a market with limited competition and values above 60% were considered to indicate markets with limited competition and dominant firms in place [25]. An overview of the interpretation of the market concentration indices is given in Table 2.

In addition to the latest concentration indices in 2018 (2017 for quick service restaurants), the percent change of the HHI and the CR4 were calculated over the past 10 years (since 2009 for packaged food and non-alcoholic beverage manufacturers and since 2008 for quick service restaurants).

Results

A. Packaged food manufacturers

The top three most sold product categories in every member state of the ESM comprised of at least two of the three following product categories: ‘Dairy’ , ‘Baked goods’, and ‘Processed meat and seafood’ , contributing respectively 24%, 18% and 15% to the overall European sales of packaged foods. ‘Dairy’ ranked as the most sold product category in 81% of the member states and ‘Baked goods’ in the five remaining member states (19%). In 37% of the member states, ‘Confectionery’ also entered the top three most sold product categories. This matched the fact that, according to the pooled ESM sales data, ‘Confectionery’ was the fourth most sold product category in Europe contributing 10% to the overall sales of packaged foods (data not shown).

Throughout the 27 ESM member states, 22 different global brand owner leader companies were identified with Mondelez International, Lactalis and Arla Foods Amba being the most reoccurring leading companies at the country level (Table 3). According to the pooled sales data throughout the ESM, Unilever Group and PepsiCo joined the list of aforementioned market leaders among the packaged food industry, although not being a leader producer of packaged food in any of the individual ESM member states. Shifting attention towards the national brand owners, in 13 out of the 27 ESM member states (48%), supermarkets were the leading brand owners through own-brand packaged food products placed on the market (data not shown).

Assessing levels of market concentration, the product markets ‘Soup’, ‘Ice cream and frozen desserts’ and ‘Breakfast cereals’ were most concentrated, with an average CR4 across ESM member states of 72%, 67% and 59%, respectively (Table 4). The

CR4 for these three product markets was not lower than 40% in any ESM member state except for 'Ice cream and frozen desserts' in Italy (23%) and 'Breakfast cereals' in Finland (39%).

The average CR4 across ESM member states amounted to around 40% or above for all 14 packaged food product markets, except for 'Baked goods' (21%), indicating limited competition. Similar levels of concentration were observed for the HHI (Annex A). The average concentration (both CR4 and HHI) for the packaged food industry slightly decreased between 2009 and 2018.

B. Non-alcoholic beverage manufacturers

The top three most sold non-alcoholic beverage product categories across ESM member states comprised 'Carbonates', 'Juices' and 'Energy drinks', contributing to 44%, 30% and 11% of the overall European sales of non-alcoholic beverages, respectively. 'Carbonates' was the most sold product category in 89% of the ESM member states. Other product categories entering the top three were 'Ready-to-Drink Tea' and 'Concentrates', respectively in 19% and 11% of the ESM member states and contributing 6% and 5% to overall European non-alcoholic beverage sales (data not shown).

Throughout the 27 ESM member states, seven global brand owners were identified as being national market leaders.

The Coca-Cola Company was the leading global brand owner in 21 of the member states (Table 3). Only in Croatia (Agrokor), the Czech Republic (Karlovarské Minerální Vody), Estonia (Olvi Oyj), Latvia (Royal Unibrew), Portugal (Sumol+Compal) and Slovenia (Atlantic Grupa) other leading global brand owners were observed. Where The Coca-Cola Company was not the leading company, they held the second largest market share in all countries except Slovenia. When looking at the pooled sales data throughout the ESM, additional market leaders within the non-alcoholic beverage industry were identified (PepsiCo, Nestlé, Danone and Suntory Holdings, data not shown).

According to the CR4 and HHI, the markets for ‘Carbonates’ and ‘Energy drinks’ were highly concentrated in most ESM member states. For both product markets the CR4 was on average 76% (Table 5). The HHI was 3069 and 2494, respectively (Annex B). The markets for ‘Ready-to-Drink Coffee’ and ‘Sport drinks’ joined the list with an average CR4 of 76% and 74% and an average HHI of 2852 and 2755, respectively. For the eight different non-alcoholic beverage product markets, the average CR4 did not go below 52%. Germany was the only country in which the CR4 was lower than 40% for all product markets except for ‘Carbonates’, ‘Ready-to-drink Tea’ and ‘Energy drinks’.

The average HHI did not go below 2000 for any non-alcoholic beverage product market except for ‘Concentrates’ and ‘Juices’ (Annex B). In contrast to the packaged food markets, the concentration of the non-alcoholic beverage markets increased from 2009 to 2018 according to both the average CR4 and the HHI. Summarized, the CR4 and HHI indicated moderately to highly concentrated markets (Table 5).

C. Quick-service restaurants

Within the ESM in 2017, on average across member states, 20% of the quick-service restaurant sales came from international chains or restaurants with 10 or more outlets in the country (with a minimum of 7% in Italy and going up to 44% in the United Kingdom, data not shown). Consumers spent more on eat-in than take-away, home-delivery and drive-through. On average 77% (min 64% in France to max 86% in Austria) of the sales could be attributed to meals consumed in the restaurant. Drive-through seemed to be the least popular in the ESM, only contributing on average 1% to the sales (min 0% in Greece up to max 3% in France). Take-away and home-delivery on average contributed 16% and 5%, respectively (data not shown). Per 1000 inhabitants, a country within the ESM in 2017 on average counted 3.7 quick-service restaurant outlets.

The lowest number was observed in Romania (1.3 outlets/1000 inhabitants) and the highest in Portugal (8 outlets/1000 inhabitants). The annual average number of quick-service restaurant transactions within the ESM in 2017 was 91651 per 1000 inhabitants (46499 in Poland up to 217372 in Spain, per 1000 inhabitants) (data not shown).

In all 22 ESM member states for which data were available, except Greece, McDonald's was the leading company (82%) or the company with the second largest market share (14%) with on average 1.8 outlets per 1000 inhabitants (with a minimum of 0.2 in Greece and a maximum of 4.2 in Switzerland, data not shown). Other companies that held the leader position were Happy Ltd in Bulgaria, Burger-In Oy in Finland, Vivartia in Greece and Migros Genossenschaftsbund in Switzerland (Table 3).

The CR4 was 50% on average and did not go below 40% in any of the ESM member states apart from Ireland and the United Kingdom (Table 6). In contrast, the HHI indicated unconcentrated markets in 50% of the ESM member states. This discrepancy was also observed when looking at the percent change from 2008 to 2017.

While the CR4 had increased in all the ESM member states, the HHI had decreased in all except Austria, the Netherlands, Poland and Spain. This difference between both concentration indices could be attributed to the market share of the top four firms increasing as well as being more evenly distributed.

D. Supermarkets

For the purpose of this analysis, supermarkets were considered as manufacturers of packaged foods and non-alcoholic beverages through own-brand products placed on the market and as retailers selling the products. Among the packaged foods and non-alcoholic beverages available on the market, 15% (SD=8.8) of the packaged foods and 7% (SD=5.5) of the non-alcoholic beverages could be attributed to supermarket own-brand products. Within Estonia no supermarket had a market share of ≥1% for selling own-brand packaged food products. In contrast, in Switzerland, 39% of the sold packaged food products were supermarket own-brand products. For the sales of non-alcoholic beverages a similar picture could be observed as for packaged foods. In Romania and Greece no supermarket had a market share of ≥1% for selling own-brand non-alcoholic beverages. In Switzerland, 23% of the non-alcoholic beverage sales were supermarket own-brand products. This suggested that the role of supermarkets as producers of own-brand packaged foods and non-alcoholic beverages was country specific. A country within the ESM on average counted 2.4 supermarket outlets per 1000 inhabitants. This decreased to one outlet per 1000 inhabitants in nine ESM member states (Austria, Denmark, Finland, Germany, Ireland, Norway, Slovenia, Sweden and the United Kingdom) and increased up to six in Bulgaria and Greece (in 2018, data not shown).

The most reoccurring supermarket within the ESM was Schwarz Beteiligungs (*brands: Kaufland, Lidl and Plus*) being the global brand owner in four countries and having a presence in 24 of the 27 ESM member states. Other supermarkets playing a leading role in several countries were Agrokor (*brands: Getro, Hura!, Konzum, Mercator, Slobodna Dalmacija and Tisak*) Tesco (*brands: One Stop, S-Market, Savia, Tesco and Zabka*) and ICA Gruppen (*brands: ICA, Rimi, Supernetto and Säästumarket*), all being the leader in two ESM member states and having a presence in two, six and four member states, respectively.

Although several different supermarkets were present throughout the ESM, noteworthy concentration took place at national level with an average CR4 of 60% (Table 7).

The CR4 only dropped below 40% in Bulgaria, Greece, Italy and Romania and did not go below 30% in any of the ESM member states. The average HHI within the ESM member states stood at 1245 with highly concentrated markets (>2000) in Finland, Norway and Sweden. In 44% of the ESM member states the HHI remained below 1000 indicating unconcentrated markets.

Within these unconcentrated markets however, only 33% of the member states also had a CR4 below 40%. In 82% of the ESM member states both the CR4 and HHI had increased since 2009 (Table 7).

Summarized, it was concluded that, even though the overall market remained relatively unconcentrated in most ESM member states, most of the market share tended to be controlled by the four biggest supermarkets.

E. Combined results for the four food industries

As shown in Figure 1, both the average number of global brand owners per country with ≥1% market share and unique companies per country with ≥1% market share across ESM member states tended to be lower among supermarkets than what was observed for packaged food and non-alcoholic beverage manufacturers and quick-service restaurants. A ESM member state on average counted 14 packaged food global brand owners with ≥1% market share (minimum 7 in Germany up to maximum 20 in Slovenia), 13 non-alcoholic beverage companies (minimum 9 in Finland up to 20 in Bulgaria and Poland), 20 quick-service restaurants (minimum 11 in Switzerland and 27 in Denmark) and nine supermarkets (minimum 5 in Finland and maximum 18 in Italy). Similar results were observed for the unique companies, with a ESM member state on average having five unique packaged food companies (no unique companies in Germany going up to ten in Lithuania, Norway, Poland and Slovenia), four unique non-alcoholic beverage companies (no unique companies in Belgium to maximum 11 in Poland), 11 unique quick-service restaurants (minimum 5 in Switzerland and Germany going up to 19 in Denmark) and four unique supermarkets (minimum one in Belgium, Portugal and Romania and maximum 13 in Italy) (Table 3, Figure 1).

In contrast, the average market share per country in the hands of the leading global brand owners was the highest for quick-service restaurants and supermarkets, with both holding, on average per country, 25% market share (minimum 8% to maximum 42% for quick-service restaurants and minimum 9% to maximum 45% for supermarkets).

The average market share per country in the hands of the leading packaged food and non-alcoholic beverage company was 7% (3% - 18%) and 21% (13% - 35%), respectively (Table 3, Figure 1).

The considerably higher average number of global brand owners with ≥1% market share and unique companies per country among quick-service restaurants was indicative of a higher in-country diversity of quick-service restaurants. This was not observed for supermarkets.

Discussion

Using Euromonitor sales and market share data, this study set out to provide an analysis of the food industry within the ESM, comparing aspects of market structure for four food industries, namely packaged foods, non-alcoholic beverages, quick-service restaurants and supermarkets. Substantial differences were found across European countries and food industries. For packaged food and non-alcoholic beverage manufacturers similar companies and most sold product categories were observed throughout the ESM with the main difference between both industries being the higher level of market concentration within the non-alcoholic beverage industry and respective product markets. For quick-service restaurants the same leading companies were detected throughout Europe with increased market share moving towards the four largest companies since 2008. In spite of these levels of market concentration, quick service restaurants showed to have a considerable higher number of global brand owners with ≥1% market share and unique companies than any other food industry. In contrast, supermarkets were shown to have a diversity of companies throughout Europe, but noteworthy concentration took place at country level with most of the market share being in hands of the four national supermarkets with the largest market share. This was also reflected in the lower number of global brand owners with ≥1% market share and unique companies.

Our data showed that the most sold packaged food and non-alcoholic beverage categories were similar throughout Europe with ‘Baked goods’, ‘Dairy’, ‘Processed meat and seafood’ and ‘Confectionery’, contributing a combined 67% to the overall European sales of packaged foods and ‘Carbonates’, ‘Juices’ and ‘Energy drinks’ contributing to 85% of the sales of non-alcoholic beverages. The companies selling these product categories were also similar across Europe with a country on average having only five unique packaged food companies and four non-alcoholic beverage companies.

These similar players and most sold product categories across the ESM suggest that from a public health point of view the market for packaged foods and non-alcoholic beverages could be approached as one territory and could facilitate the implementation of regulations affecting packaged food and non-alcoholic beverage manufacturers at a European level. Implementing regulations such as marketing restrictions (for certain media like food packages, internet and social media), reformulation targets and front-of-pack labelling at a European level would potentially be preferable to pursuing national policy measures from a public health point of view.

This would ensure policy consistency across the region and would be likely to ease the administrative burden associated with policy development and implementation. Furthermore, a harmonised policy framework across the ESM would likely facilitate implementation from a food industry point of view, as has been argued by some companies that have pushed for the Nutri-Score to be made mandatory at European level [26–28]. For the moment a variety of policy measures are already in place throughout the ESM, but the policy content and implementation varies by country [3,29]. The trans-fat regulation and obligatory on-pack nutritional information (detailing how much energy and nutrients a product contains) are examples of successful European-wide legislation in this area [30,31].

Our data showed that in about 50% of the ESM member states, supermarkets were the leading national brand owners selling packaged foods through own-brand products placed on the market. However, their role as producers of packaged foods and non-alcoholic beverages varied significantly throughout the ESM. In addition, in most ESM member states, the combined market share of the four biggest supermarkets was on average 60% (31% - 94%). This places them in a unique position for in-store health promoting interventions with the potential to influence purchasing behaviour of a significant proportion of the population. Currently only limited voluntary initiatives have been made by supermarkets in the Netherlands, the United Kingdom and Austria introducing healthy checkout counters [32–36]. Studies have, however, shown that all-inclusive interventions combining price incentives, nutritional information and easy access to healthy foods could considerably help improve the in-store food environment [37]. Nonetheless, our data showed that the potential role of supermarkets to improve food environments is rather country specific and as such regulations affecting the in-store environment would potentially benefit from being implemented at a national level.

However, first more research is needed to summarize the commitments already made by supermarkets and identify policy options adapted to the national food environment that could help ensure that supermarkets use their unique position to move the market in a healthier direction.

Alongside supermarkets, quick-service restaurants have an important role within the food environment [38–40]. Our results showed that ESM member states on average have more quick-service restaurant outlets than supermarkets (3.7 and 2.4 per 1000 inhabitants, respectively). Although, among quick-service restaurants on average 50% of all the market share was in hands of the four biggest companies, the industry also counted the highest average number of unique companies for one ESM member state and companies with ≥ 1% market share compared to packaged food manufacturers, non-alcoholic beverage manufacturers and supermarkets. The latter was reflected in the low concentration levels according to the HHI. These data suggest that, even though the bigger players are present in most of the ESM member states, smaller players at national level are important and should be taken into account when formulating nutrition policies. As such, similar to supermarkets, regulations affecting quick-service restaurants could potentially benefit from being implemented at national level. Potential policies could be the implementation of nudging techniques and menu-labelling which have shown to be effective in schools and among non-overweight individuals, respectively [38,39,41,42]. However, first more research is required to identify the unique national companies, understand the national food environment and summarize the commitments already made by quick-service restaurants.

Within the abovementioned four food industries and respective product markets, our data indicated moderately to highly concentrated markets. These levels of market concentration may be of concern from a public health perspective for a number of reasons, including how the extra profits may be used to support or hamper the implementation of government policies affecting the food environment [16,17]. This is especially of concern when many of the product portfolios of the companies consist of less healthy products. Selling less healthy, but more profitable products in concentrated markets can in turn increase profit margins [43,44]. These profits can then be used to fund corporate practices, such as marketing of unhealthy food, lobbying and paying fees to supermarkets to place unhealthy products at favourable locations in the shop, that may undermine public health efforts to improve population diets [16,43]. However, to understand to what extent such practices take place, more research into European and country specific corporate activities is required.

The study has several strengths. Most importantly, this study forms a basis to understand how certain aspects of the market structure of key European food industries may influence food environments. A key strength of the study is the amount of data used to identify the similarities and differences across Europe as well as the levels of concentration per food industry and respective product markets. It also highlights the importance of a transdisciplinary approach, not only taking into account the effectiveness of policies to improve the food environment, but additionally looking at the economic environment surrounding it. There were however also limitations identified. The Euromonitor database is based around the ownership of brands (e.g. national and global brand owners) rather than companies. As a result, the global brand owners identified may change when brands are sold to new brand owners. Further, having looked at the aforementioned levels of concentration it must be kept in mind that these may be an underestimation. Companies being considered independent in Euromonitor (due to the database being built around brand ownership), and as such for the concentration calculations, may still sell well-known brands from other companies through licensing agreements. In addition, not all products within one food category, as determined by the Euromonitor's food categorization system, are interchangeable from a consumer point of view (for example, the category ‘Baked goods’ contains both bread and pastries). Hence, levels of concentration may increase when calculating the concentration indices for more specific food categories. Furthermore, for this study the geographic boundaries were defined based on the available data (at national level using Euromonitor’s food categorisation system), but in reality, the geographic boundaries, especially for supermarkets and quick-service restaurants, may be different to national boundaries [23,45,46]. In addition, to further assess market structure, other aspects should be considered, such as barriers to entry and degree of vertical integration. Another step towards the future is to connect the players with the largest market share per food industry with their nutritional commitments and the healthiness of their product portfolios to identify gaps between commitments and performance and point out areas that could be improved by the implementation of nutrition policies.

Conclusions

This study provided an analysis of the packaged food manufacturing, non-alcoholic beverage manufacturing, quick service restaurant and supermarket industries within the ESM.

While similarities in market structure throughout the ESM were observed for packaged food and non-alcoholic beverage manufacturers, a different picture was seen for quick-service restaurants and supermarkets. The first displayed a remarkably higher diversity of companies at the national level while the latter demonstrated the contrary. Due to these structural differences between food industries, a differentiation between European and national level regulations by industry was suggested to potentially facilitate the implementation of nutrition policies. This study highlights the importance of a transdisciplinary approach taking into account not only the effectiveness of nutrition policies to improve the food environment, but also the economic environment surrounding it.

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Table 1: Average number of national and global brand owners with ≥1% market share (MS) included per food industry across countries within the European Single Market. Euromonitor data 2017/18.

Food industry	Average number of global brand owners with ≥1% MS per country (min – max)	Average number of national brand owners with ≥1% MS per country (min – max)
Packaged food	14 (7 – 20)	18 (9 – 25)
Non-alcoholic beverages	13 (9 – 20)	15 (10 – 20)
Quick Service restaurants *(1)*	20 (11 – 27)	18 (14 – 25)
Supermarkets *(2)*	9 (5 – 18)	10 (5 – 19)

(1) 'Chained Consumer Foodservice': "Chained units are defined by 10 or more units. An exception is made for international chains that have a presence of fewer than 10 units in a country. In this case, they are still considered to be chained units." As defined by Euromonitor.

(2) 'Grocery Retailers': "Retailers selling predominantly food/beverages/tobacco and other everyday groceries. This is the aggregation of hypermarkets, supermarkets, discounters, convenience stores, independent small grocers, chained forecourt retailers, independent forecourt retailers, food/drink/tobacco specialists and other grocery retailers." As defined by Euromonitor.

Table 2: Overview of the different metrics used to assess aspects of the market structure and their respective interpretation. ESM = European Single Market.

Metrics	**Calculation** ***(using Euromonitor sales and market share data)***	**Interpretation**
Market similarities and differences		
Leading global brand owner per country	Global brand owner market share data per country	The different (or similar) leading global brand owners across Europe

Leading national brand owner per country	National brand owner market share data per country	The different (or similar) leading companies across Europe that nationally have the right to produce or distribute brands
Number of global brand owners with ≥1% market share per country	The sum of all global brand owners per country with ≥1% market share	The higher the number of global brand owners with ≥1% market share the more diverse the food industry was assumed to be
Number of unique companies per country	The sum of all companies in a country having presence in only one ESM member state	The higher the number of unique companies, the more diverse the actors active within the food industry were assumed to be
Leading European global brand owners	Sum of the sales data per member state by year and global brand owner	The leading companies that own the most sold brands across the ESM and that may not have appeared as leading company at national level
Top three most sold packaged food and non-alcoholic beverage categories per country	Product category specific sales data per country	The different (or similar) most sold, and as such potentially most consumed, product categories per country
Most sold European packaged food and non-alcoholic beverage categories	Sum of the sales data per member state by year and product category	The different (or similar) most sold, and as such potentially most consumed, product categories across the ESM that may not have appeared among the top three at national level
Number of quick-service restaurant outlets per country	The number of outlets per 1000 inhabitants as obtained from Euromonitor	The different (or similar) density of quick-service restaurant outlets across the ESM
Number of annual fast food transactions per country	The number of transactions per 1000 inhabitants per year as obtained from Euromonitor	The different (or similar) amount of fast food transactions, and as such potential consumption levels, across the ESM
Dominant type of quick-service restaurant per country (chained versus independent)	The percent sales coming from chained consumer foodservice	The amount of fast food sales that can be attributed to larger quick-service restaurant chains
Preferred way of ordering and eating fast food per country	The percent of sales coming from eat in, take away, home delivery and drive through	The different (or similar) ways people across the ESM prefer to consume fast food
Number of supermarket outlets per country	Number of outlets per 1000 inhabitants as obtained from Euromonitor	The different (or similar) density of supermarket outlets across the ESM

Contribution of supermarket own-brand packaged food products to the overall sale of packaged foods per country	The percentage of packaged foods per country coming from supermarket own-brand products	The availability of supermarket own-brand packaged food products within the market per country. An estimation whether the sales of supermarket own-brand products is country specific
Contribution of supermarket own-brand non-alcoholic beverages to the overall sale of non-alcoholic beverages per country	The percentage of non-alcoholic beverages per country coming from supermarket own-brand products	The availability of supermarket own-brand non-alcoholic beverages within the market per country. An estimation whether the sales of supermarket own-brand products is country specific
Market concentration		
Herfindahl-Hirschman Index (HHI) per country	The summation of the squared market share of the firms active within the market and country	<1000: Unconcentrated Markets; 1000 – 2000: Moderately Concentrated Markets; >2000: Highly Concentrated Markets;
Four firm concentration ratio (CR4) per country	The combined market share of the four biggest firms active in the market and country	0: Perfect competition; 0 – 40: Effective Competition; 40 – 60: Limited competition; >60: Dominant Firms with limited competition;

Table 3: Global brand owner leading companies, the market share of the respective global brand owner leading companies ('*Market Share leader (%)*'), the number of global brand owners with ≥1% market share ('*# companies with ≥1% MS*') and the number of unique companies ('*# unique companies (with ≥1%MS)*') per ESM member state and food industry. Euromonitor data 2017/18.

	Packaged Foods				Non-alcoholic beverages			
Country	**Global brand owner leader company**	**Market share leader (%)**	**# companies with ≥1% MS**	**# Unique companies (with ≥ 1% MS)**	**Global brand owner leader company**	**Market share leader (%)**	**# companies with ≥1% MS**	**# Unique companies (with ≥ 1% MS)**
Austria	Berglandmilch GmbH	4	13	3	Coca-Cola Co, The	19	11	6
Belgium	Mondelez International Inc	3	12	1	Coca-Cola Co, The	35	10	0
Bulgaria	Mondelez International Inc	4	16	8	Coca-Cola Co, The	31	20	10
Croatia	Agrokor dd	10	13	5	Agrokor dd	26	13	4
Czech Republic	Agrofert as	7	15	4	Karlovarské Minerální Vody	19	12	1
Denmark	Arla Foods Amba	15	11	3	Coca-Cola Co, The	15	16	2
Estonia	Tere AS	8	18	6	Olvi Oyj	23	14	4
Finland	Valio Oy	12	14	1	Coca-Cola Co, The	15	9	2
France	Lactalis, Groupe	4	14	4	Coca-Cola Co, The	16	11	1
Germany	Ferrero & related parties	3	7	0	Coca-Cola Co, The	16	14	7
Greece	Vivartia SA	4	15	8	Coca-Cola Co, The	23	17	9
Hungary	Bonafarm Group	6	12	3	Coca-Cola Co, The	26	15	4
Ireland	Mondelez International Inc	6	15	5	Coca-Cola Co, The	26	10	1
Italy	Barilla Holding SpA	4	15	7	Coca-Cola Co, The	13	15	7
Latvia	Premia Foods AS	9	19	7	Royal Unibrew A/S	22	17	6
Lithuania	Pieno Zvaigzdes AB	7	17	10	Coca-Cola Co, The	26	14	3
Netherlands	Royal FrieslandCampina NV	5	11	1	Coca-Cola Co, The	19	10	4
Norway	Tine SA	18	17	10	Coca-Cola Co, The	27	11	5
Poland	SM Mlekpol	3	18	10	Coca-Cola Co, The	17	20	11
Portugal	Lactogal - Produtos Alimentares SA	7	10	2	Sumol+Compal SA	13	12	6
Romania	Lactalis, Groupe	5	16	3	Coca-Cola Co, The	23	11	6
Slovakia	Nestlé SA and Meggle GmbH	4	19	8	Coca-Cola Co, The	13	17	5
Slovenia	Lactalis, Groupe	9	20	10	Atlantic Grupa dd	13	12	1
Spain	Danone, Groupe	4	11	3	Coca-Cola Co, The	29	12	4
Sweden	Arla Foods Amba	12	17	2	Coca-Cola Co, The	30	15	4
Switzerland	Emmi Group	4	8	2	Coca-Cola Co, The	17	14	5
United Kingdom	Mondelez International Inc	5	16	5	Coca-Cola Co, The	24	11	3
Average		**7**	**14**	**5**		**21**	**13**	**4**
Min		**3**	**7**	**0**		**13**	**9**	**0**
Max		**18**	**20**	**10**		**35**	**20**	**11**
SD		**4**	**3**	**3**		**6**	**3**	**3**
	Quick-service restaurants				**Supermarkets**			
Austria	McDonald's Corp	42	22	11	Rewe Group	27	7	3
Belgium	McDonald's Corp	16	18	10	Etn Franz Colruyt NV	21	8	1
Bulgaria	Happy Ltd	21	17	8	Schwarz Beteiligungs GmbH	22	8	3
Croatia	/	/	/	/	Agrokor dd	19	9	6
Czech Republic	McDonald's Corp	33	22	9	Schwarz Beteiligungs GmbH	26	7	2
Denmark	McDonald's Corp	24	27	19	FDB Group	29	9	3
Estonia	/	/	/	/	Coop Estonia	21	12	7
Finland	Burger-In Oy	13	23	17	S Group	45	5	2
France	McDonald's Corp	33	18	10	Carrefour SA	15	9	2
Germany	McDonald's Corp	31	19	5	Edeka Zentrale AG & Co KG	22	7	2
Greece	Vivartia SA	13	19	14	Sklavenitis J&S SA	16	8	7
Hungary	McDonald's Corp	31	18	7	Tesco Plc	14	10	3
Ireland	McDonald's Corp	15	24	14	Musgrave Group Plc	29	10	5
Italy	McDonald's Corp	25	16	12	CONAD	9	18	13
Latvia	/	/	/	/	ICA Gruppen AB	26	10	5
Lithuania	/	/	/	/	Vilniaus Prekyba UAB	33	8	3
Netherlands	McDonald's Corp	28	22	14	Koninklijke Ahold Delhaize NV	28	14	10
Norway	McDonald's Corp	12	22	10	Norgesgruppen ASA	31	6	4
Poland	McDonald's Corp	34	20	8	Jerónimo Martins SGPS SA	22	16	7
Portugal	McDonald's Corp	40	19	13	Sonae SGPS SA	19	8	1
Romania	McDonald's Corp	24	21	13	Schwarz Beteiligungs GmbH	18	7	1
Slovakia	McDonald's Corp	37	19	9	Schwarz Beteiligungs GmbH	30	8	3
Slovenia	/	/	/	/	Agrokor dd	30	11	5
Spain	McDonald's Corp	19	15	8	Mercadona SA	22	11	6
Sweden	McDonald's Corp	21	22	11	ICA Gruppen AB	39	9	5
Switzerland	Migros Genossenschaftsbund	28	11	5	Migros Genossenschaftsbund	29	7	4
United Kingdom	McDonald's Corp	8	23	15	Tesco Plc	22	12	8
Average		**25**	**20**	**11**		**25**	**9**	**4**
Min		**8**	**11**	**5**		**9**	**5**	**1**
Max		**42**	**27**	**19**		**45**	**18**	**13**
SD		**9**	**3**	**4**		**8**	**3**	**3**

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Table 4: Market concentration for different food product categories using the four firm concentration ratio (CR4) per European Single Market member state. Red indicates CR4 values >60% and markets with dominant firms and limited competition, yellow indicates CR4 values between 40% - 60% and markets with limited competition while green indicates CR4 values $\leq 40\%$ and markets with effective competition. The percent change over the past 10 years (2009 – 2018) is included in brackets. Euromonitor data 2018.

Country	Soup		Ice Cream and Frozen Desserts		Breakfast Cereals		Confectionery		Savoury Snacks		Sweet Biscuits, Snack Bars and Fruit Snacks		Sweet Spreads		Dairy		Sauces, dressings and condiments		Ready meals		Rice, Pasta and Noodles		Processed Meat and Seafood		Processed Fruit and Vegetables		Baked Goods		Packaged Foods	
Austria	76	(0)	76	(3)	62	(5)	58	(8)	54	(-1)	41	(9)	66	(1)	37	(1)	49	(1)	44	(-3)	39	(2)	28	(7)	49	(-9)	8	(4)	13	(-2)
Belgium	76	(2)	50	(1)	63	(-10)	38	(-2)	53	(5)	38	(0)	43	(-6)	28	(-6)	41	(-9)	23	(14)	33	(-6)	17	(14)	26	(20)	7	(-13)	10	(-23)
Bulgaria	85	(-6)	87	(-1)	74	(6)	54	(0)	32	(16)	43	(11)	41	(-7)	26	(-17)	39	(-2)	54	(23)	43	(0)	61	(-7)	46	(6)	20	(-8)	14	(-26)
Croatia	89	(13)	94	(5)	43	(-3)	56	(-5)	38	(13)	59	(12)	50	(-4)	62	(0)	65	(-1)	47	(-8)	49	(20)	72	(-1)	65	(21)	20	(15)	29	(-4)
Czech Republic	84	(-2)	75	(-3)	71	(-1)	70	(-5)	42	(-16)	62	(-9)	43	(-15)	39	(9)	44	(-8)	53	(-4)	37	(-17)	39	(-1)	36	(-5)	22	(-5)	20	(-8)
Denmark	70	(8)	51	(-15)	58	(-2)	46	(-8)	54	(-1)	38	(-16)	54	(-6)	64	(-4)	45	(-1)	43	(-6)	23	(1)	35	(4)	25	(8)	23	(-35)	24	(-8)
Estonia	64	(9)	83	(8)	48	(-15)	61	(1)	46	(-22)	49	(46)	43	(9)	65	(6)	32	(-11)	49	(9)	31	(-6)	56	(-2)	40	(-19)	64	(1)	24	(11)
Finland	54	(-3)	83	(-1)	39	(-13)	74	(-1)	53	(0)	54	(-4)	45	(-29)	53	(-21)	43	(-3)	53	(-1)	37	(-4)	49	(0)	30	(-2)	35	(-31)	28	(-17)
France	76	(-3)	64	(3)	70	(1)	48	(11)	45	(4)	50	(14)	56	(17)	38	(2)	40	(0)	34	(9)	54	(13)	24	(10)	29	(17)	8	(14)	12	(-5)
Germany	66	(0)	47	(2)	55	(3)	41	(4)	40	(2)	26	(8)	48	(0)	14	(-9)	44	(-4)	38	(4)	30	(5)	10	(32)	27	(5)	16	(-1)	9	(-3)
Greece	100	(8)	70	(-1)	68	(-8)	71	(-1)	51	(-6)	56	(4)	28	(-30)	35	(-18)	57	(-3)	47	(10)	55	(-20)	34	(14)	45	(-17)	12	(-27)	14	(-21)
Hungary	84	(1)	54	(-20)	47	(-8)	53	(-7)	39	(-8)	43	(-6)	30	(-10)	34	(-18)	41	(0)	35	(-11)	31	(-6)	28	(-21)	25	(-5)	7	(6)	15	(-30)
Ireland	72	(-3)	73	(-3)	68	(-2)	75	(-2)	58	(-14)	46	(-6)	49	(-17)	35	(-18)	44	(-16)	34	(-20)	44	(-6)	57	(1)	57	(2)	24	(-11)	20	(-10)
Italy	63	(-23)	23	(-22)	80	(-8)	61	(2)	38	(-16)	44	(-5)	51	(-17)	29	(-3)	37	(-16)	29	(1)	33	(-15)	19	(20)	30	(0)	11	(7)	10	(-30)
Latvia	67	(0)	75	(8)	81	(-1)	69	(2)	56	(-19)	70	(-5)	44	(12)	62	(13)	65	(3)	40	(-17)	33	(7)	51	(15)	65	(4)	50	(2)	29	(11)
Lithuania	75	(-3)	69	(-7)	68	(-6)	60	(-15)	59	(-3)	58	(28)	55	(3)	66	(-9)	43	(-24)	47	(21)	41	(-6)	44	(-5)	49	(-4)	43	(25)	20	(0)
Netherlands	68	(-10)	71	(2)	50	(3)	37	(-6)	40	(-13)	37	(-15)	35	(-4)	30	(-20)	43	(-13)	27	(8)	34	(-12)	10	(18)	43	(0)	11	(-20)	13	(-16)
Norway	89	(-2)	90	(7)	62	(-7)	72	(-1)	62	(-10)	61	(0)	67	(0)	86	(0)	57	(-3)	73	(-4)	44	(-18)	57	(-3)	25	(-20)	32	(-11)	41	(-6)
Poland	75	(-13)	66	(-3)	60	(-12)	47	(-7)	43	(-5)	39	(-31)	33	(-4)	35	(7)	45	(-2)	30	(-18)	33	(-20)	42	(4)	36	(-9)	5	(55)	11	(-14)
Portugal	56	(-24)	76	(6)	56	(-7)	43	(-2)	34	(-10)	25	(-13)	33	(19)	49	(-3)	31	(-13)	18	(-15)	40	(-2)	24	(-2)	18	(-32)	9	(7)	19	(-4)
Romania	63	(25)	63	(2)	68	(6)	66	(-2)	45	(-8)	33	(-7)	46	(16)	48	(-13)	37	(-9)	36	(-43)	49	(23)	36	(-8)	38	(4)	9	(89)	12	(4)
Slovakia	67	(-13)	67	(-2)	72	(-4)	69	(-1)	31	(-37)	61	(6)	42	(-14)	35	(-12)	29	(-11)	51	(-21)	26	(-39)	42	(1)	35	(-21)	16	(-10)	15	(-6)
Slovenia	87	(14)	68	(0)	43	(7)	57	(-2)	47	(4)	33	(-10)	30	(-7)	54	(-2)	33	(-4)	48	(-4)	61	(-6)	60	(-4)	47	(1)	32	(-10)	21	(-10)
Spain	50	(-6)	56	(-18)	49	(-20)	40	(-7)	38	(-6)	42	(-20)	38	(0)	34	(-17)	22	(-6)	25	(-6)	33	(-15)	20	(-7)	21	(-26)	21	(32)	15	(17)
Sweden	82	(5)	65	(-10)	44	(-17)	58	(0)	55	(-3)	32	(-23)	40	(-3)	60	(-11)	46	(6)	44	(-6)	29	(-22)	45	(-7)	24	(-18)	42	(-8)	25	(-9)
Switzerland	66	(-3)	54	(0)	42	(-1)	28	(0)	48	(2)	32	(-1)	36	(-4)	26	(1)	52	(-1)	10	(-27)	20	(-13)	9	(0)	17	(-13)	5	(4)	10	(0)
United Kingdom	53	(-22)	46	(11)	60	(-8)	66	(-1)	45	(-16)	37	(11)	42	(4)	21	(-7)	33	(-21)	13	(-21)	33	(-5)	17	(1)	35	(-1)	28	(-22)	13	(-4)
Average	72	(-2)	67	(-2)	59	(-5)	56	(-2)	46	(-6)	45	(-1)	44	(-4)	43	(-6)	43	(-6)	39	(-5)	37	(-6)	37	(3)	36	(-4)	21	(2)	18	(-8)
Min	50	(-24)	23	(-22)	39	(-20)	28	(-15)	31	(-37)	25	(-31)	28	(-30)	14	(-21)	22	(-24)	10	(-43)	20	(-39)	9	(-21)	17	(-32)	5	(-35)	9	(-30)
Max	100	(25)	94	(11)	81	(7)	75	(11)	62	(16)	70	(46)	67	(19)	86	(13)	65	(6)	73	(23)	61	(23)	72	(32)	65	(21)	64	(89)	41	(17)
SD	12	(11)	15	(8)	12	(7)	13	(5)	8	(11)	12	(16)	10	(12)	17	(9)	10	(7)	14	(15)	10	(13)	17	(11)	13	(13)	15	(26)	8	(12)

Table 5: Market concentration using the four firm concentration ratio (CR4) for the 8 different non-alcoholic beverage product markets per European Single Market member state. Red indicates CR4 values >60% and markets with dominant firms and limited competition, yellow indicates CR4 values between 40% - 60% and markets with limited competition while green indicates CR4 values ≤ 40% and markets with effective competition. Between brackets the percent change over the past 10 years is included (2009 – 2018). Euromonitor data 2018. RTD = Ready-to-drink. For 'Asian Specialty Drinks' data were lacking in several countries.

Country	Carbonates		RTD Coffee		Energy Drinks		Sports Drinks		RTD Tea		Concentrates		Juice		Asian Speciality Drinks		Soft Drinks	
Austria	70	(1)	74	(-6)	70	(3)	72	(-6)	67	(-4)	55	(5)	50	(6)			48	(-1)
Belgium	77	(7)	81	(55)	68	(21)	72	(9)	72	(8)	50	(-21)	32	(-9)			50	(1)
Bulgaria	77	(5)	74	(-7)	81	(-1)	77	(-3)	66	(10)	54	(-30)	47	(-12)			47	(-6)
Croatia	81	(11)	85	(15)	94	(2)	79	(3)	78	(13)	63	(3)	69	(8)			63	(20)
Czech Republic	76	(0)	87	(-1)	49	(-31)	93	(7)	64	(19)	59	(-2)	52	(-2)			52	(-8)
Denmark	71	(3)	85	(4)	84	(33)	80	(5)	68	(-14)	63	(-2)	47	(-12)			42	(-9)
Estonia	87	(19)	83	(-2)	85	(15)	92	(12)	94	(15)	60	(-2)	66	(1)			55	(22)
Finland	72	(-7)	67	(-8)	73	(6)	77	(-9)	57	(20)	45	(-14)	60	(-5)			50	(-9)
France	82	(-2)	92	(106)	84	(-7)	86	(26)	65	(6)	59	(6)	48	(28)	84	(5)	43	(-4)
Germany	56	(-8)	35	(14)	66	(7)	24	(0)	44	(-8)	34	(57)	26	(-8)	38	(7)	27	(-1)
Greece	84	(-8)	85	(-6)	91	(-4)	99	(9)	82	(-10)	77	(6)	68	(-4)			51	(-8)
Hungary	82	(-1)	55	(-24)	78	(28)	64	(53)	68	(-10)	41	(16)	58	(22)			43	(-4)
Ireland	86	(-2)	74	(-15)	93	(1)	90	(7)	65	(-33)	67	(3)	40	(-10)			59	(-4)
Italy	67	(-8)	63	(-20)	88	(23)	82	(8)	52	(-14)	57	(4)	43	(-10)	91	+∞	40	(-2)
Latvia	68	(4)	57	(-26)	85	(62)	72	(20)	93	(8)	78	(71)	76	(18)			55	(3)
Lithuania	84	(17)	93	(56)	54	(23)	43	(-50)	77	(-8)	57	(-24)	56	(-7)			44	(12)
Netherlands	63	(1)	70	(19)	76	(53)	53	(-8)	64	(25)	62	(10)	43	(-2)	76	(49)	43	(-2)
Norway	89	(1)	93	(10)	81	(-13)	79	(-9)	82	(5)	85	(7)	53	(8)			64	(-9)
Poland	77	(6)	49	(2)	76	(26)	93	(15)	61	(-18)	58	(3)	61	(5)			41	(-5)
Portugal	79	(3)	100	(0)	57	(-32)	23	(-71)	37	(-8)	52	(-35)	53	(3)	58	+∞	34	(-13)
Romania	66	(4)	91	(87)	72	(-13)	75	(-25)	83	(14)	40	(-52)	49	(-12)			44	(-9)
Slovakia	67	(-3)	76	(-10)	64	(-15)	78	(-10)	59	(-18)	42	(-2)	48	(8)			35	(-4)
Slovenia	88	(5)	66	(15)	84	(-8)	56	(19)	85	(8)	66	(4)	69	(-12)			46	(-3)
Spain	80	(-1)	66	(-33)	65	(-5)	85	(-4)	83	(14)	79	(-4)	41	(10)			41	(-11)
Sweden	85	(6)	94	(58)	83	(11)	95	(1)	73	(-7)	74	(15)	59	(11)			50	(-5)
Switzerland	75	(4)	85	(23)	67	(18)	71	(3)	38	(10)	43	(-5)	34	(-13)			32	(-7)
United Kingdom	80	(1)	85	(152)	87	(2)	88	(3)	70	(-15)	57	(-4)	43	(31)	12	(-57)	45	(-3)
Average	76	(2)	76	(17)	76	(8)	74	(0)	68	(0)	58	(1)	52	(1)	60	(1)	46	(-3)
Min	56	(-8)	35	(-33)	49	(-32)	23	(-71)	37	(-33)	34	(-52)	26	(-13)	12	(-57)	27	(-13)
Max	89	(19)	100	(152)	94	(62)	99	(53)	94	(25)	85	(71)	76	(31)	91	(49)	64	(22)
SD	8	(7)	15	(42)	12	(22)	19	(22)	14	(14)	13	(24)	12	(12)	28	(38)	9	(8)

Table 6: Market concentration using the four firm concentration ratio (CR4) and the Herfindahl-Hirschman Index (HHI) for the quick-service restaurant industry per European Single Market member state. Red indicates CR4 values >60% and HHI values >2000 so highly concentrated markets, yellow indicates CR4 values between 40% - 60% and HHI values between 1000 - 2000 so moderately concentrated markets and green indicates CR4 values ≤ 40 and HHI < 1000 so unconcentrated markets. Between brackets the percent change over the past 10 years is included (2008 – 2017). Euromonitor data 2017.

	Austria	Belgium	Bulgaria	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Spain	Sweden	Switzerland	United Kingdom	Average	Min	Max	SD
CR4	58	55	53	61	42	41	46	47	42	61	36	52	44	42	59	59	56	63	42	47	71	29	50	29	71	10
% Change since 2008	(51)	(187)	(195)	(43)	(55)	(184)	(33)	(45)	(15)	(19)	(102)	(83)	(73)	(172)	(85)	(46)	(75)	(62)	(189)	(67)	(128)	(129)	(93)	(15)	(195)	(58)
HHI	1860	885	1004	1460	783	595	1192	1073	574	1310	498	951	988	628	1489	1764	1229	1711	648	739	1616	363	1062	363	1860	435
% Change since 2008	(13)	(-12)	(-13)	(-32)	(-25)	(-25)	(-16)	(-13)	(-62)	(-54)	(-24)	(-21)	(15)	(-10)	(8)	(-4)	(-21)	(-12)	(36)	(-28)	(-7)	(-28)	(-15)	(-62)	(36)	(21)

Table 7: The four firm concentration ratio (CR4) and the Herfindahl-Hirschman Index (HHI) for the supermarket industry per European Single Market member state. Red indicates CR4 values >60% and HHI values >2000 so highly concentrated markets, yellow indicates CR4 values between 40% - 60% and HHI values between 1000 - 2000 so moderately concentrated markets and green indicates CR4 values ≤ 40 and HHI < 1000 so unconcentrated markets. Between brackets the percent change over the past 10 years is included (2008 – 2017). Euromonitor data 2017.

	Austria	Belgium	Bulgaria	Croatia	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy
CR4	77	59	37	48	64	76	69	94	46	70	39	46	62	31
% Change since 2009	(11)	(6)	(96)	(16)	(19)	(7)	(4)	(4)	(1)	(14)	(142)	(-4)	(14)	(12)
HHI	1780	994	587	748	1247	1872	1308	3272	679	1273	497	779	1300	346
% Change since 2009	(18)	(13)	(426)	(-10)	(45)	(8)	(8)	(6)	(1)	(29)	(401)	(7)	(27)	(12)

	Latvia	Lithuania	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom	Average	Min	Max	SD
CR4	68	65	62	84	48	54	37	70	70	41	79	60	53	60	31	94	16
% Change since 2009	(19)	(-10)	(11)	(12)	(66)	(14)	(36)	(19)	(-10)	(19)	(4)	(-4)	(-4)	(19)	(10)	(142)	(32)
HHI	1510	1545	1151	2145	804	930	499	1538	1629	654	2116	1440	917	1245	346	3272	631
% Change since 2009	(24)	(-21)	(7)	(30)	(172)	(37)	(108)	(52)	(-22)	(60)	(7)	(-16)	(-3)	(53)	(-22)	(426)	(109)

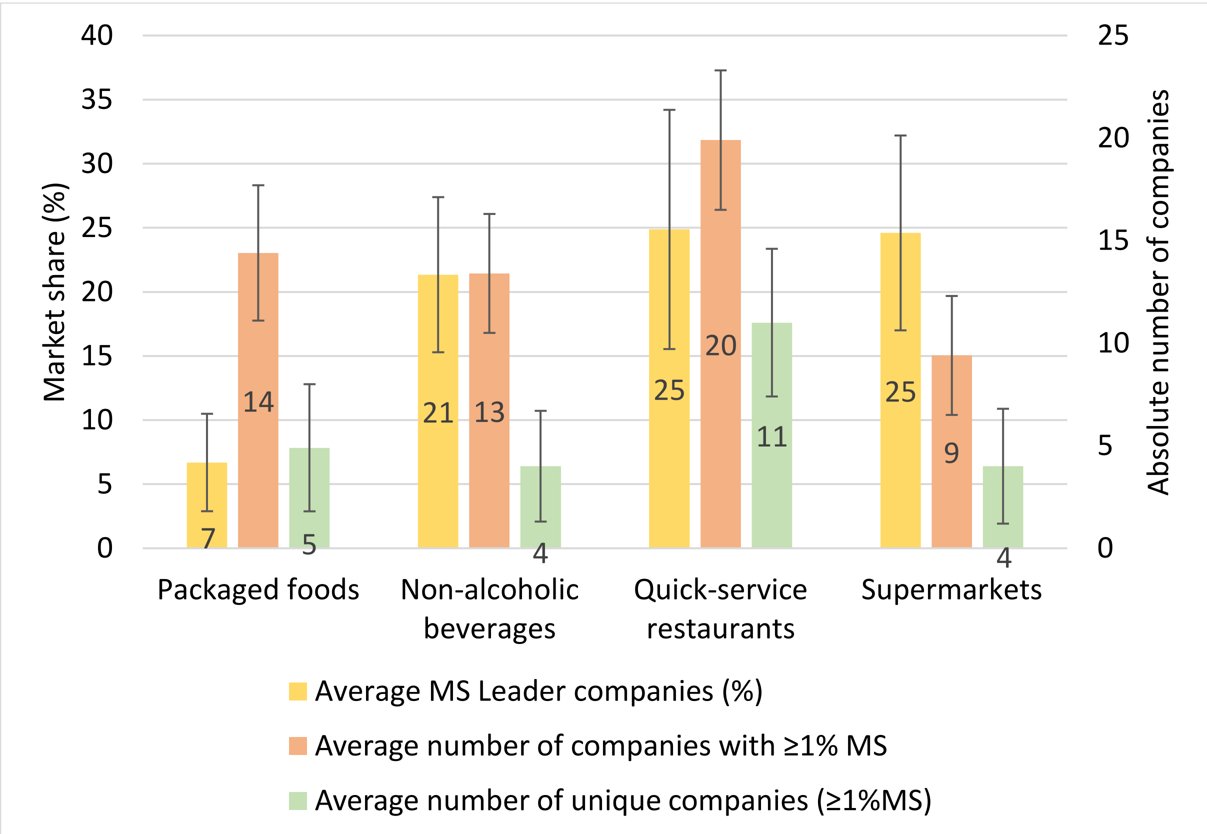

Figure 1: Average market share (MS) in hands of the leading global brand owner company (yellow), average number of global brand owners with ≥1% market share (orange) and average number of unique companies (green) across European Single Market member states and per food industry. The error bars indicate the respective standard deviation.

Annex

A. Market concentration using the Herfindahl-Hirschman Index (HHI) and percent change over 10 years (food industry = packaged foods)

Table 1: The Herfindahl-Hirschman Index (HHI) for the 14 different packaged food product markets per European Single market member state. Red indicates HHI values >2000 and highly concentrated markets, yellow indicates HHI-values between 1000 - 2000 and moderately concentrated markets and green indicates HHI-values < 1000 and unconcentrated markets. Between brackets the percent change over the past 10 years is included (2009 – 2018). Euromonitor data 2018.

Country	Soup		Ice Cream and Frozen Desserts		Breakfast Cereals		Confectionary		Dairy		Sweet Biscuits, Snack Bars and Fruit Snacks		Savoury Snacks		Sweet Spreads		Sauces, dressings and condiments		Ready meals		Processed Meat and Seafood		Processed Fruit and Vegetables		Rice, Pasta and Noodles		Baked Goods		Packaged Foods	
Austria	3694	(3)	3900	(1)	1021	(2)	1161	(11)	546	(4)	624	(24)	1605	(-9)	1670	(2)	759	(-2)	591	(-3)	249	(9)	1156	(-9)	458	(7)	18	(0)	60	(2)
Belgium	2303	(55)	1051	(-1)	2029	(-35)	558	(-7)	252	(-10)	484	(-13)	1266	(6)	778	(-23)	546	(-19)	175	(18)	83	(8)	165	(1)	315	(-15)	14	(21)	38	(-19)
Bulgaria	4740	(6)	3706	(13)	2816	(19)	1210	(5)	273	(-18)	684	(53)	390	(57)	570	(-11)	547	(-4)	990	(38)	1103	(-39)	710	(15)	671	(2)	161	(27)	75	(-31)
Croatia	4371	(21)	6185	(15)	604	(-4)	939	(-8)	1591	(-1)	1534	(23)	548	(10)	925	(-33)	1363	(-6)	846	(-29)	1767	(6)	2044	(61)	720	(31)	136	(55)	264	(-5)
Czech Republic	2614	(-10)	2124	(15)	1666	(-1)	1574	(-10)	460	(11)	2238	(-28)	669	(-45)	602	(-29)	744	(-13)	950	(-16)	619	(-2)	376	(-12)	425	(-38)	221	(-4)	149	(-10)
Denmark	1472	(6)	1042	(-27)	1123	(-1)	637	(-24)	2885	(-14)	460	(-25)	1465	(-6)	806	(-10)	588	(-4)	571	(-11)	524	(0)	215	(15)	204	(4)	240	(-57)	269	(-16)
Estonia	1327	(-16)	2415	(15)	705	(-28)	1580	(12)	1294	(6)	804	(66)	779	(-41)	655	(15)	361	(-34)	918	(35)	951	(-14)	575	(-28)	378	(-17)	1304	(0)	212	(13)
Finland	892	(-11)	3083	(-2)	436	(-24)	2153	(-3)	1446	(-36)	1690	(46)	924	(-1)	655	(-56)	706	(-1)	897	(-6)	861	(-1)	339	(4)	492	(-10)	508	(-49)	296	(-28)
France	2198	(-9)	1465	(2)	1927	(-11)	694	(21)	495	(3)	1552	(18)	668	(6)	941	(9)	522	(-5)	336	(16)	184	(15)	310	(43)	1483	(24)	20	(35)	63	(0)
Germany	1262	(-5)	757	(4)	779	(3)	577	(12)	90	(-8)	201	(8)	613	(9)	717	(7)	567	(-6)	450	(9)	31	(27)	217	(5)	306	(6)	98	(0)	25	(-15)
Greece	8785	(67)	1668	(-18)	1452	(-42)	1890	(4)	370	(-33)	1723	(14)	1122	(-20)	277	(-56)	1716	(2)	840	(38)	350	(8)	1157	(-18)	1144	(-32)	43	(-46)	76	(-33)
Hungary	3796	(3)	1286	(-12)	890	(-21)	799	(-16)	407	(-33)	829	(-23)	434	(-24)	252	(-18)	539	(-5)	369	(-25)	364	(-35)	217	(-7)	299	(-25)	16	(0)	87	(-27)
Ireland	1341	(-16)	3356	(-4)	1535	(-27)	1884	(-11)	434	(-33)	609	(-16)	1182	(-37)	797	(-39)	671	(-26)	428	(-29)	1331	(5)	842	(-1)	536	(-13)	217	(-20)	160	(-22)
Italy	1178	(-42)	222	(-39)	3333	(-15)	1198	(-2)	309	(3)	919	(-11)	587	(-16)	1225	(-36)	443	(-24)	293	(2)	135	(29)	326	(7)	412	(-41)	36	(16)	39	(-12)
Latvia	1562	(-11)	2844	(30)	1883	(-17)	1613	(6)	1425	(20)	1766	(-13)	1164	(-9)	543	(27)	1695	(13)	573	(-23)	773	(15)	1159	(12)	394	(1)	698	(5)	246	(16)
Lithuania	1879	(-12)	1363	(-10)	1962	(-13)	1166	(-29)	1233	(-24)	978	(48)	1043	(-17)	866	(11)	546	(-43)	703	(31)	613	(-6)	968	(11)	477	(-16)	702	(56)	152	(-12)
Netherlands	2547	(-21)	4465	(14)	865	(9)	421	(-10)	374	(-50)	471	(-21)	856	(-32)	367	(-7)	638	(-29)	286	(18)	39	(67)	527	(-2)	352	(-21)	40	(-37)	64	(-33)
Norway	3652	(-15)	3628	(23)	1479	(0)	1601	(3)	4469	(-10)	1675	(-26)	1207	(-19)	1836	(-7)	1294	(-13)	2104	(-23)	1337	(-18)	217	(-43)	654	(-34)	344	(-19)	577	(-10)
Poland	2092	(-27)	1324	(-2)	1953	(-33)	697	(-13)	376	(-11)	446	(-62)	675	(-17)	380	(-10)	627	(-5)	348	(-22)	545	(11)	429	(-10)	420	(-26)	6	(318)	66	(-17)
Portugal	2343	(-40)	4003	(22)	1375	(-16)	597	(-1)	753	(-9)	224	(-34)	478	(-15)	387	(23)	430	(-23)	111	(-23)	210	(-15)	103	(-41)	505	(-2)	30	(24)	113	(-15)
Romania	1561	(76)	1171	(-2)	2280	(44)	1204	(-15)	775	(-14)	447	(-8)	852	(2)	719	(18)	442	(-20)	443	(-69)	470	(-2)	368	(-26)	793	(40)	22	(455)	61	(14)
Slovakia	2224	(-13)	1960	(32)	1653	(-14)	1482	(-7)	413	(-22)	1850	(20)	342	(-66)	671	(-20)	318	(-7)	795	(-38)	605	(8)	373	(-34)	256	(-54)	133	(-2)	99	(-18)
Slovenia	3053	(35)	1192	(-2)	825	(17)	945	(-6)	1127	(-9)	290	(-25)	962	(-5)	242	(-11)	353	(5)	819	(-9)	1112	(-9)	1036	(29)	1045	(-10)	392	(-12)	182	(-12)
Spain	798	(-20)	1406	(-31)	1361	(-37)	492	(-16)	391	(-29)	625	(-40)	803	(-3)	419	(-1)	161	(-7)	183	(-18)	130	(-14)	149	(-23)	363	(-32)	243	(66)	47	(-30)
Sweden	1830	(13)	1578	(-25)	725	(-17)	1106	(6)	2011	(-26)	535	(-47)	925	(-3)	668	(-18)	681	(19)	635	(5)	648	(-13)	214	(-27)	249	(-40)	614	(-14)	254	(-21)
Switzerland	2394	(3)	1389	(0)	689	(-3)	242	(-1)	251	(0)	347	(-5)	1209	(-5)	377	(-14)	894	(3)	45	(-41)	29	(-3)	96	(-20)	137	(-24)	8	(-7)	35	(-1)
United Kingdom	1206	(-31)	1100	(35)	1059	(-30)	1285	(-7)	137	(-19)	425	(-2)	773	(-33)	513	(-11)	316	(-34)	44	(-46)	74	(-19)	377	(0)	313	(-11)	242	(-42)	70	(-10)
Average	2486	(0)	2210	(2)	1423	(-11)	1100	(-4)	911	(-13)	905	(-3)	872	(-12)	699	(-11)	684	(-11)	583	(-8)	561	(1)	543	(-4)	511	(-13)	241	(28)	140	(-13)
Min	25	(-42)	44	(-39)	161	(-42)	798	(-29)	242	(-50)	90	(-62)	242	(-66)	222	(-56)	342	(-43)	201	(-69)	6	(-39)	436	(-43)	96	(-54)	29	(-57)	137	(-33)
Max	577	(76)	2104	(35)	1716	(44)	8785	(21)	1836	(20)	4469	(66)	2153	(57)	6185	(27)	1605	(19)	2238	(38)	1304	(67)	3333	(61)	2044	(40)	1767	(455)	1483	(16)
SD	119	(29)	413	(19)	387	(19)	1610	(11)	377	(16)	951	(31)	495	(22)	1372	(21)	323	(14)	591	(27)	296	(20)	689	(24)	448	(22)	458	(108)	301	(14)

B. Herfindahl-Hirschman Index (HHI) and percent change over 10 years (food industry = non-alcoholic beverages)

Table 2: The Herfindahl-Hirschman Index (HHI) for the 8 different non-alcoholic beverage product markets per European Single Market member state. Red indicates HHI values >2000 and highly concentrated markets, yellow indicates HHI-values between 1000 - 2000 and moderately concentrated markets and green indicates HHI-values < 1000 and unconcentrated markets. Between brackets the percent change over the past 10 years is included (2009 – 2018). Euromonitor data 2018. RTD = Ready-to-drink. For 'Asian Specialty Drinks' data were lacking in several countries.

Country	Carbonates		RTD Coffee		Sports Drinks		Energy Drinks		RTD Tea		Concentrates		Juice		Asian Speciality Drinks		Soft Drinks	
Austria	3310	(4)	1865	(-17)	2086	(-10)	3811	(29)	2693	(-20)	946	(11)	910	(2)			689	(-4)
Belgium	4225	(8)	2536	(38)	3533	(18)	2275	(7)	3006	(-23)	1195	(-41)	309	(-22)			1320	(-5)
Bulgaria	3555	(23)	1645	(-27)	2246	(-38)	2049	(-38)	2075	(7)	1238	(-60)	828	(-9)			1112	(1)
Croatia	3789	(16)	1960	(4)	1687	(-9)	2922	(12)	2187	(33)	1400	(-5)	1928	(45)			1284	(36)
Czech Republic	1940	(-11)	2682	(-2)	2604	(18)	883	(-59)	1169	(33)	1048	(-3)	898	(0)			780	(-18)
Denmark	1616	(-25)	3672	(-45)	5301	(59)	2105	(26)	2993	(-26)	1184	(-25)	951	(-38)			550	(-30)
Estonia	3646	(40)	2973	(-59)	4950	(15)	2143	(29)	7243	(49)	1008	(-14)	1541	(12)			1060	(54)
Finland	1764	(-19)	1719	(-68)	2378	(-18)	1986	(28)	994	(-15)	635	(-32)	1748	(1)			699	(-16)
France	4353	(-11)	4768	(333)	2512	(-2)	3009	(-14)	2570	(0)	1477	(6)	715	(83)	2349	(9)	628	(-6)
Germany	1670	(-7)	400	(-2)	576	(35)	2009	(-22)	606	(-9)	632	(338)	244	(-16)	1414	(15)	322	(0)
Greece	4885	(-22)	2543	(-14)	4496	(63)	2805	(-66)	2263	(-53)	2808	(75)	1982	(-43)			922	(-10)
Hungary	3724	(7)	909	(-42)	1292	(120)	2028	(50)	1302	(-44)	608	(28)	1020	(50)			841	(10)
Ireland	3437	(-9)	4474	(-40)	2863	(13)	3479	(-21)	2551	(-67)	2903	(21)	525	(-15)			1096	(-12)
Italy	2334	(-15)	2363	(2)	2455	(4)	6033	(50)	792	(-41)	978	(4)	516	(-23)	4215	(+∞)	492	(-11)
Latvia	2436	(19)	1091	(-74)	1802	(56)	2109	(150)	4464	(41)	1950	(110)	2455	(34)			1035	(9)
Lithuania	3795	(38)	2738	(108)	835	(-78)	905	(48)	2999	(17)	1943	(-8)	945	(-14)			873	(50)
Netherlands	2422	(14)	1989	(-43)	1048	(-15)	5089	(162)	1818	(-7)	2405	(20)	910	(1)	4296	(67)	609	(8)
Norway	3315	(1)	6080	(-15)	3419	(-13)	2587	(-2)	2947	(30)	3021	(16)	1203	(-1)			1251	(-22)
Poland	2745	(30)	1056	(47)	2868	(-38)	1615	(21)	1606	(-37)	870	(-1)	1563	(9)			575	(-9)
Portugal	2775	(9)	6808	(-32)	283	(-88)	2123	(-66)	888	(21)	1305	(-54)	1591	(41)	3341	(+∞)	407	(-7)
Romania	2139	(42)	3773	(320)	4345	(-12)	1684	(-38)	2518	(-17)	1132	(-62)	827	(-11)			723	(1)
Slovakia	1609	(-8)	1967	(-18)	3192	(-21)	1961	(-29)	1041	(-32)	598	(4)	627	(20)			417	(-12)
Slovenia	3066	(10)	2172	(19)	886	(38)	3008	(-22)	2856	(4)	1503	(-1)	3143	(-24)			708	(-9)
Spain	4173	(-3)	2095	(-78)	5690	(19)	2138	(-13)	4763	(54)	2248	(-18)	541	(27)			918	(-18)
Sweden	4051	(22)	4674	(163)	3592	(-11)	1884	(-43)	2607	(4)	2848	(0)	983	(14)			1140	(5)
Switzerland	2741	(7)	4124	(-13)	1513	(9)	2384	(-3)	378	(2)	992	(32)	359	(-31)			433	(-10)
United Kingdom	3352	(-11)	3926	(443)	5937	(28)	2314	(-16)	1741	(-70)	1743	(-23)	595	(79)	70	(-81)	778	(2)
Average	3069	(6)	2852	(33)	2755	(5)	2494	(6)	2336	(-6)	1504	(12)	1106	(6)	2614	(2)	802	(-1)
Min	322	(-25)	1609	(-78)	598	(-88)	400	(-66)	378	(-70)	883	(-62)	283	(-43)	244	(-81)	70	(-30)
Max	1320	(42)	4885	(443)	3021	(120)	6808	(162)	7243	(54)	6033	(338)	5937	(83)	3143	(+∞)	4296	(54)
SD	282	(19)	914	(129)	742	(42)	1536	(54)	1431	(34)	1083	(74)	1555	(32)	678	(53)	1522	(19)

Science and Technology in childhood Obesity Policy

BIA-Obesity Europe: commitments and performance of the European food industry to improve population nutrition

Abstract

Objectives: The food industry could play an important role in improving population diets, but often escape accountability through unspecific commitments. This study evaluated nutrition-related commitments and estimated performance of the largest packaged food and non-alcoholic beverage manufacturers, supermarkets and quick-service restaurants (QSR) in Europe.

Methods: To quantitatively assess the comprehensiveness, specificity and transparency of companies' publicly available commitments in 2020, the 'Business Impact Assessment on Obesity and Population Nutrition' (BIA-Obesity) was applied. The proportion of sales from 'unhealthy' food categories (product categories not-permitted to be marketed to children), as well as ultra-processed food categories and over time changes in the number of QSR transactions and QSR were calculated.

Results: Company commitments fell short of best practice recommendations (median overall score of 21%, range: 1%-62%). Food and beverage companies generated 82% (15%-100%) and 58% (1%-100%) sales from ultra-processed and 'unhealthy' products, respectively, and the number of QSR outlets and transactions substantially increased in Europe since 2011.

Conclusion: Whilst most companies made some nutrition-related commitments, they did not comply with best practice recommendations. A large proportion of sales was generated from ultra-processed/unhealthy products and QSR outlets increased. Government regulations are urgently needed.

Introduction

Throughout Europe, different food cultures, income levels and inequalities can be observed, but the challenges relating to unhealthy diets and overweight remain largely the same (1). In 2016, approximately only 41% of the European population was classified as having a normal bodyweight (Body Mass Index, 18.5 < BMI < 24.9 kg/m^2) (1,2). Genetics may be able to explain weight variations at an individual level, but cannot explain the continued weight gain across populations and age categories (3). Food environments, defined as "the collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status"(4), are now thought to be the primary drivers of unhealthy diets and obesity (4–7). Over the last 40 years, food environments have rapidly changed (4,6,8). People are frequently exposed to unhealthy foods including through advertisements, messages and images for unhealthy foods and beverages. Evidence suggests that food marketing can unconsciously influence food choices and shift diets towards less healthy foods (9,10). These changes to food environments are largely due to food industry actions, enabled by a regulatory environment that promotes globalisation and profit growth, without due consideration for the impact on public health (4,10,11).

The food industry, however, is attempting to profile themselves as responsible actors that are part of the solution to improving population nutrition and reducing obesity, instead of contributing to the underlying problem (9,11,12). Solutions proposed by the food industry are generally voluntary and self-regulatory in nature, including marketing and reformulation initiatives (9). For example, the EU-Pledge is a European wide initiative to address marketing of unhealthy foods and beverages towards children (13,14). Through this pledge, food and beverage manufacturers, as well as some quick-service restaurants (QSR), commit to not advertise food products to children that do not meet the EU-Pledge nutrition criteria, in media where at least 35% of the audience is under the age of 12-years (13–15). Although compliance to this pledge by signatory companies is high, this does not translate into effective protection of children from unhealthy food marketing, due to the target audience definition, the limited number of national signatories and the lenient nutrition criteria (15,16).

An alternative nutrient profiling system to determine whether food products should be permitted to be marketed to children is the World Health Organisation Regional Office for Europe nutrient profile model (WHO-model).

The WHO-model is considerably stricter and allows fewer products to be marketed to children compared to the nutrient profiling model underpinning the EU-Pledge (16,17). In regards to reformulation, a number of prominent food and beverage manufacturers, QSR and supermarkets commit to voluntary reformulation targets as part of corporate social responsibility activities (18–22). There are also food industry-wide initiatives in place, such as the reformulation commitments made through the International Food and Beverage Alliance (IFBA) (23–26).

To ensure that commitments made by the food industry translate into real-world good practices, it is essential to monitor and evaluate them (7). The Access to Nutrition Initiative (ATNI) benchmarks the largest food and beverage manufacturers on their nutrition-related policies and practices at a global level (27–30). The International Network for Food and Obesity/Non-communicable Diseases (NCDs) Research, Monitoring and Action Support (INFORMAS) developed the ‘Business Impact Assessment on Obesity and Population Nutrition’ (BIA-Obesity) based on the ATNI methods, a review of relevant academic papers, WHO documents and other grey literature reports. The BIA-Obesity benchmarks company commitments and practices related to obesity and population-level nutrition at the national level, with specific assessment criteria developed for food and non-alcoholic beverage manufacturers, QSR and supermarkets (7,31). Each company's commitments and practices are assessed across six policy domains: ‘Corporate strategy’, ‘Product formulation’, ‘Nutrition labelling’, ’Product and brand promotion’, ‘Product accessibility’, and ‘Relationships with other organisations’ (31). The BIA-Obesity tool and process have been described in detail in an open access publication elsewhere (31).

To date, the BIA-Obesity has been applied in six countries (32–37). This study is the first to apply BIA-Obesity in the European context. Using the BIA-Obesity, this study aimed to quantitatively assess publicly available nutrition-related commitments made by the largest packaged food and beverage manufacturers, supermarkets and QSR in Europe (2020). In addition, company performance was estimated by calculating the proportion of packaged food and beverage sales from ultra-processed and 'unhealthy' food categories, as well as changes in the number of QSR transactions and QSR and supermarket outlets over time in Europe.

Methods

Adaptation of the BIA-Obesity tool and process to the European context

The indicators across BIA-Obesity domains relate to company commitments that go beyond legislative requirements. For this reason, before the BIA-Obesity is applied in a particular jurisdiction, indicators and scoring criteria are modified to suit the particular legislative context.

In collaboration with the INFORMAS team, the BIA-Obesity indicators were adapted to the European context (7,31). Firstly, indicators not applicable to the European context were removed, such as those related to the on-pack disclosure of the ingredients list, trans-fat and added sugar content. This is regulated by the European Union (EU) Regulation No 1169/2011 (38).

Secondly, the scoring of the remaining indicators was adapted. Indicators assessing if a commitment was in place were scored higher if the commitment specifically applied to Europe (or referred to more than two European countries) instead of solely being a global commitment without reference to Europe. Indicators that scored the content of the commitments, were scored based on the comprehensiveness, transparency, and specificity of the commitment, regardless of whether it was applied at European or global level (31). If an active declaration was found stating that the company had no activity in a certain area (e.g. committed not to make political donations), the maximum score was assigned. The complete tool, including scoring criteria, can be found in Supplementary file 1.

Selection of food companies

Food companies were selected among four European food industries, namely, packaged food and non-alcoholic beverage manufacturers, QSR and supermarkets. The Euromonitor International Passport database was used to determine the company's overall market share in both Eastern- and Western Europe per industry in 2017/2018 (39). Euromonitor uses a geographical definition of Europe, including 17 countries in both Eastern- and Western Europe. Consequently, some non-EU members were also included (Belarus, Georgia, Moldova, Ukraine and Russia for Eastern Europe; Andorra, Iceland, Lichtenstein, Monaco, Norway, Switzerland and Turkey for Western Europe).

Selection of packaged food and beverage manufacturers was at company level. For QSR and supermarkets, selection was at brand level (e.g. KFC and Pizza Hut are both brands from Yum! Brands).

For QSR, data were available for all 17 West European countries, but only for eight East European countries. Within each industry, the most prominent European companies/brands were selected on two criteria: 1) ≥1% market share in Eastern- and Western Europe, 2) Presence across East- and West European countries. For example, companies only present within the aforementioned non-EU countries, were excluded.

For packaged food manufactures an additional selection was conducted based on companies' contribution to the sales of specific food categories such as 'Breakfast cereals', 'Confectionery', 'Ice-cream and frozen desserts', 'Sweet biscuits and cereal bars', 'Drinking milk products', 'Yoghurts', 'Savoury snacks' and 'Ready meals'. It was made sure that the top companies contributing most to the sales of those specific food categories were included in the assessment. For the purpose of this project, alcoholic beverages, edible oils, bottled water, infant formula and baby foods were excluded.

Data collection

- **Nutrition-related commitments**

An internet search was conducted for each selected company to identify nutrition-related commitments (7). The available data were downloaded or screenshots were taken. Where it existed, the European company website was searched alongside the global website. Brand websites were also included. For supermarkets, an additional selection of national company websites was searched to identify commitments made in two or more individual European countries. Due to language barriers these national websites were limited to websites in English, Dutch, French, Spanish and German. Where available, financial and corporate social responsibility reports were also examined. Lastly, industry pledges and initiatives (i.e. the EU-Pledge and IFBA reformulation commitments) were taken into account.

As BIA-Obesity indicators are identical for packaged food and beverage manufacturers and several companies are active within both areas, both industries are discussed together throughout the article.

- **Performance estimation metrics**

Due to limited data available at European level to assess performance as recommended by INFORMAS, performance was estimated using Euromonitor International sales data (2018) (7,39).

For packaged food and beverage manufacturers, the healthiness of product sales was used as a measure to assess company ‘performance’ in two BIA-Obesity domains: ‘Product formulation’ and ‘Product and brand promotion’.

Data on product categories sold by each company were collected for 27 European countries, 13 in Eastern- and 14 in Western Europe. The healthiness of these product categories was assessed using two classification systems, the NOVA-classification and the WHO-model (17,39,40). The NOVA-classification categorises products into four groups according to the level of processing: 1) Unprocessed or minimally processed foods, 2) Processed culinary ingredients, 3) Processed foods and 4) Ultra-processed foods (40), and was used in this study to calculate, for each selected company and across European countries, the proportion of packaged food/beverage sales from ultra-processed products. The WHO-model is used to determine whether products are permitted to be marketed to children. While some product categories are entirely permitted or not-permitted to be marketed to children, for some product categories, nutrient thresholds are defined. Once a product exceeds the threshold for one nutrient, it is no longer permitted to be marketed to children. In addition to the WHO-model categories that are entirely not-permitted to be marketed to children (category 1, 2, 4a, 4c and 5), also 'Milk drinks with sugar' (part of category 4b) and 'Sweetened soft drinks' (part of category 4d) were considered as not-permitted (17). An overview of the different WHO-model categories and how they were classified at category level for the purpose of this study can be found in Supplementary file 2. An overview on how Euromonitor food categories were classified according to both the NOVA and the WHO-model classification can be found in Supplementary file 3.

For QSR and supermarkets, the number of outlets and annual fast food transactions (the latter for QSR only) was obtained from Euromonitor, to estimate their presence throughout Europe and link with the importance of having strong commitments within the 'Product accessibility' domain. The number of QSR outlets and transactions for McDonald's only included the brand McDonald's (not McCafé) and for Pizza Hut only included Pizza Hut (not Pizza Hut Express).

Similarly, the number of outlets for Auchan did not comprise Auchan City or Auchan outlets in hands of CONAD, Carrefour outlets did not comprise Carrefour Express, Carrefour Market or Carrefour Planet and Tesco outlets did not comprise Tesco Express and Tesco Extra.

Data Analysis

- **Nutrition-related commitments**

The scoring of the commitments was completed in Microsoft Excel. Supplementary file 4 provides an example of how the commitments were scored. The scores were assigned by two authors (EG and IVD) and subsequently a sample of six companies (two companies per food industry) were re-scored blindly by a third author (ER). Scoring discrepancies were discussed until an agreement was obtained. The scores per domain and food sector were weighted according to the BIA-Obesity methodology (Supplementary file 5) (31).

The median scores (range) for the commitments per BIA-Obesity domain were calculated for each food industry and across food industries.

- **Performance estimation metrics**

The proportion (range, standard deviation (SD)) of sales for ultra-processed and not-permitted food categories (i.e. 'unhealthy' food categories), as well as the average number of QSR outlets and annual fast food transactions in 2018, were calculated per company across European countries. To estimate changes over time, the average percent change was calculated over a 10-year period (2009 – 2018) for packaged food and beverage manufacturers and over an 8-year period (2011-2018) for supermarkets and QSR (due to Euromonitor data availability).

Associations between performance estimation metrics and BIA-Obesity scores were assessed.

Results

A total of 30 companies were assessed, 17 packaged food and beverage manufacturers, six QSR and seven supermarkets. An overview of the included companies together with their market shares in Eastern- and Western Europe and the number of countries they were present with ≥1% market share can be found in Table 8.

The overall BIA-Obesity score ranged from 1% (Maspex Wadowice and Red Bull GmbH) to 62% (Danone), with a median score across all companies of 21%. The median scores for packaged food and beverage manufacturers, QSR and supermarkets were 35% (range:1%-62%), 15% (range:3%-30%) and 15% (range:7%-27%), respectively (Figure 2, Table 9).

The best performing companies within the ‘Corporate strategy’ domain made specific, measurable, achievable, relevant and time bound (SMART) targets within their overarching nutrition strategy, referred to global priorities (WHO recommendations and Sustainable Development Goals) and published regular reports on their approach to population nutrition. Within the ‘Product formulation’ domain, best performing companies committed to not use artificial trans-fat and had some SMART targets in place to reduce either salt, saturated fats, sugar and energy content of products. Within the ‘Nutrition labelling’ domain, best performing companies provided nutritional information online on a per 100g/ml basis while supporting a European wide implementation of the Nutri-Score and linking the use of nutrition and health claims with the nutritional profile of products. Companies scoring well within the ‘Product and brand promotion’ domain were a signatory to the EU-Pledge and made some additional commitments to not sponsor or market in settings where children gather using unhealthy brands. Only limited commitments were found within the ‘Product accessibility’ domain with best performing companies committing to increase the proportion of healthy products within their portfolio as well as supporting some forms of taxation to make healthier foods relatively cheaper and unhealthy foods relatively more expensive. The latter domain is especially important for QSR and supermarkets. Best performing QSR committed to not provide free refills for soft drinks and provided healthy drink and side items within combination meals while best performing supermarkets committed for checkouts to be free from unhealthy items.

Within the last domain, ‘Relationships with other organisations’, best performing companies disclosed supported professional organisations, external research, nutrition education and active lifestyle programs and involvement in public-private partnerships as well as committed to not make political donations.

Packaged food and non-alcoholic beverage manufacturers

The domain ‘Corporate strategy’ scored the highest with a median score of 63% (range:0%-87%). The domain ‘Product accessibility’ obtained the lowest score, with a median score of 8% (range:0%-38%).

Packaged food manufacturers that obtained an overall score above 50% were Danone (62%), Nestlé (59%), Mars (56%) and Unilever (55%). Among beverage manufacturers Coca-Cola obtained the highest overall BIA-score (59%), followed by PepsiCo (46%), Britvic (34%) and the Eckes-Granini Group (19%) (**Error! Reference source not found.**,Table 9).

Within the domain ‘Product formulation’, 14 out of the 17 selected packaged food and beverage manufactures had some commitments, with a median score of 35% (range:0%-82%). Packaged food manufacturers scored considerably higher than beverage manufacturers, with a median score of 61% (range:0%-82%), compared to 35% (range:0%-65%) (Table 9).

Packaged food and beverage manufactures generated on average 82% (range:15%-100%) of sales from ultra-processed foods, or 79% (range:15%-100%) and 85% (range:66%-100%), respectively. Apart from Lactalis, that generated only 15% of sales from ultra-processed foods, there were no companies that generated less than 65% of sales from ultra-processed foods. Among the 17 selected packaged food and beverage manufactures, sales generated by ultra-processed foods on average increased over the last 10 years (2009–2018) for six of the companies (+4%, range: 0.9%-9%), did not change for two and decreased for nine (-7%, range:-0.2% - -15%) (Table 10). When comparing sales generated from ultra-processed foods to the scores for commitments made within the domain ‘Product formulation’, no association was observed (Figure 3).

Similar to the domain ‘Product formulation’, 14 out of the 17 selected packaged food and beverage manufactures committed to limit advertising to children below 12-years of age, with the domain ‘Product and brand promotion’ obtaining a median score of 42% (range:0%-60%).

Category specific sales data however revealed that selected packaged food and beverage manufacturers generated on average 58% (range:1%-100%) of their 2018 sales across Europe from ‘unhealthy’ food categories. Beverage manufactures generated almost all of their sales (average:81%, range:60%-100%) from these food categories, whilst for packaged food manufacturers this was approximately half of all sales (average:43%, range:1%-83%). Over a 10-year period (2009-2018), eight companies had on average increased sales (+16%, range:0.3%-79%) from ‘unhealthy’ food categories, whilst this decreased for the remaining nine companies (-11%, range:-0.4% - -23%) (Table 10). When comparing sales generated from ‘unhealthy’ food categories with the scores within the domain ‘Product and brand promotion’, no association was observed (Figure 4).

Quick-service restaurants

Similar to packaged food and beverage manufacturers, the domain ‘Corporate strategy’ was the highest scoring and ‘Product accessibility’ the lowest scoring domain, with median scores of 51% (range:0%-80%) and 0% (range:0%-18%), respectively (Figure 2,Table 9).

McDonald’s obtained the highest overall BIA-Obesity score (30%) as well as the highest score in all domains except for the ‘Relationships with other organisations’ domain, where the highest score was obtained by Subway (23%). Subway, Pizza Hut, KFC and Burger King, all obtained overall scores between 14% and 18%. Domino’s Pizza had the lowest overall BIA-Obesity score (3%).

The limited nutrition-related commitments made by QSR, reflected in a median overall BIA-score of 15% (range:3%-30%), may be of concern as the selected QSR on average counted 4494 European outlets (range:1477-8714) and 875 million annual fast food transactions (range:62 million-3311 million) across Europe in 2018. Both the number of outlets and annual transactions substantially increased since 2011 with on average 75% (range:19%-133%) and 88% (range:23%-188%), respectively (Table 10).

Supermarkets

As with the other sectors, the domain ‘Corporate strategy’ was the highest scoring domain with a median score of 57% (range:23%-87%). Unlike other sectors, the lowest scoring domain was ‘Product and brand promotion’, with a median score of 0% (range:0%-3%) (Figure 2,Table 9**Figure 2: Overall Business Impact Assessment on**

Obesity and Population Level Nutrition (BIA-Obesity) scores for selected packaged food and beverage manufacturers, quick-service restaurants and supermarkets in Europe, 2020. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***).

Tesco obtained the highest overall BIA-Obesity score (27%), closely followed by Lidl (26%). Across the individual domains, Lidl scored the highest within 'Corporate strategy' (87%), 'Product formulation' (50%) and 'Product and brand promotion' (3%). Carrefour scored the highest within 'Nutrition labelling' (33%) and 'Relationships with other organisations' (67%) and Tesco within 'Product accessibility' (13%).

The selected supermarkets on average counted 4492 outlets across Europe in 2018 (range:479-10581). The number of outlets increased since 2011 for all supermarkets, apart from Tesco, with on average 50% (range:-2%-238%) (Table 10).

Discussion

BIA-Obesity scores showed that most selected packaged food and beverage manufacturers, QSR and supermarkets recognised their role in improving food environments, but fell short of recommended best practices. Best practices refer to actions recommended by the World Health Organization (WHO) that the food industry can take to improve population nutrition and create healthier food environments, such as reformulating products to reduce nutrients of concern (sugar, saturated fat, trans fat, sodium), ensuring that healthy and nutritious choices are available and affordable to all consumers, restricting marketing of foods high in sugars, sodium and saturated fats, especially those foods aimed at children and teenagers, and providing consumers with clear, easily understood nutrition information and evidence-based interpretive food labels.

Publicly available nutrition-related commitments, assessed using the BIA-Obesity, largely differed in levels of transparency, specificity and comprehensiveness, with overall BIA-Obesity scores ranging from 1% to 62%.

The median overall BIA-Obesity score across food industries in Europe was lower than what was found in Australia and New Zealand (21% vs 41% and 38%, respectively). Previous studies showed that scores typically increase for companies engaging with the BIA-Obesity (33,35,37). As such the difference in scores is likely due to the European assessment being based on only publicly available data, whereas for Australia and New Zealand the assessment included internal policy information provided by companies (35,37).

'Corporate strategy' was the highest scoring domain, emphasizing that companies like to profile themselves as part of the solution to reducing obesity and improving population nutrition (9,11,12). 'Product accessibility' was the lowest scoring domain. The low scores within the 'Accessibility' domain could potentially be explained by the pricing and distribution of healthier products being less of a concern for companies or being more complex due to the number of actors involved (29,30,37). These findings are similar to previous findings (33,35,37) and are also in line with findings from the ATNI 2018 Global Index, which identified 'Governance' as the highest scoring and 'Accessibility' the lowest scoring domain (30).

Companies could strengthen their role in improving food environments through the enhancement of their nutrition-related commitments. To meet best practice recommendations (i.e. WHO recommendations) they could develop SMART targets for product reformulation using an official nutrient profiling system, commit to only label products with nutrition and health claims when products are healthy and develop a marketing policy that applies to children up to the age of 18 (applying the WHO-model). QSR could commit to only advertise 'healthy' sides and drinks in combination meals, commit to not use price incentives such as supersizing and commit to not open new stores near schools. Supermarkets could commit to limit multi-buy specials on unhealthy foods, dedicate a maximum amount of shelf/floor space to less healthy products and limit the placement of unhealthy items at high-traffic areas (31).

No associations were observed between commitment scores and performance estimation metrics for packaged food and beverage manufactures. Across Europe in

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2018 on average 82% and 58% of sales were generated from ultra-processed and 'unhealthy' food categories, respectively. These findings indicate that companies with stronger reformulation and marketing to children commitments are still deriving a large proportion of their sales from ultra-processed and unhealthy products. The high proportion of sales derived from ultra-processed foods is particularly concerning within the growing body of literature showing an association between the consumption of ultra-processed foods and overweight (41–43). The sales generated from 'unhealthy' foods are likely an underestimation, as the study only classified products that are not-permitted to be marketed to children under any circumstances. Foods and beverages that are within WHO-model categories using the nutrient thresholds may still exceed the predefined nutrient-thresholds and in practice be not-permitted to be marketed to children (17).

For QSR, scores for commitments were low, while the number of outlets and annual fast food transactions increased substantially over the last eight years. This is concerning as annual fast food transactions have been positively associated with average BMI (44). Nevertheless, it has been suggested that this could be addresses through government regulation, as countries that implemented stricter policies to regulate fast food consumption had also experienced a slower increase in BMI (44,45).

Policy measures already in place at European level are the obligatory on-pack nutritional information and trans-fat regulation (46,47). Across individual European countries, policies have been implemented to support healthy nutrition and physical activity within the school environment, support self-regulatory marketing and reformulation initiatives and a growing support for front-of-pack labelling (1,48). Nevertheless, European countries are not on track to meet global nutrition-related targets (1). These findings, combined with our results that show that food industry nutrition-related commitments fall short of best practice recommendations, highlight the need for more ambitious government regulations, both at European level and across countries.

This study has several strengths. It was the first to evaluate the comprehensiveness, specificity and transparency of publicly available nutrition-related commitments in the European context applying the BIA-Obesity tool. It pointed out domains where commitments were in place to improve food environments and highlighted areas for improvement.

By estimating performance it also emphasized the need to improve the relative availability of healthier food choices across Europe while decreasing the proportion sales generated from ultra-processed and unhealthy products. Nonetheless, several limitations were identified. This study solely included publicly available information and as such was not designed to capture internal company commitments. A clear distinction between companies was however evident. Additionally, information was primarily obtained from global company websites and reports and only the biggest food companies were included in the assessment. As a result, it was not always clear how commitments were applied in Europe or within individual European countries. For supermarkets in particular, European and global level information was limited and difficult to obtain as the majority of supermarkets operated at the country level. Lastly, due to limited data available at European level, performance across food industries could only be estimated within a few BIA-Obesity domains.

To overcome aforementioned limitations, future research should apply the BIA-Obesity within individual European countries, especially for supermarkets, and data on the nutritional composition of product portfolios, labelling practices, the availability/affordability of products and promotion to children should be collected to more accurately assess performance across all domains of BIA-Obesity.

In conclusion, this study found that most major European packaged food and beverage manufacturers, QSR and supermarkets made commitments to improve food environments, albeit with varying transparency, specificity and comprehensiveness. These commitments did not meet best practice recommendations. Even though food companies recognised their role in improving food environments and profiled themselves as part of the solution, the number of QSR outlets and annual fast food transactions increased over time, the relative availability of healthier food choices was limited across Europe and there was still a large margin to decrease the proportion sales generated from ultra-processed and unhealthy products. As a result, more ambitious government regulations are needed, both at European- and country-level.

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Table 8: Companies included for the Business Impact Assessment on Obesity and Population Level Nutrition (BIA-Obesity) tool in Europe, 2020, together with their market share or brand share in Eastern- and Western Europe and the number of countries they operate in. Sourced from Euromonitor 2017/18. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

		Market share 2017/2018 (%)		Number of countries operating in with ≥1% market share	
	Company	Eastern Europe	Western Europe	Eastern Europe	Western Europe
PACKAGED FOOD MANUFACTURERS					
	Danone Group	3	2	10/17	9/17
	Ferrero Group	2	2	12/17	8/17
	Intersnack Knabber-Gebäck GmbH & Co KG [1]	0.3	0.5	0/17	2/17
	Kellogg Co [1]	0.3	0.6	0/17	1/17
	Lactalis, Groupe	1	2	7/17	7/17
	Mars Inc	2	1	16/17	10/17
	Mondelēz International Inc	2	2	14/17	15/17
	Nestlé SA	2	2	13/17	11/17
	Oetker-Gruppe [1]	0.2	0.5	0/17	1/17
	Pepsico Inc [2]	3	0.9	6/17	7/17
	Unilever Group	1	2	12/17	16/17
	TOTAL MARKET SHARE 2018	17	15		

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BEVERAGE MANUFACTURERS					
	Britvic Plc	/	2	/	3/17
	Coca-Cola Co	18	21	17/17	17/17
	Eckes-Granini Group GmbH	0.6	2	3/17	5/17
	Maspex Wadowice Grupa	3	/	7/17	/
	Pepsico Inc [2]	12	6	17/17	17/17
	Red Bull GmbH	2	3	0/17	5/17
	Suntory LTd	0.2	3	1/17	7/17
	TOTAL MARKET SHARE 2018	23	33		
QUICK-SERVICE RESTAURANTS [3]					
	Burger King (Restaurant Brands International Inc)	8	5	7/8	16/17
	Domino's Pizza Inc	0.8	2	6/8	16/17
	KFC (Yum! Brands Inc)	12	3	8/8	10/17
	McDonald’s (McDonald's Corp)	27	19	8/8	17/17
	Pizza Hut	1	1	6/8	13/17
	Subway (Doctor's Associates Inc)	2	2	7/8	11/17
	TOTAL BRAND SHARE 2017	51	31		
SUPERMARKETS [4]					

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	Aldi	0.4	5	1/17	9/17
	Auchan (Auchan Group)	2	2	5/17	2/17
	Carrefour (Carrefour SA)	0.7	3	3/17	5/17
	Lidl (Schwarz Beteiligungs GmbH)	4	5	9/17	15/17
	Maxima (Vilniaus Prekyba UAB) [5]	0.8	/	3/17	/
	Spar (Internationale Spar Centrale BV)	1	1	5/17	7/17 [6]
	Tesco (Tesco Plc)	2	2	4/17	2/17
	TOTAL BRAND SHARE 2018	10	17		

1. Added based on their importance towards obesity in general and among children, as determined by their contribution to specific Euromonitor food categories such as ‘Breakfast cereals’, ‘Confectionery’, ‘Ice-cream and frozen desserts’, ‘Sweet biscuits and cereal bars’, ‘Drinking milk products’, ‘Yoghurts’, ‘Savoury snacks’ and ‘Ready meals’. Intersnack Knabber-Gebäck GmbH & Co KG did not have more than 1% market share in Eastern and Western Europe, but was a considerable contributor to the sales of ‘Savoury snacks’ with 5.3% and 9.1% of the market share of ‘Savoury snacks’ in Eastern and Western Europe, respectively. Kellogg Co in turn was the biggest company selling ‘Breakfast cereals’ in both Eastern and Western Europe with a market share of 6.6% and 27%, respectively, within this food category. They also substantially contributed to the sales of ‘Sweet biscuits and cereal bars’ and ‘Savoury snacks’, making them important to include towards childhood obesity. Lastly, Oetker-Gruppe was identified as the biggest company specialised in ‘Ready meals’ in Western Europe with a market share of 5.5% and was also among the top 5 in Eastern Europe with a market share of 2.3%.

2. Pepsico Inc was included both as packaged food and beverage manufacturer. This was not done for other companies already included as packaged food manufacturers, such as Danone and Nestlé, as they, although having a high market share for beverages, showed to mainly contribute to the sales of bottled water and derivate products such as sugared/juicy/aromatic waters.

3. Brand share was defined as the brand share among ‘Chained consumer food services’ as obtained from Euromonitor 2017/2018. Euromonitor defines ‘Chained Consumer Foodservices’ as: “Chained units are defined by 10 or more units. An exception is made for international chains that have a presence of fewer than 10 units in a country. In this case, they are still considered to be chained units.”.

4. Brand share was defined as the brand share among ‘Grocery Retailers’, defined as: “Retailers selling predominantly food/beverages/tobacco and other everyday groceries. This is the aggregation of hypermarkets, supermarkets, discounters, convenience stores, independent small grocers, chained forecourt retailers, independent forecourt retailers, food/drink/tobacco specialists and other grocery retailers.” by Euromonitor 2017/2018.

5. Maxima (Vilniaus Prekyba UAB) was added to the selection as they were the biggest supermarket in Estonia, Latvia and Lithuania with a market share of 17.5%, 24.5% and 32.8%, respectively. The only other supermarkets present in this geographical area was Lidl in Lithuania.

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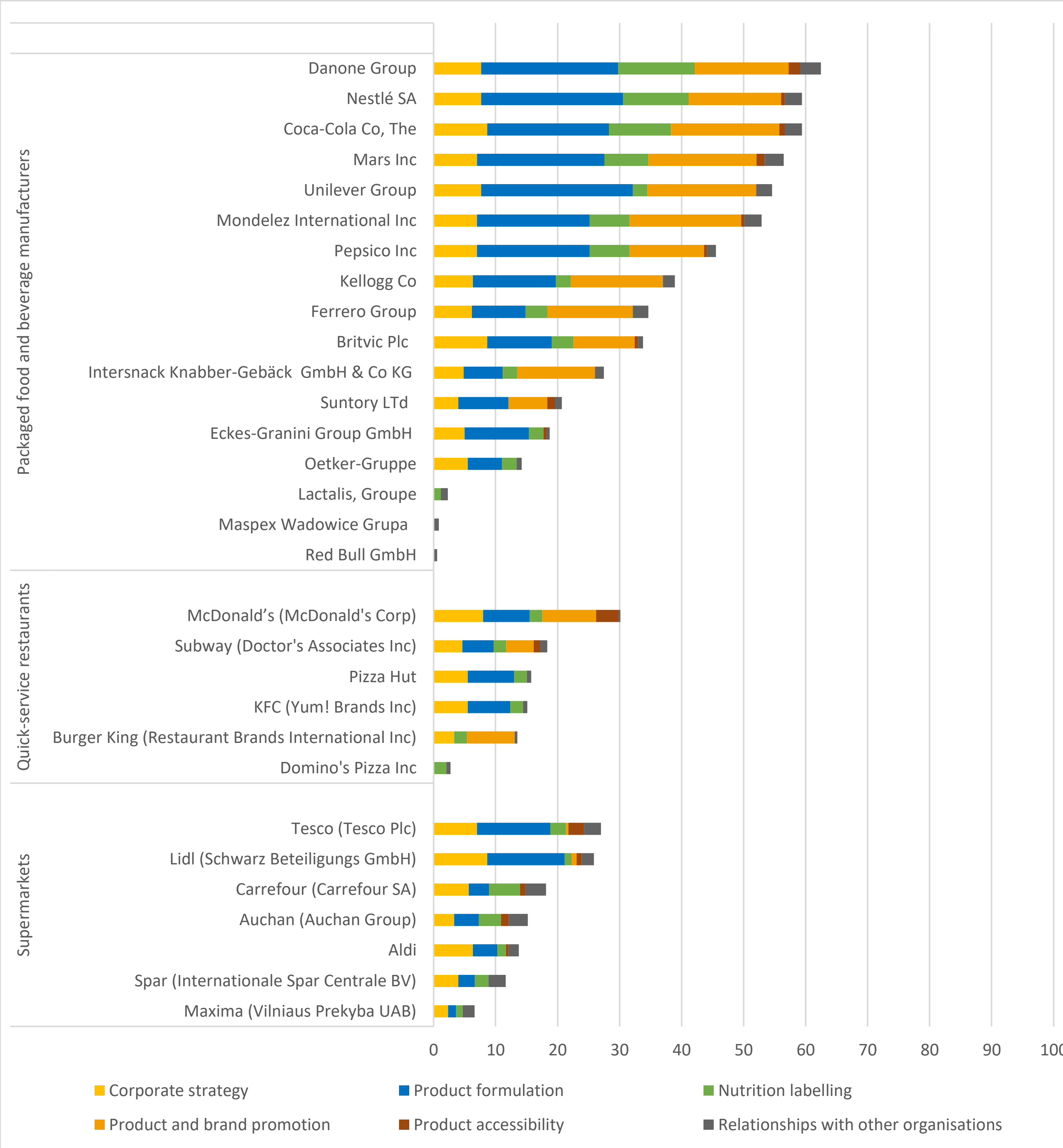

Packaged food and beverage manufacturers
Danone Group
Nestlé SA
Coca-Cola Co, The
Mars Inc
Unilever Group
Mondelez International Inc
Pepsico Inc
Kellogg Co
Ferrero Group
Britvic Plc
Intersnack Knabber-Gebäck GmbH & Co KG
Suntory LTd
Eckes-Granini Group GmbH
Oetker-Gruppe
Lactalis, Groupe
Maspex Wadowice Grupa
Red Bull GmbH
Quick-service restaurants
McDonald's (McDonald's Corp)
Subway (Doctor's Associates Inc)
Pizza Hut
KFC (Yum! Brands Inc)
Burger King (Restaurant Brands International Inc)
Domino's Pizza Inc
Supermarkets
Tesco (Tesco Plc)
Lidl (Schwarz Beteiligungs GmbH)
Carrefour (Carrefour SA)
Auchan (Auchan Group)
Aldi
Spar (Internationale Spar Centrale BV)
Maxima (Vilniaus Prekyba UAB)
0
10
20
30
40
50
60
70
80
90
Corporate strategy
Product formulation
Nutrition labelling
Product and brand promotion
Product accessibility
Relationships with other organisations

Figure 2: Overall Business Impact Assessment on Obesity and Population Level Nutrition (BIA-Obesity) scores for selected packaged food and beverage manufacturers, quick-service restaurants and supermarkets in Europe, 2020. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Table 9: The total Business Impact Assessment on Obesity and Population Level Nutrition (BIA-Obesity) scores as well as the scores for the individual domains per company (based on publicly available data, 2020). ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Company Name	Total BIA-score (%)	Corporate strategy (%)	Product formulation (%)	Nutrition labelling (%)	Product and brand promotion (%)	Product accessibility (%)	Relationships with other organisations (%)
PACKAGED FOOD MANUFACTURERS							
Danone Group	62	77	74	62	50	38	67
Ferrero Group	35	62	29	18	46	0	50
Intersnack Knabber-Gebäck GmbH & Co KG	27	48	21	12	42	2	28
Kellogg Co	39	63	45	12	50	0	39
Lactalis, Groupe	2	0	0	6	0	0	22
Mars Inc	56	70	68	35	58	27	61
Mondelez International Inc	53	70	61	32	60	10	56
Nestlé SA	59	77	76	53	50	13	56
Oetker-Gruppe	14	55	18	12	0	0	17
Pepsico Inc*	46	70	61	32	40	10	28
Unilever Group	55	77	82	12	58	2	50
Median	**46**	**70**	**61**	**18**	**50**	**2**	**50**
Min	**2**	**0**	**0**	**6**	**0**	**0**	**17**
Max	**62**	**77**	**82**	**62**	**60**	**38**	**67**
NON-ALCOHOLIC BEVERAGE MANUFACTURERS							
Britvic Plc	34	87	35	18	33	10	17
Coca-Cola Co, The	59	87	65	50	58	17	56
Eckes-Granini Group GmbH	19	50	35	12	0	8	11
Maspex Wadowice Grupa	1	0	0	0	0	0	17
Pepsico Inc*	46	70	61	32	40	10	28

Red Bull GmbH	1	0	0	0	0	0	11
Suntory Ltd	21	40	27	0	21	25	22
Median	**21**	**50**	**35**	**12**	**21**	**10**	**17**
Min	**1**	**0**	**0**	**0**	**0**	**0**	**11**
Max	**59**	**87**	**65**	**50**	**58**	**25**	**56**
Median overall (packaged food & non-alcoholic beverage manufacturers)	**35**	**63**	**35**	**12**	**42**	**8**	**28**
Min overall (packaged food & non-alcoholic beverage manufacturers)	**1**	**0**	**0**	**0**	**0**	**0**	**11**
Max overall (packaged food & non-alcoholic beverage manufacturers)	**62**	**87**	**82**	**62**	**60**	**38**	**67**
QUICK-SERVICE RESTAURANTS							
Burger King (Restaurant Brands International Inc)	14	33	0	14	31	0	9
Domino's Pizza Inc	3	0	0	14	0	0	14
KFC (Yum! Brands Inc)	15	55	28	14	0	0	14
McDonald's (McDonald's Corp)	30	80	30	14	35	18	5
Pizza Hut	16	55	30	14	0	0	14
Subway (Doctor's Associates Inc)	18	47	20	14	18	5	23
Median	**15**	**51**	**24**	**14**	**9**	**0**	**14**
Min	**3**	**0**	**0**	**14**	**0**	**0**	**5**
Max	**30**	**80**	**30**	**14**	**35**	**18**	**23**
SUPERMARKETS							
Aldi	14	63	16	9	0	2	33
Auchan (Auchan Group)	15	33	16	24	0	6	61
Carrefour (Carrefour SA)	18	57	13	33	0	4	67
Lidl (Schwarz Beteiligungs GmbH)	26	87	50	7	3	4	39
Maxima (Vilniaus Prekyba UAB)	7	23	5	7	0	0	39
Spar (Internationale Spar Centrale BV)	12	40	11	15	0	0	56
Tesco (Tesco Plc)	27	70	47	17	2	13	56
Median	**15**	**57**	**16**	**15**	**0**	**4**	**56**
Min	**7**	**23**	**5**	**7**	**0**	**0**	**33**
Max	**27**	**87**	**50**	**33**	**3**	**13**	**67**
OVERALL MEDIAN	**21**	**57**	**29**	**14**	**18**	**4**	**28**
OVERALL MIN	**1**	**0**	**0**	**0**	**0**	**0**	**5**

OVERALL MAX	**62**	**87**	**82**	**62**	**60**	**38**	**67**

Table 10: The performance indicators per company and food industry (packaged food and beverage manufacturers[1], quick-service restaurants[2], supermarkets[3]). ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Company Name	Performance indicators					
	Proportion (%) of sales not-permitted to be marketed to children across Europe according to WHO-model (2018)			Proportion (%) of sales that are ultra-processed across Europe according to the NOVA-classification (2018)		
	Average (Min – Max)	Standard Deviation	% Change (2009-2018)	Average (Min – Max)	Standard Deviation	% Change (2009-2018)
PACKAGED FOOD MANUFACTURERS						
Danone Group	13 (0 – 71)	16	12.8	68 (37 – 98)	19	5.2
Ferrero Group	79 (0 – 100)	35	0.3	100 (100 – 100)	0	0.0
Intersnack Knabber-Gebäck GmbH & Co KG	1 (0 – 12)	3	79.2	79 (0 – 100)	23	-0.4
Kellogg Co	27 (0 – 64)	16	-22.5	100 (97 – 100)	1	-0.2
Lactalis, Groupe	6 (0 – 20)	7	-11.8	15 (0 – 47)	15	-11.2
Mars Inc	69 (0 – 100)	35	-0.4	75 (0 – 100)	37	0.0
Mondelēz International Inc	83 (0 – 100)	22	3.9	95 (0 – 100)	20	4.6
Nestlé SA	48 (0 – 94)	28	-17.1	74 (0 – 100)	30	-11.2
Oetker-Gruppe	39 (0 – 100)	33	17.5	96 (39 – 100)	13	9.4
Pepsico Inc*	60 (0 – 100)	31	-15.6	82 (0 – 100)	28	-7.1
Unilever Group	52 (0 – 74)	16	8.7	89 (0 – 100)	23	2.1
Average	**43 (1 - 83)**			**79 (15 - 100)**		
Standard Deviation	**27**			**23**		
BEVERAGE MANUFACTURERS						
Britvic Plc	67 (0 – 100)	47	-13.7	66 (0 – 100)	46	-14.8
Coca-Cola Co, The	91 (0 – 100)	19	-4.2	89 (0 – 100)	19	-6.0
Eckes-Granini Group GmbH	95 (0 – 100)	22	-4.8	87 (0 – 100)	30	-5.8
Maspex Wadowice Grupa	61 (0 – 100)	43	2.2	78 (0 – 100)	38	0.9

Pepsico Inc*	60 (0 – 100)	31	-15.6	82 (0 – 100)	28	-7.1
Red Bull GmbH	100 (100 – 100)	0	3.9	100 (100 – 100)	0	3.9
Suntory LTd	95 (0 – 100)	21	-4.6	95 (0 – 100)	21	-4.4
Average	**81 (60 - 100)**			**85 (66 - 100)**		
Standard Deviation	**16**			**10**		
Average packaged food & beverage manufacturers	**58 (1 - 100)**			**82 (15 - 100)**		
Standard Deviation packaged food & beverage manufacturers	**31**			**20**		
	Number of outlets across Europe (2018)			**Number of annual fast food transactions across Europe (2018)**		
	Total Outlets		% Change (2011 - 2018)	Total transactions (x1000)		% Change (2011 - 2018)
QUICK-SERVICE RESTAURANTS						
Burger King (Restaurant Brands International Inc)	4608		75.8	919128		92.0
Domino's Pizza Inc	3523		132.7	160300		188.4
KFC (Yum! Brands Inc)	3102		127.1	527613		132.1
McDonald’s (McDonald's Corp)	8714		19.1	3311362		23.2
Pizza Hut	1477		24.0	61676		33.0
Subway (Doctor's Associates Inc)	5542		69.3	267542		59.4
Average	**4494**		**75**	**874603**		**88**
Min	**1477**		**19**	**61676**		**23**
Max	**8714**		**133**	**3311362**		**188**
SUPERMARKETS						
Aldi	7992		6.6			
Auchan (Auchan Group)	764		238.1			
Carrefour (Carrefour SA)	1721		78.3			
Lidl (Schwarz Beteiligungs GmbH)	10581		9.4			
Maxima (Vilniaus Prekyba UAB)	479		14.9			
Spar (Internationale Spar Centrale BV)	8551		6.6			
Tesco (Tesco Plc)	1358		-1.5			
Average	**4492**		**50**			
Min	**479**		**-2**			
Max	**10581**		**238**			

1. *For packaged food and beverage manufactures the proportion of sales coming from food groups not-permitted to be marketed to children (according to the World Health Organisation, WHO) and ultra-processed (according to NOVA) in 2018 is provided, including the change over the past 10 years (2009 – 2018).*
2. *For quick-service restaurants the number of outlets and annual fast food transactions as well as the change over time is provided (2011 – 2018).*
3. *For supermarkets the number of outlets and change over time is provided (2011 – 2018).*

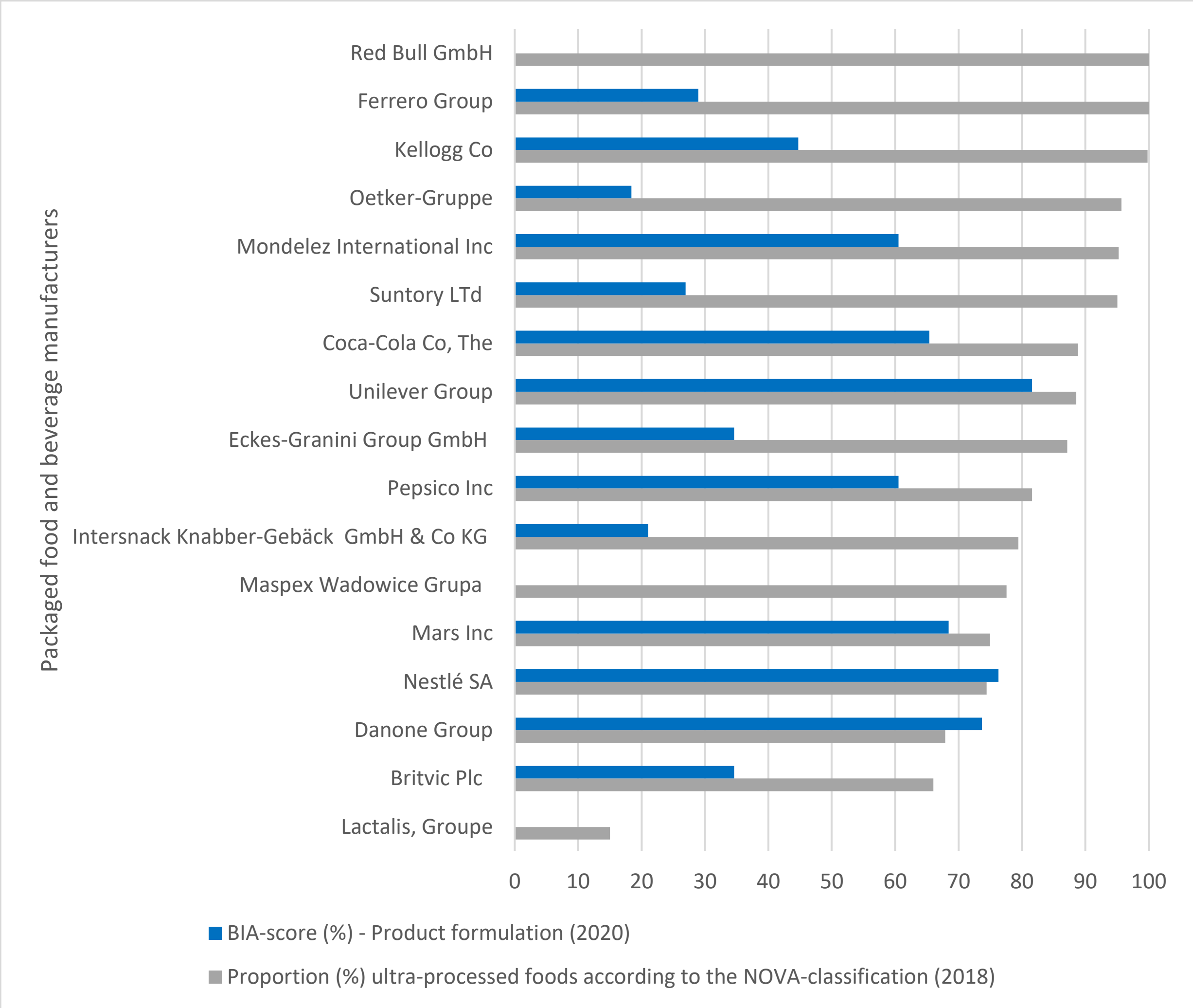

Figure 3: The Business Impact Assessment on Obesity and Population Level Nutrition score (BIA-score) for the domain 'Product formulation' (%) compared with the proportion of sales coming from food groups that are ultra-processed (according to NOVA in 2018) per selected packaged food and beverage manufacturer. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

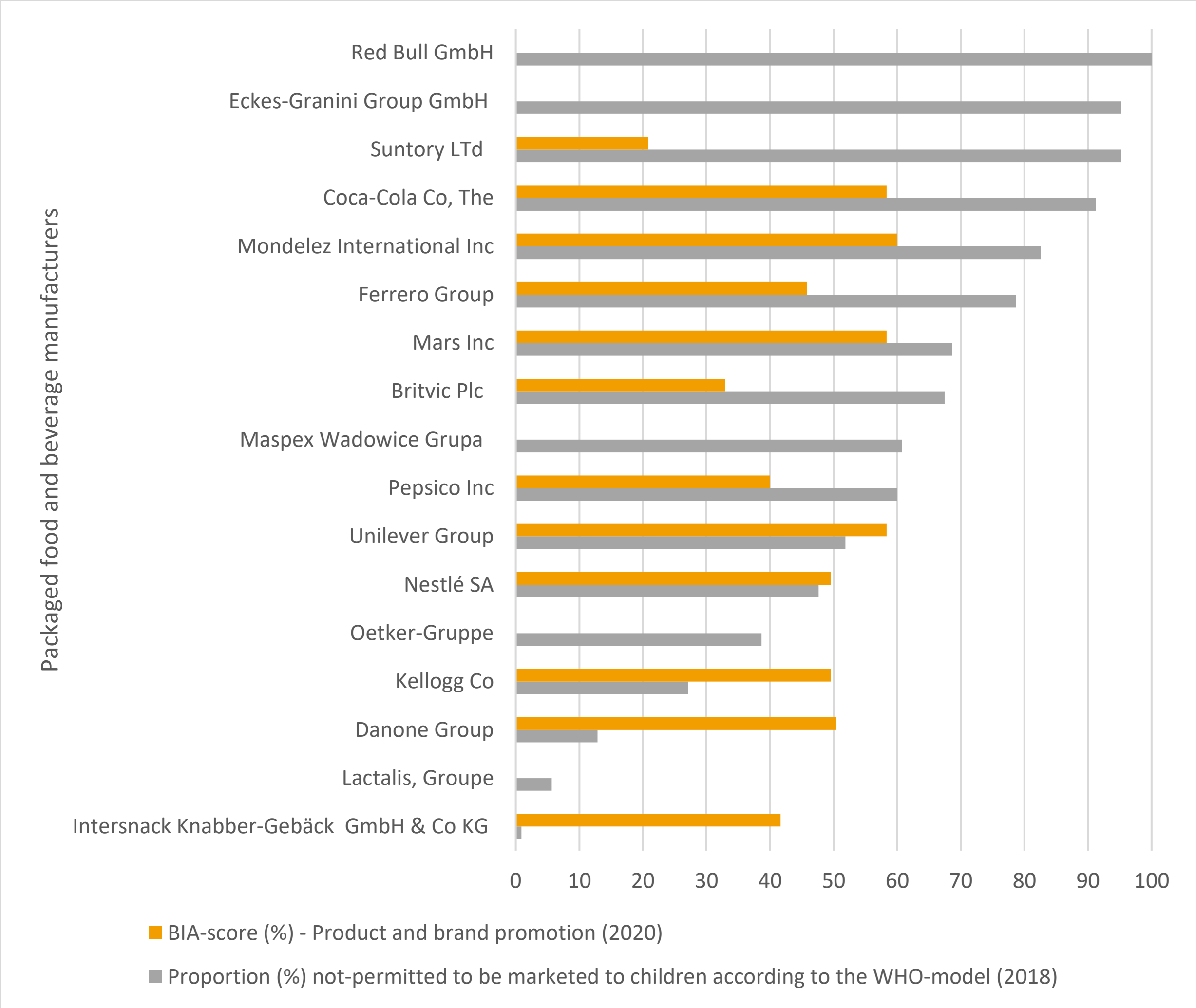

Figure 4: The Business Impact Assessment on Obesity and Population Level Nutrition score (BIA-score) for the domain 'Product and brand promotion' (%) compared with the proportion of sales coming from food groups that are not-permitted to be marketed to children (according to the World Health Organisation Regional Office for Europe Nutrient Profile model, WHO-model in 2018) per selected packaged food and beverage manufacturer. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020***

Annex 1: Examples of how publicly available commitments were collected and scored according to the Business Impact Assessment on Obesity and Population Level Nutrition (BIA-Obesity) tool, Europe, 2020. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Domain	Indicator	Policy content	Scoring criteria	score
Corporate nutrition strategy	*Does the company have an overarching commitment to improving population nutrition and health articulated in strategic documents (e.g., corporate strategy document, corporate responsibility reports)?*	*"Our mission is to bring health through food to as many people as possible. We have created a unique portfolio of healthy products to complete this mission, and we strive to continuously optimize their nutritional profile." - Danone*	*10: Yes, a specific commitment to improving population nutrition and health, at the European level or at the global level with reference to the European market or multiple European countries, publicly available in strategic documents* *7.5: Yes, a specific global commitment to improving population nutrition and health, publicly available in strategic documents* *5: Yes, a European- or global- level commitment, but not publicly-available, OR general reference to nutrition and health as part of general corporate strategy* *0: No clear commitments to improving population nutrition and health*	*7.5*
Product formulation	*Has the company set a target/targets or provided detailed evidence of having taken significant action to reduce/reach lower levels of added sugars, and is it applicable to Europe?*	*"1. By 2020, we will remove 25% of sugar from our ready-to-drink tea products, as set out in our position statement on sugar. To meet this stretching target, we developed more drinks that meet our Highest Nutritional Standards (HNS) of 5g or less sugar per 100ml. And by 2018, we had removed 20% of sugar across all our sweetened*	*10: Set SMART targets or provided detailed evidence of having taken significant action in all key categories/subcategories, published* *5: Targets (not necessarily SMART) set or taken significant action in some key products/sub-categories / not published* *2.5: General or vague commitment to reducing use of added sugars in products, published or disclosed to INFORMAS team*	*5*

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		tea-based beverages (against a 2010 baseline). *2. We focus on beverages and ice cream because that is where we can have the biggest impact on sugar reduction and therefore public health." - Unilever*	*0: No target / no information*	
Nutrition labelling	*Does the company have a published commitment to rolling out a government endorsed FOP labelling system (e.g. NutriScore, Traffic light)?*	*"We aim to implement Nutri-Score at scale, starting in countries that already support the scheme, such as France, Belgium, Switzerland and Germany. Constructive engagement will continue in other countries to ensure the best possible outcome for all Europeans." - Nestlé*	*10: Yes, with implementation plan across all product categories (published or unpublished)* *7.5: Yes, with implementation plan across a selection of product categories (published or unpublished)* *5: Yes, but with no specific implementation plan (published or unpublished)* *0: No*	*10*
Product and brand promotion	*Does the company have an explicit policy to reduce the exposure of children to unhealthy food marketing on broadcast media (TV, radio)?* *(Note: check if the company supports the EU Pledge. If yes and no other comments, then EU pledge is scored)*	*"The Intersnack Group is a member of the European Snacks Association (ESA) and a signatory of the EU Pledge, a voluntary initiative by leading food and beverage companies to change food and beverage advertising to children under the age of twelve in the European Union." - Intersnack Knabber-Gebäck*	*10: Yes, European policy or policy that refers to multiple European countries and noted on company website / annual reports* *7.5: Yes, global policy and noted on company website / annual reports* *5: Yes, European policy or policy that refers to multiple European countries, but not noted on company website / annual reports OR noted on industry association website* *2.5: Yes, global policy but not noted on company website / annual reports* *0: No policy/ no information available to the research team*	*10*
Product accessibility	*Does the company publish its policy position (in relation to government policy) on fiscal policies to make healthier foods relatively cheaper and unhealthy foods relatively more*	*"Obesity and NCDs are extremely complex problems and the right answers aren't always the simple ones. Experience from around the world shows no evidence that a tax on soft drinks helps to reduce obesity. We're determined to help*	*10: Yes, on own website* *5: Yes, on industry association website* *0: Not publicly available*	*10*

	expensive?	*create a healthy food environment in Europe and we are committed to supporting and accelerating what works, which is why reducing sugar from our drinks is such a top priority. We've already seen consumer behavior changing, but we know there is much more work to be done." – Coca-Cola*		
Relationships with other organisations	*Does the company publish details of the nutrition education / healthy diet oriented programs it funds or supports?*	*"1. 'Partnership for Health' is a programme designed by four partners: the Institute of Mother and Child and the following companies: Danone, Biedronka and Lubella. "Partnership for Health" is a unique initiative on the Polish market. The three commercial companies and the Institute started a joint initiative in order to tackle the problem of an unbalanced diet of Polish children and its dramatic effects on health and society.* *2. This educational program is addressed to students in the sixth-eighth grades of primary school and third grade of junior high school and their teachers. In the school year 2018/19, as many as 160,000 pupils from primary and junior high schools from all over Poland took part in it! They gained not only extensive knowledge about healthy lifestyle, nutrition principles, lack of food and cooking, but also participated in special competitions in which*	*10: Yes, information on European activity or activity in multiple European countries is publicly available (website or document) in a consolidated and cumulative form OR active declaration/policy stating no activity in this area (either publicly available or disclosed to INFORMAS team)* *5: Yes, information is available, but is not consolidated and easy to locate OR information is available at the global level only OR comprehensive information about their activities in the area provided to the project team* *0: No information available / provided*	*5*

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		attractive prizes were available!" - Maspex Wadowice		

Annex 2: Weighting per 'Business Impact Assessment on Obesity and Population Nutrition' (BIA-Obesity) domain and food industry. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

BIA-Obesity domains	Packaged food and Soft drinks	Chain restaurants	Supermarkets
Corporate nutrition strategy	10	10	10
Product formulation	30	25	25
Nutrition labelling	20	15	15
Product and brand promotion	30	25	25
Product accessibility	5	20	20
Relationships with other organisations	5	5	5
TOTAL	100	100	100

Annex 3: The World Health Organisation Regional Office for Europe Nutrient Profile model (WHO-model) categories and how the classification was applied at category level. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Group	Name	Marketing to children
1	Chocolate and sugar confectionery, energy bars, and sweet toppings and desserts	Not-permitted
2	Cakes, sweet biscuits and pastries; other sweet bakery wares, and dry mixes for making such	Not-permitted
3	Savoury snacks	Potentially permitted
4	Beverages	
4A	a) Juices	Not-permitted
4B	b) Milk drinks	With sugar: Not-permitted, Others: Potentially permitted
4C	c) Energy drinks (often contain o.a. guarana, taurine, glucuronolactone and vitamins)	Not-permitted
4D	d) Other beverages (Soft drinks, sweetend beverages)	Sweetened soft drinks: Not-permitted, Others: Potentially permitted
5	Edible ices	Not-permitted
6	Breakfast cereals	Potentially permitted

7	Yoghurts, sour milk, cream and other similar foods	Potentially permitted
8	Cheese	Potentially permitted
9	Ready-made and convenience foods and composite dishes	Potentially permitted
10	Butter and other fats and oils	Potentially permitted
11	Bread, bread products and crisp breads	Potentially permitted
12	Fresh or dried pasta, rice and grains	Potentially permitted
13	Fresh and frozen meat, poultry, fish and similar +eggs	Permitted
14	Processed meat, poultry, fish and similar	Potentially permitted
15	Fresh and frozen fruit, vegetables and legumes	Permitted
16	Processed fruit, vegetables and legumes	Potentially permitted
17	Sauces, dips and dressings	Potentially permitted

Annex 4: Euromonitor food groups (2019) and their respective category based on NOVA and World Health Organisation Regional Office for Europe Nutrient Profile model (WHO-model) classifications. ND = No data; not enough information to classify as (non-)permitted without nutritional data. ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Euromonitor food groups	NOVA	WHO-model	Euromonitor food groups	NOVA	WHO-model
Edible Oils	Non-ultra-processed	ND	**Multi-Pack Water Ice Cream**	Ultra-processed	Non-permitted
Shelf Stable Ready Meals	Ultra-processed	ND	**Nuts, Seeds and Trail Mixes**	Non-ultra-processed	ND
Chilled Lunch Kits	Ultra-processed	ND	**Potato Chips**	Ultra-processed	ND
Chilled Pizza	Ultra-processed	ND	**Tortilla Chips**	Ultra-processed	ND
Chilled Ready Meals	Ultra-processed	ND	**Puffed Snacks**	Ultra-processed	ND
Dinner Mixes	Ultra-processed	ND	**Rice Snacks**	Ultra-processed	ND
Dried Ready Meals	Ultra-processed	ND	**Vegetable, Pulse and Bread Chips**	Ultra-processed	ND
Frozen Pizza	Ultra-processed	ND	**Savoury Biscuits**	Ultra-processed	ND
Frozen Ready Meals	Ultra-processed	ND	**Popcorn**	Ultra-processed	ND
Prepared Salads	Non-ultra-processed	ND	**Pretzels**	Ultra-processed	ND

Gravy Cubes and Powders	Ultra-processed	ND	**Other Savoury Snacks**	Ultra-processed	ND
Liquid Stocks and Fonds	Ultra-processed	ND	**Dried Fruit**	Non-ultra-processed	ND
Stock Cubes and Powders	Ultra-processed	ND	**Processed Fruit Snacks**	Ultra-processed	ND
Dry Sauces	Ultra-processed	ND	**Cereal Bars**	Ultra-processed	Non-permitted
Herbs and Spices	Non-ultra-processed	ND	**Energy Bars**	Ultra-processed	Non-permitted
Monosodium Glutamate	Ultra-processed	ND	**Fruit and Nut Bars**	Non-ultra-processed	Non-permitted
Pasta Sauces	Ultra-processed	ND	**Other Snack Bars**	Ultra-processed	Non-permitted
Cooking Sauces	Ultra-processed	ND	**Chocolate Coated Biscuits**	Ultra-processed	Non-permitted
Dips	Ultra-processed	ND	**Cookies**	Ultra-processed	Non-permitted
Pickled Products	Ultra-processed	ND	**Filled Biscuits**	Ultra-processed	Non-permitted
Barbecue Sauces	Ultra-processed	ND	**Plain Biscuits**	Ultra-processed	Non-permitted
Fish Sauces	Ultra-processed	ND	**Wafers**	Ultra-processed	Non-permitted
Ketchup	Ultra-processed	ND	**Packaged Flat Bread**	Non-ultra-processed	ND
Mayonnaise	Ultra-processed	ND	**Unpackaged Flat Bread**	Non-ultra-processed	ND
Mustard	Ultra-processed	ND	**Packaged Leavened Bread**	Ultra-processed	ND
Oyster Sauces	Ultra-processed	ND	**Unpackaged Leavened Bread**	Non-ultra-processed	ND
Salad Dressings	Ultra-processed	ND	**Packaged Cakes**	Ultra-processed	Non-permitted
Soy Sauces	Ultra-processed	ND	**Unpackaged Cakes**	Non-ultra-processed	Non-permitted
Chili Sauces	Ultra-processed	ND	**Dessert Mixes**	Ultra-processed	Non-permitted
Other Table Sauces	Ultra-processed	ND	**Frozen Baked Goods**	Ultra-processed	Non-permitted
Tomato Pastes and Purées	Ultra-processed	ND	**Packaged Pastries**	Ultra-processed	Non-permitted
Yeast-based Spreads	Ultra-processed	ND	**Unpackaged Pastries**	Non-ultra-processed	Non-permitted
Other Sauces, Dressings and Condiments	Ultra-processed	ND	**Hot Cereals**	Non-ultra-processed	ND

Shelf Stable Soup	Ultra-processed	ND	**Children's Breakfast Cereals**	Ultra-processed	Non-permitted
Chilled Soup	Ultra-processed	ND	**Flakes**	Ultra-processed	ND
Dehydrated Soup	Ultra-processed	ND	**Muesli and Granola**	Ultra-processed	ND
Frozen Soup	Ultra-processed	ND	**Other RTE Cereals**	Ultra-processed	ND
Instant Soup	Ultra-processed	ND	**Shelf Stable Beans**	Non-ultra-processed	ND
Honey	Non-ultra-processed	Non-permitted	**Shelf Stable Fruit**	Non-ultra-processed	ND
Chocolate Spreads	Ultra-processed	Non-permitted	**Shelf Stable Tomatoes**	Non-ultra-processed	ND
Jams and Preserves	Ultra-processed	Not-permitted	**Shelf Stable Vegetables**	Non-ultra-processed	ND
Nut and Seed Based Spreads	Ultra-processed	Non-permitted	**Frozen Fruit**	Non-ultra-processed	ND
Butter	Non-ultra-processed	ND	**Frozen Processed Potatoes**	Ultra-processed	ND
Cooking Fats	Non-ultra-processed	ND	**Frozen Processed Vegetables**	Non-ultra-processed	ND
Margarine and Spreads	Ultra-processed	ND	**Shelf Stable Processed Red Meat**	Ultra-processed	ND
Spreadable Processed Cheese	Ultra-processed	ND	**Shelf Stable Processed Poultry**	Ultra-processed	ND
Other Processed Cheese	Ultra-processed	ND	**Chilled Processed Red Meat**	Non-ultra-processed	ND
Packaged Hard Cheese	Non-ultra-processed	ND	**Chilled Processed Poultry**	Non-ultra-processed	ND
Unpackaged Hard Cheese	Non-ultra-processed	ND	**Frozen Processed Red Meat**	Non-ultra-processed	ND
Soft Cheese	Non-ultra-processed	ND	**Frozen Processed Poultry**	Non-ultra-processed	ND

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Dairy Only Flavoured Milk Drinks	Ultra-processed	Non-permitted	**Shelf Stable Seafood**	Ultra-processed	ND
Flavoured Milk Drinks with Fruit Juice	Ultra-processed	Non-permitted	**Chilled Processed Seafood**	Non-ultra-processed	ND
Fresh Milk	Non-ultra-processed	ND	**Frozen Processed Seafood**	Non-ultra-processed	ND
Shelf Stable Milk	Non-ultra-processed	ND	**Chilled Meat Substitutes**	Ultra-processed	ND
Goat Milk	Non-ultra-processed	ND	**Frozen Meat Substitutes**	Ultra-processed	ND
Powder Milk	Non-ultra-processed	ND	**Shelf Stable Meat Substitutes**	Ultra-processed	ND
Soy Drinks	Ultra-processed	ND	**Chilled Noodles**	Non-ultra-processed	ND
Other Milk Alternatives	Ultra-processed	ND	**Instant Noodle Cups**	Ultra-processed	ND
Sour Milk Products	Non-ultra-processed	ND	**Instant Noodle Pouches**	Ultra-processed	ND
Drinking Yoghurt	Ultra-processed	ND	**Plain Noodles**	Non-ultra-processed	ND
Flavoured Yoghurt	Ultra-processed	ND	**Chilled Pasta**	Non-ultra-processed	ND
Plain Yoghurt	Non-ultra-processed	ND	**Dried Pasta**	Non-ultra-processed	ND
Chilled Dairy Desserts	Ultra-processed	Non-permitted	**Rice**	Non-ultra-processed	ND
Shelf Stable Dairy Desserts	Ultra-processed	Non-permitted	**Carbonated Natural Mineral Bottled Water**	Non-ultra-processed	ND
Chilled Snacks	Ultra-processed	ND	**Carbonated Spring Bottled Water**	Non-ultra-processed	ND
Coffee Whiteners	Ultra-processed	ND	**Carbonated Purified Bottled Water**	Non-ultra-processed	ND
Flavoured Condensed Milk	Ultra-processed	ND	**Flavoured Bottled Water**	Ultra-processed	Non-permitted

Plain Condensed Milk	Non-ultra-processed	ND	**Functional Bottled Water**	Non-ultra-processed	ND
Cream	Non-ultra-processed	ND	**Still Natural Mineral Bottled Water**	Non-ultra-processed	ND
Flavoured Fromage Frais and Quark	Non-ultra-processed	ND	**Still Spring Bottled Water**	Non-ultra-processed	ND
Plain Fromage Frais and Quark	Non-ultra-processed	ND	**Still Purified Bottled Water**	Non-ultra-processed	ND
Savoury Fromage Frais and Quark	Non-ultra-processed	ND	**Low Calorie Cola Carbonates**	Ultra-processed	Non-permitted
Chocolate Pouches and Bags	Ultra-processed	Non-permitted	**Regular Cola Carbonates**	Ultra-processed	Non-permitted
Boxed Assortments	Ultra-processed	Non-permitted	**Lemonade/Lime**	Ultra-processed	Non-permitted
Chocolate with Toys	Ultra-processed	Non-permitted	**Ginger Ale**	Ultra-processed	Non-permitted
Countlines	Ultra-processed	Non-permitted	**Tonic Water/Other Bitters**	Ultra-processed	Non-permitted
Seasonal Chocolate	Ultra-processed	Non-permitted	**Orange Carbonates**	Ultra-processed	Non-permitted
Tablets	Ultra-processed	Non-permitted	**Other Non-Cola Carbonates**	Ultra-processed	Non-permitted
Other Chocolate Confectionery	Ultra-processed	Non-permitted	**Liquid Concentrates**	Ultra-processed	Non-permitted
Bubble Gum	Ultra-processed	Non-permitted	**Powder Concentrates**	Ultra-processed	Non-permitted
Chewing Gum	Ultra-processed	Non-permitted	**Not from Concentrate 100% Juice**	Non-ultra-processed	Non-permitted
Boiled Sweets	Ultra-processed	Non-permitted	**Reconstituted 100% Juice**	Ultra-processed	Non-permitted

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Liquorice	Ultra-processed	Non-permitted	**Juice Drinks (up to 24% Juice)**	Ultra-processed	Non-permitted
Lollipops	Ultra-processed	Non-permitted	**Nectars**	Ultra-processed	Non-permitted
Medicated Confectionery	Ultra-processed	Non-permitted	**Coconut and Other Plant Waters**	Non-ultra-processed	ND
Power Mints	Ultra-processed	Non-permitted	**RTD Coffee**	Ultra-processed	Non-permitted
Standard Mints	Ultra-processed	Non-permitted	**Carbonated RTD Tea**	Ultra-processed	Non-permitted
Pastilles, Gums, Jellies and Chews	Ultra-processed	Non-permitted	**Still RTD Tea**	Ultra-processed	Non-permitted
Toffees, Caramels and Nougat	Ultra-processed	Non-permitted	**Energy Drinks**	Ultra-processed	Non-permitted
Other Sugar Confectionery	Ultra-processed	Non-permitted	**Sports Drinks**	Ultra-processed	Non-permitted
Frozen Desserts	Ultra-processed	Non-permitted	**Asian Speciality Drinks**	Ultra-processed	Non-permitted
Frozen Yoghurt	Ultra-processed	Non-permitted			
Single Portion Dairy Ice Cream	Ultra-processed	Non-permitted			
Single Portion Water Ice Cream	Ultra-processed	Non-permitted			
Unpackaged Ice Cream	Ultra-processed	Non-permitted			
Bulk Dairy Ice Cream	Ultra-processed	Non-permitted			
Ice Cream Desserts	Ultra-processed	Non-permitted			

Multi-Pack Dairy Ice Cream	Ultra-processed	Non-permitted			
Bulk Water Ice Cream	Ultra-processed	Non-permitted			

Annex 5: The total Business Impact Assessment on Obesity and Population Level Nutrition (BIA-Obesity) scores as well as the scores for the individual domains per company (based on publicly available data, 2020). ***Assessment of the commitments and performance of the European food industry to improve population nutrition, Europe, 2020.***

Company Name	Total BIA-score (%)	Corporate strategy (%)	Product formulation (%)	Nutrition labelling (%)	Product and brand promotion (%)	Product accessibility (%)	Relationships with other organisations (%)
PACKAGED FOOD MANUFACTURERS							
Danone Group	62	77	74	62	50	38	67
Ferrero Group	35	62	29	18	46	0	50
Intersnack Knabber-Gebäck GmbH & Co KG	27	48	21	12	42	2	28
Kellogg Co	39	63	45	12	50	0	39
Lactalis, Groupe	2	0	0	6	0	0	22
Mars Inc	56	70	68	35	58	27	61
Mondelez International Inc	53	70	61	32	60	10	56
Nestlé SA	59	77	76	53	50	13	56

Oetker-Gruppe	14	55	18	12	0	0	17
Pepsico Inc*	46	70	61	32	40	10	28
Unilever Group	55	77	82	12	58	2	50
Median	**46**	**70**	**61**	**18**	**50**	**2**	**50**
Min	**2**	**0**	**0**	**6**	**0**	**0**	**17**
Max	**62**	**77**	**82**	**62**	**60**	**38**	**67**
NON-ALCOHOLIC BEVERAGE MANUFACTURERS							
Britvic Plc	34	87	35	18	33	10	17
Coca-Cola Co, The	59	87	65	50	58	17	56
Eckes-Granini Group GmbH	19	50	35	12	0	8	11
Maspex Wadowice Grupa	1	0	0	0	0	0	17
Pepsico Inc*	46	70	61	32	40	10	28
Red Bull GmbH	1	0	0	0	0	0	11
Suntory LTd	21	40	27	0	21	25	22
Median	**21**	**50**	**35**	**12**	**21**	**10**	**17**
Min	**1**	**0**	**0**	**0**	**0**	**0**	**11**
Max	**59**	**87**	**65**	**50**	**58**	**25**	**56**
Median overall (packaged food & non-alcoholic beverage manufacturers)	**35**	**63**	**35**	**12**	**42**	**8**	**28**
Min overall (packaged food & non-alcoholic beverage manufacturers)	**1**	**0**	**0**	**0**	**0**	**0**	**11**
Max overall (packaged food & non-alcoholic beverage manufacturers)	**62**	**87**	**82**	**62**	**60**	**38**	**67**
QUICK-SERVICE RESTAURANTS							
Burger King (Restaurant Brands International Inc)	14	33	0	14	31	0	9
Domino's Pizza Inc	3	0	0	14	0	0	14
KFC (Yum! Brands Inc)	15	55	28	14	0	0	14
McDonald’s (McDonald's Corp)	30	80	30	14	35	18	5
Pizza Hut	16	55	30	14	0	0	14
Subway (Doctor's Associates Inc)	18	47	20	14	18	5	23
Median	**15**	**51**	**24**	**14**	**9**	**0**	**14**
Min	**3**	**0**	**0**	**14**	**0**	**0**	**5**
Max	**30**	**80**	**30**	**14**	**35**	**18**	**23**
SUPERMARKETS							
Aldi	14	63	16	9	0	2	33

Auchan (Auchan Group)	15	33	16	24	0	6	61
Carrefour (Carrefour SA)	18	57	13	33	0	4	67
Lidl (Schwarz Beteiligungs GmbH)	26	87	50	7	3	4	39
Maxima (Vilniaus Prekyba UAB)	7	23	5	7	0	0	39
Spar (Internationale Spar Centrale BV)	12	40	11	15	0	0	56
Tesco (Tesco Plc)	27	70	47	17	2	13	56
Median	**15**	**57**	**16**	**15**	**0**	**4**	**56**
Min	**7**	**23**	**5**	**7**	**0**	**0**	**33**
Max	**27**	**87**	**50**	**33**	**3**	**13**	**67**
OVERALL MEDIAN	**21**	**57**	**29**	**14**	**18**	**4**	**28**
OVERALL MIN	**1**	**0**	**0**	**0**	**0**	**0**	**5**
OVERALL MAX	**62**	**87**	**82**	**62**	**60**	**38**	**67**

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Case studies BIA-Obesity Belgium and France

Further work, to be released later during the STOP project (not part of this deliverable), includes results from two case studies for Belgium and France, where the BIA-Obesity was implemented and analysed at the national level. The case studies assessed the largest Belgian and French food companies on their commitments and practices related to obesity prevention and population nutrition. The study included four industry sectors: packaged food manufacturers, non-alcoholic beverage manufacturers, supermarkets and quick service restaurants. The objective was to highlight where Belgian and French companies are demonstrating leadership in relation to obesity prevention and nutrition, and to identify areas and recommendations for improvement.

These national-level analyses allowed to engage with companies in relation to their scores, and to add some more detailed performance metrics (i.e. healthiness of company's portfolios) to the analyses (not available at the European level).