

# Analysis of Corporate Social Responsibility (CSR) Reporting in the Food & Beverage Industry

## ABSTRACT

Corporate Social Responsibility (CSR) is a set of practices and principles applied by companies to integrate the societal and environmental concerns into their business planning and operations [1]. This report analyses and presents the findings from the filings made by companies in the Food & Beverage industry with respect to their CSR reporting on four key critical areas of greenhouse gas emissions, diversity, employee health & safety, and customer welfare. To derive observations and insights from the data on reports, text analysis was used. The results of the analysis showed a steady growth in CSR reporting across all the regions. Greenhouse gas emissions and diversity were addressed more frequently in the European region while employee health & safety and customer welfare mostly in Asia.

*Keywords: greenhouse gas emissions, diversity, employee health & safety, customer welfare, corporate social responsibility, CSR reports, regulatory, analysis, visualisations*

## 1. INTRODUCTION

Traditionally, the focus of enterprises was profit maximization. Recently, organizations have become more concerned with respect to their actions' impact on the society and environment. This has led to the emergence of Corporate Social Responsibility whereby companies highlight their views, policies, and activities on these matters in dedicated reports.

CSR reporting varies across countries. More and more companies are taking the initiative to submit CSR reports as these provide them with the opportunity to share their works and achievements on various areas including, economic, environmental, ethical, and philanthropic initiatives [2]. These reports aid the companies to integrate their contributions in their brand perception and identity. The importance of this reporting can be gauged from the fact that in the year 2019, 90% of the companies on the S&P 500 index released their CSR reports [2].

GRI (Global Reporting Initiative) is an international organisation that aids companies to report their impact on society and environment and has one of the most reliable and widely used sources of CSR reports [3]. This report examines the information provided by the GRI database

on the corporate social responsibility reports provided by companies of different sizes and regions. Through the text analysis of the reports and the consequent visualisations, the aim is to share meaningful insights that would help the regulators and key stakeholders gauge the performance of the companies. The work includes:

- reporting of Food & Beverage industry on the four key issues of CSR
- evolution of the reporting over the years
- emphasis given to these issues over the period

## 2. METHODOLOGY

In this part, the report presents the steps followed for collecting, cleaning, manipulating, analysing, and visualising the data. For the data processing, R software was utilised and RStudio (IDE) was the working environment. The relevant R-packages used include: dplyr, stringr, pdftools, tesseract, writexl, readxl, tidyr, scales, ggpubr, cowplot and ggplot2 [4]. Microsoft Excel was also used for a small part of the manipulation and analysis of the dataset.

### 1. Data Collection

An R file with collected data from the GRI database was provided for analysis. This dataset contained 47093 records with information on firms from multiple sectors and regions that published CSR reports for the period from 1999 to 2018. For the purposes of the analysis and due to the small number of data, the year 2018 was excluded from the dataset. A subset dataset containing reports only from the "Food and Beverage" sector was created as well (Figure 1).

	Name	Size	Country	Country Status	Region	Date issued	Publication Year	Type
1	SABMiller_2000	Large	United Kingdom of Great Britain and Northern Ireland	OECD	Europe	14-11-2008	2000	GRI - G1
2	SouthAfricaBreweries_2000	Large	South Africa	DAC-IMMCT	Africa	9-2-2009	2000	GRI - G1
3	Amnusaar_BuschCompanies_2001	MNE	United States of America	OECD	Northern America	13-12-2011	2001	GRI - G1
4	ChiquitaBrands_2001	Large	United States of America	OECD	Northern America	28-10-2009	2001	GRI - G1
5	SABMiller_2001	Large	United Kingdom of Great Britain and Northern Ireland	OECD	Europe	4-2-2009	2001	GRI - G1
6	Amnusaar_BuschCompanies_2002	MNE	United States of America	OECD	Northern America	7-2-2009	2002	GRI - G1
7	ChiquitaBrands_2002	Large	United States of America	OECD	Northern America	28-1-2009	2002	GRI - G1
8	McDonaldsIreland_2002	Large	Ireland	DAC-IMMCT	Latin America & the Caribbean	21-11-2009	2002	GRI - G1
9	McDonaldsIreland_2002	MNE	United States of America	OECD	Northern America	6-2-2009	2002	GRI - G1
10	MeinlGroup_2002	Large	Germany	OECD	Europe	10-11-2008	2002	GRI - G1
11	SABMiller_2002	Large	United Kingdom of Great Britain and Northern Ireland	OECD	Europe	6-2-2009	2002	GRI - G1
12	SouthAfricaBreweries_2002	Large	South Africa	DAC-IMMCT	Africa	9-2-2009	2002	GRI - G1
13	SouthAfricaBreweries_2002	MNE	United States of America	OECD	Northern America	18-9-2011	2002	Non - GRI
14	Amnusaar_BuschCompanies_2003	MNE	United States of America	OECD	Northern America	22-11-2009	2003	GRI - G2
15	BaskinRobbins_2003	MNE	Spain	OECD	Europe	12-11-2008	2003	GRI - G2
16	Coca-ColaCristal_2003	Large	Croatia	Non-OECD / Non-DAC	Europe	26-11-2008	2003	GRI - G2
17	Diageo_2003	MNE	United Kingdom of Great Britain and Northern Ireland	OECD	Europe	31-10-2008	2003	GRI - G2
18	SouthAfricaBreweriesCoca-Cola_2003	Large	Kenya	DAC-IMMCT	Latin America & the Caribbean	28-8-2017	2003	Non - GRI
19	SABMiller_2003	Large	United Kingdom of Great Britain and Northern Ireland	OECD	Europe	17-2-2009	2003	GRI - G2

Figure 1. Sample of the Food and Beverage sector subset dataset (RStudio)

A folder containing firms' CSR reports in a pdf format was also provided. This folder contained 1306 reports from firms of the "Food and Beverage" sector. After removing the corrupted pdf files, 1088 reports were left.

## 2. Text Analysis

Next, the text analysis process was applied. The “Food and Beverage” sector reports were scanned to calculate the frequency of addressing four specific topics. These topics include greenhouse gas emissions, diversity, employee health & safety, and customer welfare.

First, the files were prepared for the text analysis. Removing all punctuation, digits, spaces, and unnecessary characters was part of this process. Each report was scanned for containing relevant keywords for each one of the topics. Reports from multiple countries and regions were contained in the folder, therefore keywords were also translated in Chinese, German, French and Spanish. Columns representing the count (frequency) in each report were created for each keyword. Then a new data frame that contained the new columns was exported to Microsoft Excel as an xlsx file (Figure 2). The purpose was to sum the counts of the keywords by subject for all the languages more efficiently. After creating new columns for these sums and dropping all unnecessary columns, the xlsx file was reimported in R as a data frame and merged with the original subset data frame.

J	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Name	Size	Country	Country_Status	Region	Date_Added	Publication_Year	Type	Organization_type	Listed_Non_listed	greenhouse_gas_emission	diversity	employee_health_and_safety	customer_welfare
2	A.G.BARR_2013	Large	United Kingdom	OECD	Europe	14-6-2016	2013	Non - GRI	State-owned company	Listed	28	2	43	60
3	A.G.BARR_2014	Large	United Kingdom	OECD	Europe	7-6-2016	2014	Non - GRI	State-owned company	Listed	40	27	67	56
4	A.G.BARR_2015	Large	United Kingdom	OECD	Europe	14-6-2016	2015	Non - GRI	State-owned company	Listed	44	35	48	50
5	A.G.BARR_2016	Large	United Kingdom	OECD	Europe	14-6-2016	2016	Non - GRI	State-owned company	Listed	38	30	31	64
6	A.G.BARR_2017	Large	United Kingdom	OECD	Europe	1-1-2018	2017	Non - GRI	State-owned company	Listed	30	35	8	75
7	AFRI_2010	Large	South Africa	DAC-UMCT	Africa	11-4-2012	2010	GRI - G3			34	43	41	128
8	AGRANAGroup_20_MNE		Austria	OECD	Europe	29-4-2015	2014	GRI - G3.1	Private company	Listed	146	17	33	57
9	AGRANAGroup_20_MNE		Austria	OECD	Europe	23-7-2015	2015	GRI - G4	Private company	Listed	152	38	38	80
10	AGRANAGroup_20_MNE		Austria	OECD	Europe	7-11-2016	2016	GRI - G4	Private company	Listed	151	42	42	90
11	Agrisor_2014	MNE	Croatia	Non-OECD / Non-DAC		22-1-2015	2014	GRI - G3	Private company	Non-listed	2375	65	185	109
12	AgroSuperServicio	Large	Chile	DAC-UMCT	Latin America	26-4-2016	2016	GRI - G4	Private company	Non-listed	26	6	33	166
13	AgroSuperServicio	Large	Chile	DAC-UMCT	Latin America	6-10-2017	2017	GRI - G4	Private company	Non-listed	33	34	70	174
14	AgriProductsCorpo MNE		Taiwan	Non-OECD / Non-DAC	Asia	15-2-2016	2015	GRI - G4	Private company	Listed	168	6	232	8
15	AgriProductsCorpo MNE		Taiwan	Non-OECD / Non-DAC	Asia	22-2-2017	2016	GRI - G4	Private company	Listed	149	4	199	9
16	AgriProductsCorpo MNE		Taiwan	Non-OECD / Non-DAC	Asia	7-3-2018	2017	GRI - G4	Private company	Listed	149	4	209	9
17	Ab-west_2012	Large	South Africa	DAC-UMCT	Africa	5-12-2013	2012	Non - GRI	Private company	Listed	0	1	1	28
18	Ab-west_2013	Large	South Africa	DAC-UMCT	Africa	3-3-2015	2013	Non - GRI	Private company	Listed	0	2	0	27
19	Ab-west_2015	Large	South Africa	DAC-UMCT	Africa	10-12-2015	2015	Non - GRI	Private company	Listed	0	1	2	16
20	Ab-west_2016	Large	South Africa	DAC-UMCT	Africa	5-12-2016	2016	Non - GRI	Private company	Listed	0	2	34	23
21	Ajinomoto_2013	MNE	Japan	OECD	Asia	17-3-2013	2012	Non - GRI	Private company	Listed	0	1	338	2
22	Ajinomoto_2013	MNE	Japan	OECD	Asia	4-4-2014	2013	Non - GRI	Private company	Listed	564	180	428	155
23	Ajinomoto_2015	MNE	Japan	OECD	Asia	24-2-2016	2015	Non - GRI	Private company	Listed	475	176	461	158
24	Ajinomoto_2016	MNE	Japan	OECD	Asia	22-3-2017	2016	GRI - G4	Private company	Listed	397	102	406	140
25	Ajinomoto_2017	MNE	Japan	OECD	Asia	28-2-2018	2017	Non - GRI	Private company	Listed	0	2	348	8
26	AlzPharm_2016	MNE	Germany	OECD	Europe	1-11-2016	2016	GRI - G4	Private company	Non-listed	177	19	45	100
27	AlzPharm_2017	MNE	Germany	OECD	Europe	6-2-2018	2017	Non - GRI	Private company	Non-listed	43	0	0	0
28	AlgalAgro_2013	Large	Brazil	DAC-UMCT	Latin America	18-12-2015	2013	GRI - G3	Private company	Non-listed	0	2	0	52
29	AlgalAgro_2014	Large	Brazil	DAC-UMCT	Latin America	2-6-2014	2014	GRI - G3	Private company	Non-listed	0	5	0	46
30	Alken-Maes_2011	Large	Belgium	OECD	Europe	7-10-2014	2011	Non - GRI	Subsidiary	Listed	4	2	1	2
31	Alken-Maes_2012	Large	Belgium	OECD	Europe	7-10-2014	2012	Non - GRI	Subsidiary	Listed	4	2	1	5
32	Alken-Maes_2014	Large	Belgium	OECD	Europe	7-10-2014	2014	Non - GRI	Subsidiary	Listed	26	0	0	1
33	Alken-Maes_2015	Large	Belgium	OECD	Europe	26-1-2017	2015	Non - GRI	Subsidiary	Listed	116	0	31	13
34	Alken-Maes_2016	Large	Belgium	OECD	Europe	26-1-2017	2016	Non - GRI	Subsidiary	Listed	16	0	21	12

Figure 2. Sample of the xlsx file dataset including the aggregated columns for each topic.

### 3. RESULTS

The table below (Figure 3) shows the frequency of the keywords for each of the focus areas across the regions. It is observed that on an overall level, employee health and safety was the topic most frequently addressed.

Region	greenhouse_gas_emmission	diversity	employee_health_and_safety	customer_welfare
Africa	2156	625	2948	1969
Asia	19823	2736	35384	6162
Europe	24969	3970	18094	12539
Latin America	4276	1948	8169	8753
Northern Americ	11220	2841	9430	2144
Oceania	2431	306	1535	612
Total	64875	12426	75560	32179

Figure 3. Occurrence of key words of the four focus areas

Figure 4 below specifies the distribution of CSR reports (in percentages) across the years through bar graph for all the sectors and line graph for F&B sector. It is observed that the number of reports kept steadily increasing across All and the F&B sector from 2002 – 2016. However, there was a decline in the number of reports filed in the year 2017. Further, about 90% of the occurrences is credited towards the second half of the period from the year 2010 signalling that companies started filing and becoming more vocal about CSR.

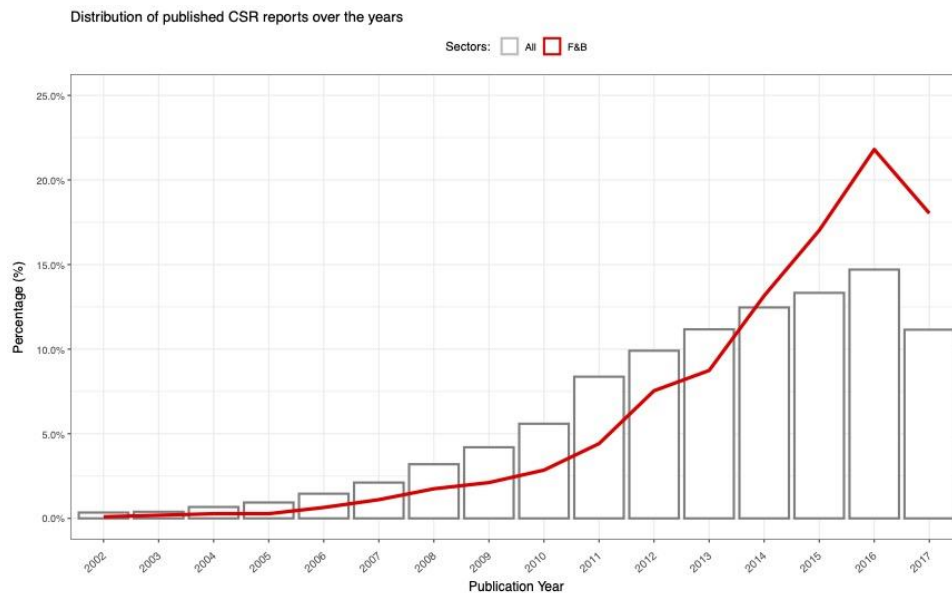


Figure 4. Distribution of CSR reports filings (in %) over the years for All sectors and F&B sector

Figure 5 below shows region wise reports by size of company for the F&B sector. It is noted that in Africa, almost all the filings came from Large companies.

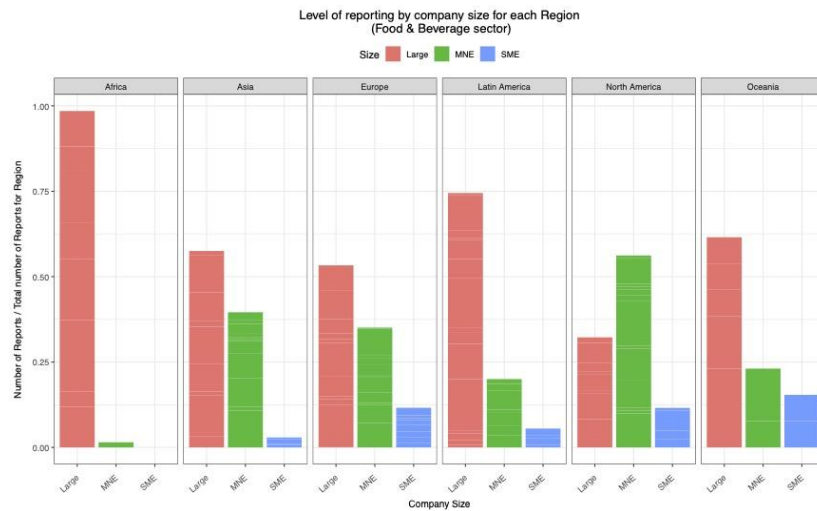


Figure 5. CSR Report filings by company size and region

In all the regions, Large-sized companies have the highest reporting followed by Multinational Enterprises (MNEs) and Small or Medium Enterprises (SMEs). The only exception being the Northern America wherein MNEs have reported more than the Large companies.

Figure 6 plots the average frequencies of the focus areas calculated by dividing of the number of occurrences with the total number of reports for the year. For Greenhouse gas emissions, the peak is in the year 2011 with the trend flattening out in the last five years. Diversity is highest in 2004 with a downward pattern in the final four years. Employee health & safety oscillates to being top in 2009, dips till 2012 and then move upward in the last years. Customer welfare falls after its peak in the year 2007 but then stabilizes in the last six years.

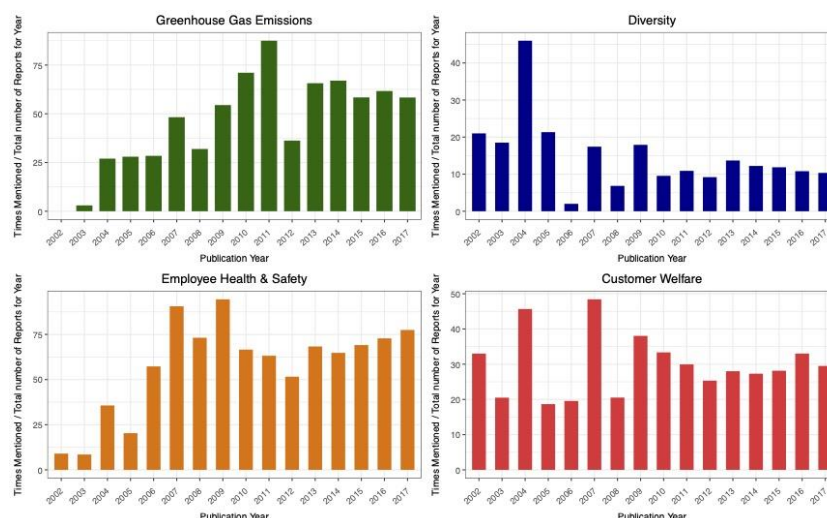


Figure 6. Average number of keywords for each one of the focus areas during the period

Figure 7 below shows that the Oceania region has the highest occurrences in all the focus areas except Customer welfare. Northern America is the second lead in greenhouse gas emissions and diversity, and third in employee health & safety. Latin America tops in customer welfare but is at the bottom in greenhouse gas. European, Asian, and African regions are poised somewhere in the middle for most focus areas. Asia comes second in employee health & safety and last in diversity and customer welfare. Africa is at the bottom in employee health & safety.

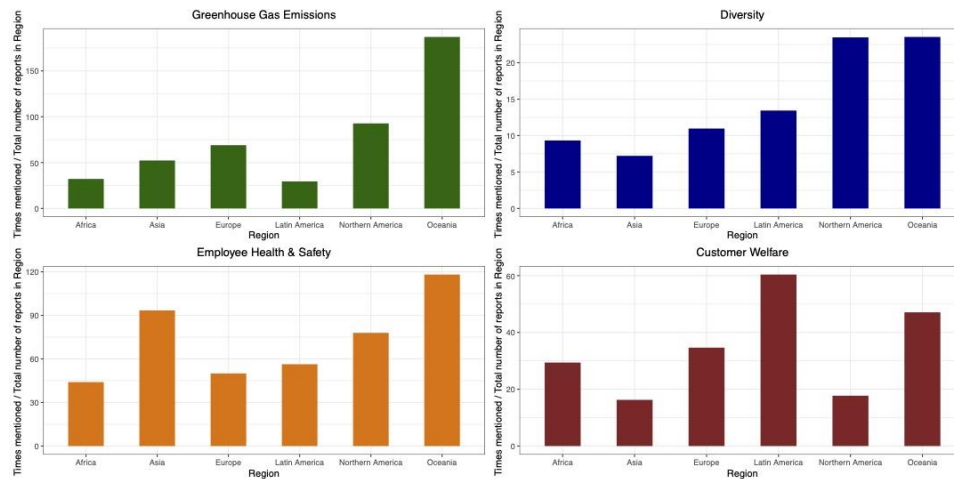


Figure 7: Average number of keywords for each one of the focus areas across the regions

#### 4. CONCLUSION

Based on the results of our analysis, it is concluded that there is a positive upward trend with respect to the number of CSR Reports filings for All and F&B sector during the period of 2002 – 2017 with a fall in 2017. With respect to the company size, to the exception of Northern America, all the regions had Large companies having the maximum filings followed by MNEs and SMEs. The keywords frequency of the four focus areas of greenhouse gas emissions, diversity, employee health & safety, and customer welfare usually had the highest before the year 2011, then went downward and started to then consolidate in the last few years. Oceania was the top region in three of the four keywords.

Although this paper is presented with the best of intent and knowledge, it is critical to mention the limitations. The analysis of other sectors would have provided a larger view of the CSR activities across various industries. However, the works had to be narrowed towards the deeper review of the F&B sector. Moreover, the depth of the analysis would have been better if the corrupted files could also have been utilised.

## 5. REFERENCES

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