

Corporate Environment Responsibility: Food and Beverages Industries

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Abstract: This paper concentrates on the Food & Beverages industries and their environment responsibility. These industries are making profit but they forget that these profits are generated on the cost of environment. These F&B industries from production to packaging to supply chain it affects the environment. It significantly contributes in the deforestation, water pollution and GHG emissions which not only limited to this but also transportation and distribution of F&B products use single-use plastic or the non-biodegradable packaging which further generates waste which ultimately cause GHG emissions. This paper is highlighting on these issues as water management, waste generation specifically plastic waste and climate change. Also, this paper analysis its theory by evaluating two big F&B industries i.e. Coca-Cola and Nestle on the basis of their Sustainability Report. This paper based their argue by analyzing the revenue generation of these industries are increasing every year and still each year they are generating waste, wastewater, emission and accused for their act of greenwashing. This paper in its last part concludes after analyzing the data that in reality the industries are not fulfilling their claims, which are only on the paper but not in the real activity of the industries.

Key Words - Corporate Environment Responsibility, F&B Industries, Water management, Waste Generation, Plastic waste, Climate Change, Emissions.

INTRODUCTION

A. Corporate Environment Responsibility of F&B industries. a. Corporate Environment Responsibility:

It is evident, that now corporate players recognize that long-term victory is based on a corporation's understanding of managing the environment and society along with their business operations. This makes the word “sustainability issue” important as how corporations affect society and how corporations are affected by the society.

This paper talks about corporate environment responsibility which means the obligations of the companies towards environment also not limited to this but extend its research of environment responsibility of the F&B industries that how they are depend on the environment and also how they are affecting the environment through their activities.

The CER used above seems like CSR which is mentioned in Section 135 of the Companies Act, 2013 which defines “A Company with who has a net worth of Rs. 500 Crore or more, or Rs. 1000 Crore or more or net profit of Rs. 500 Crore or more have to reserve their 2% amount for the society benefits. There are various acts mentioned in Schedule 7 of the act that shall be done for the society. Also, if there is analysis of section 135 (5) of the Act and specifically in the provided part, there it is mention that industries shall give preference to their local areas where they operate, here the Corporate Environment Responsibility of the industries starts.

Hence, Despite of the provisions of CSR why we need CER? The answer to this question can be analysed from the concept of sustainable development which arises because of the continuous exploitation of the natural resource and the degradation of the environment. Due to an increase in production to meet societal demands, combat competition, expand their portfolio into society, and primarily for profit-making, the effects of industries' actions on the environment are rapidly growing. CSR is concerned with the whole development of society which includes the education sector, society development, women empowerment, and other related matters but the concept of CER was introduced to prioritize the environment sector which includes the plantation, secure water supply, agriculture development, and procure climate change, emissions, and other environment-related matters.

The National Guidelines on the Economic, Social, and Environment Responsibilities of Business, 2018 states nine guidelines attributed to building responsibilities on the business enterprises, where principle 2 and 6 specifically talks about environment safety as follow:

Principle 2 recognizes sustainable development in manufacturing and utilization to improve product quality and reduce negative environmental effects throughout the product's life cycle, and, Principle 6 acknowledges the interconnectedness of environmental issues at all scales, including local, regional, and global, and holds corporations accountable for mitigating climate change, reducing emissions, and conserving water.

From the above statements, we can ascertain how much corporations are accountable to the environment and introduces the concept of CER.

CER mainly concerns the strategy and plan of action of the companies. There is no financial limit on the companies for spending the amount and it doesn't depend on the turnover or net worth of the company.

Mainly under the CER, it focuses on the environmental factor of the companies and the acts of their stakeholders. CER takes into account the area where the company formulating their project, which means it depends on the cost of the project ongoing and how much company should spend for the environmental benefit and not on the profits of the companies.

The Ministry of Environment, Forest and Climate Change (MoEFCC) notify in its Environmental Assessment Notification 2020 in Clause 3 (16) about the "Corporate Environment Responsibility" as it is a part of Environment Management Plan where the companies which are introducing new projects, make expansion and modernisation have responsibility for environmental safety take action for the immediate surroundings of the project which are raised by the public consultation or for the need of the society. MoEFCC publish a notification in 2018 which specifically differentiate between the CSR and CER for the environment safety.

The differentiation we can see in the Clause 5 (IV) of the OM specifically defines that the activities for completing CER responsibility shall be restricted to the project area.

Clause 5 (VI) also states that CER shall be conduct as a part of project and should be monitored respectively.

When the 2nd meeting were held in the 2015 of the Expert Appraisal Committee under the EIA notification 2006, the experts expressed the view that corporations should be asked to carry out welfare functions for society. This is significant to the social interest of the society because corporations are the society's trustees, not its owners, and it is their duty to allocate some of their profits for the benefit of society.

In the year 2016, the FAO initiate the concept of Corporate Environment Responsibility and finally in the year 2020 the CER strategy 2020-2030 launched with an aim to reduce the 45% mitigation in the carbon emission. The areas of concern under the CER are also identified by the organization as:

- Waste Management,
- Sustainable Procurement
- Energy Efficiency
- Water Management
- Implementing the circular economy approach

To mitigate the environment pollution, OECD also publishes report for the industries to manage their environment corporate performance by engaging the environment management strategy for improving their environment performance during their corporate activities and process by adopting the "Plan-Do-Check-Improve". By planning, the industries can plan their strategy for the environment protection during their business activities. They execute their strategy by adopting the "do" elements and check their progress, monitor their activity and adopt the prevention action and improve their activity on the basis of management review.

b. Environment Responsibility of F&B industries

This paper is focusing on the F&B industry's environment responsibility. F&B industries are the industries which use the raw materials and convert them into the final products for the consumption of the people. The UNICEF defines that these industries have an important role in the manufacture, distribution, supply value chain and retail of the food products, which is consumed by the millions of the consumers across the globe. However, F&B industries is an important driver as a food system, impacting the world health, growth and the development but it has some challenges due to the environment as water implication, waste management and because of this industry comes under the waste generation sector, and these activities contribute into the carbon emissions impact by the climate change although this sector is contributing in the carbon footprints. The industry is interlinked between the challenges by the environment and industry itself breakdown the environment. F&B industries cover from farm-to-fork chain system means it covers agriculture, harvesting, food supply, packaging, distribution, consumption, and disposal of the products. This activity was completed by taking raw materials from the environment and ended with disposing in the environment. Food and agriculture organizations notify that rapid population growth is also changing the consumption patterns, which puts the food system's ability to sustainably provide food and also these changes put the environment in risk. The food system has a substantial impact on the environment, raising concerns about pollution, waste, water pollution, climate change, and other environmental problems.

The F&B industries itself is challenged by the climate change and water scarcity as in the 2016 World Economic Forum report claims that climate change and water scarcity are impacting the industries and find that agriculture sectors are most affected sector because of the climate change and water crisis which includes both pollution and scarcity. The 5th Assessment Report of IPCC states that agriculture production is affected between the 1-5% because of the climate change because of the crisis in the agriculture sector that source of F&B industries are also affected. Instance: the rice production has minimised in the Vietnam because of the saline water is mixed in the soil because the waste water dumped into the river this shows that climate change is effecting the food sector but how these food sector becomes the threat for the climate change, it was claimed that one-fourth of the GHGs emission were done by the food sector.

The BIER in their report of 2018 states that in 2017 the average water used by the 19 beverages industry is 456,245 kl, this amount of water is still using the beverages industry which may cause the water scarcity which also results to impact the beverages industry on the production level.

The F&B industries are also challenged for their waste generation which is caused because of the food waste or the plastic used for packaging which ultimately increase waste generation, GHGs emission and pollute the landfills and water. The packaging in developed countries is about 2% and most of the packaging materials were used by the food sector. The food packaging by using the plastic is one of the examples of environment pollution because it is comes under the waste generation and the food sector is the consumer of the plastic which drives the growth of the single-use plastic. The cans used by the beverages industries as Coca-Cola which is a one-time user and after the consumption is goes into the landfill or the oceans and only few of them are recycled. To prove this, a scholar states that globally the recycling of single-use plastic materials is collected 14% and recycled only 5% of the plastic. The materials which come under the single-plastic uses are mostly bottle cups, straws, lid, beverages bottles and cans.

Sustainable development goals which came into existence by the “United Nations Conference on the Sustainable Development” in Rio de Janeiro in the year 2012 with a motive to preserve the environment, economic and political challenges of the world. There are total 17 goals were introduced by the United Nation and among them “Target 12” talks about the “Sustainable Consumption and the production patters”. It deals with the food waste and loss where under this goal the UN claims that the high-income countries emit larges environment GHGs emissions in the comparison of the Low- income countries. Although the low-income countries are contributing less carbon footprint but still its affect the environment.

“Target 12.3” of the goal set a target that by the year 2030, half of the world’s food waste were reduced on the level of retailers and the consumers and also mitigate the food wastage and losses on the production as well as on the level of supply chains which also includes the after-harvesting of food loss. To mitigate this food wastage and loss the goals also provides the solution under the “Target 12.5” where it can be reduces by the prevention, reduction, recycling and reuse, specifically saying by adopting the circular economy approach but to achieve all these goals we have to take actions also, not only by setting a goal we can achieve the sustainability because after analysing the progress report of the SDG in the year 2023, it was assed that in 2021 only 13.2% achieved in preserving the food waste and loss, it remains unchanged from the year 2016. Also, the world doesn’t achieve almost half the goal set by the SDG of preserving the waste generates by the after-harvesting process.

OECD, also target the food sector and estimate that 4.4% of the carbon emissions, 2.4% of land acidification and 1.7% of water are affected and these affects are generating because the industry process were based on high energy consumption process.

According to the World Bank, the larger amount of freshwater is used for the food production which means most water used in agriculture functions.

We require a sustainable approach that addresses these problems, has a positive effect, and preserves the environment's sustainability.

The sustainable approach which the industry can adopt is the circular economy approach as reduce, reuse and recycle of the products or waste to minimize the waste generation, water pollution and controlled in the GHGs emission in the food industry.

The other approach can be adopted by the increase the measure for the environmental impacts of products and engage with the other stakeholder. The calculation of the GHGs emission and water footprint by the industry which can be done by the “life cycle assessment” (LCA). LCA method is used to analyse the lifecycle of the product within a period and their impact on the environment. This method is basically used to calculate the impact of the product on the environment in a limited time or limited boundary. The Coca-Cola industry used this LCA method first time in the 1969 to compare the environmental impact of the plastic and glass containers.

Now this paper examines the F&B industries structure and revenue for clear understanding of the area it covers and how it is different from other industries and effects the environment then we ascertain the responsibility of these industries towards the environment. After ascertaining the world’s food sector, this paper finds the UK food sector is the single largest food processing manufacturing industries and fourth largest industry which is energy user. India also forecast that Indian F&B industries are expecting to increase nearly by US \$ 623 billion by 2029. It is also forecasted that F&B industries is a growing industry. Hence, the F&B industries have responsibility to manage their environment footprint for their own sustainable growth and also for the environment growth.

THEORY AND HYPOTHESIS

The Sustainability in the F&B industries becomes crucial after the introduction of the sustainability goals by the United Nations. These goals were implemented to secure the natural capitals which include air, water, climate, and eco-systems. All the areas of the F&B industries whether it is plant-based or animal-based, also all sectors includes from the production of the products to the consumption by the end-user industries are complying with the sustainable goals in their industry strategies.

i. Hypothesis

Effective CER engagement by the companies will contribute in the reduction of their environment footprint specifically in “Water, Waste, and their impact on Climate change.”

Asha Balwantraj Joshi states that “The responsibility of the industry in the present era is not only to produce goods and services to fulfill the demand of the consumers but also to protect and take care of the environment and conserve at every stage”. This means not only the food and beverages production but also the company’s engagement in the protection of the environment is necessary. So, why these industries have to be environment-friendly?

Because, there is an increase in the population, which effects the environment as companies are producing more goods for the society. The effect of the overuse of natural resources also results in affecting the environment as well. This problem of overpopulation effecting the environment was covered by the Alla Kasych, Petr Suler and Zuzana Rowland state that “Environment responsibilities are the integral part of modern companies, which requires a strategic operation on scientific principles. The aim of the contribution in the environment should be based in the existing problems of a particular industry strategy.” Here, comes the concept of Corporate Environment Responsibility, which is limited to the industries particular strategy means limited to their project area.

The concern of the paper is F&B industries and the beverage industries mainly depend on the water as the main ingredient for the preparation of their products. The big beverages industries like Coca-Cola and PepsiCo fined by the NGT because they are damaging the environment in India. In the year 2022, the NGT fined the two beverage industries Moon Beverages (Coke) and the Varun Beverages (Pepsi) for violating the groundwater extraction rules issued by the Central Ground Water Authority. The industries were also liable to pay the environmental compensation for not fulfilling their mandatory obligation to recharge the water level. Then this activities of the indsutries raised various question about who is responsible for the cause of environment pollution.

This all question are answered in the book written by Dr. Indrajit Dube where he defines the definitions and effects of the environment pollution. His book is compilation of both Indian law and international law where he explains about the sustainable development defined by the World Commission on Environment and Development, also called as “Brundtland Commission” where the definition describes as humanity have capable for sustainable development if it make sure of using the resources at present without comprising the future needs. This definition acknowledge the basic meaning of the sustainable development but the advent of large number of industries makes this definition a little complicated as it using overuse the resources as water, soil, and other natural resources which threaten the resources for future use. This definition covers various principles and one of the principles of “preventive” principle where the curtailment of pollution from grass-root, the reason behind this is that if any acts which effect the environment remain unpreventable and stays long. Why this paper concentrates on the F&B industries and makes them responsible for the global environment challenge?

The F&B industries are specifically connected with the environment, and mainly responsible for wastewater generation, waste generation, packaging material as using of plastic, GHGs emission through the manufacturing of products and through the supply chain, this sector becomes the big contributor to the environmental breakdown.

Business Roundtable, a US organization started in 1992 lead by the CEO’s of the American leading companies to support the companies for their environment sustainability. The organization aid the business to work accordingly which also protect the environment by adopting the sustainable activities across their business activities. This organization is made to make the industries environment-friendly.

The UNFCCC talks about the food industry that these industries shall not be affected by the climate and give assistance to them to develop in a sustainable manner. The Paris Agreement which is dedicate to enforce and mitigate the Climate Changes, states about the F&B Industries, that this industry is highly under the risk of being affected by the climate change and this industry is also comes under the criteria which produce high percentage of GHGs emission.

These two international agreements where talks about the F&B industries specifically that they are affected by the climate change and also themselves are the drivers of the climate change, waste generation and water scarcity or water pollution, how this situation were arised?.

ii. Water Sustainability:

The water quality and the food production both are interlinked as water is used for the food production, and also for the consumption. Food safety is also depends on the water quality used in the processing of the food and second the food industry is the contributor of the water pollutants and emitting the wastewater through the agriculture runoff, as fertilizers or pesticides and runoff of wastewater from the food processing industries. The discharge of poorly-treated water or untreated water affects the water efficiency.

If this paper only assesses the beverages industries, it is in the form of liquid, means a large amount of water used in manufacturing and also a cooling agent is required to maintain the sustainability of the product. This also results of the wastewater generation and makes common in the F&B industries.

The beverages industries require large amount of fresh water for the production, cleaning, rinsing, for cleaning the machines for better production and for their long-term life cycle cooling or steam production. This all activity results into the wastewater generation. This shows the major issue of the beverages industry as water consumer and also the wastewater generation.

To maintain the water sustainability industries have to adopt the approach of circular economy to sustain the water use and preserve for the future generation. Normally the approach contains the 3R's as Reduce, recycle and re-use but some scholars introduce the 9 principles to maximise the water efficiency and reduce the water scarcity and pollution as Rethink, avoid, reduce, replace, reuse, recycle, cascading, store, and recover.

iii. **Waste generation:**

Also, F&B industries are accused for producing waste at the large scale. Scaling the beverages industries only, then there are various elements as wastage produces due to losses on the production level because of the broken cans or bottles which results into the spilled beverages and other activities which generates waste at the time of production as raw materials, packaging and during the cleaning of bottles. For reducing these wastes which also includes the plastic for the packaging material is becomes an endless controversy in the beverages industry.

• **Plastic generation**

The increase in the plastic waste generation impacts on the environment and it's one of the drivers of the climate change, to mitigate this, the SDG introduced in the year 2015 as follows set some target to minimise the plastic waste as:

SDG 12 set target that by 2020 to reduce the all wastes generate throughout the life cycle of the product and also SDG 15 (life on land) states about 17 million tons of plastic generation which is attributed that by 2040 it will be increased by 3 times.

The progress report of the 2030 doesn't provide the statics of target 12 on the waste generation but target 15 progress report claim that still the ocean, the largest world's ecosystem is in danger by the mounting of plastic pollution.

If the plastic waste pollutes the environment, then why the F&B industries choose to use plastic in their production and distribution of the product? Because the packaging products needs those materials which are light in weight which ultimately reduces the transportation cost of the industries and plastic fulfils all these criteria and no one is there to challenge this. Instances, the changing of glass bottles of Coca-Cola with the plastic bottles, it increases the shell life of the product, light weight means the lower cost of transportation, easy to carry anywhere, and minimises the food loss or waste.

"Green lodging news" a website which publishes the environment news publish on June 14, 2023 a data that on the global level the beverage industries are buying more than 500 bn. plastic bottles per year and US become the 100 bn. plastic producing state. The Coca-Cola, which is one of the largest beverage industry are using the PET bottles which manufactures by using the cancer-causing chemicals which also emits the GHGs emission and hazard for the human health.

Beverages industries are commonly impacted by the plastic waste. The beverages products are mainly have short-term life which makes their packaging important to sustain their life cycle among the other competitors. The containers of the beverages industries were manufactured according the products filled into it. Also this plastic production is also accused for the GHGs emission as it discharges 3.4% of the GHGs emission into the environment

iv. **Climate change:**

These waste also emits the GHG emissions which effect the environment and also, it was assumed that F&B industry are mostly depend on the energy and carbon- based process which also emits the GHG in the environment, Alia Ladha-Sabur defines the food industry has a major dependence on the energy intensive process and also emits carbon emission. His theory states that because of continuous increase in the population growth, food demands may also increase 60% in the year 2050. His finding was basically based on the UK's food industry, but it doesn't mean that it only limited to the UK. The hazards are caused on the global level. As, it was proved by many scholars that the F&B industries are the major contributor in the Greenhouse gas (GHG) emission in the environment. It is also established that in case of immediate reduction in the fossil-fuel emission, still there is not less than 2 degree GHG were present in the environment.

OECD report also signifies the same problem of the above scholars as the emission reduction by the F&B industries are not much receive attention in comparison with other sector like energy, transport and other industrial units, although the agriculture solely contribute in the GHGs emission on a large scale. Therefore, the meeting of the Paris Agreement target the F&B industries involvement in the reduction of the GHGs emission important because without them the global temperature will not decrease from 2 degree Celsius.

This paper takes the Britannia's example to evaluate data which is also comes under the ambit as one of the bakery industry which produces bread, biscuits, buns and other related products. Scholars argue that the bakery sector contribute more in the carbon emissions in the environment. To support these bases scholars argue that bakery products are produced by the large scale plant bakeries and rest by the smaller bakeries or the bakeries at the local level.

To understand the type of emission produced by the F&B industries "The Greenhouse Gas Protocol" published their report named A Corporate Accounting and Reporting Standard, this report states that when the companies identify their area of operations then

this organization aid companies to identify their category of emissions in the environment. This is called the scope of emissions. The percentages of emissions from the scope for F&B industries are different. It was estimated that from the Scope 1 (Direct emissions) are 8%, Scope 2 (indirect emission) were 4% and the Scope 3 (value chain emissions) are 88%. Despite the emissions from scope 3 is large, the companies generally not provide complete report for their value chain emissions. Carbon footprint emission throughout the processing and distribution of the products to the end-users shown in the below chart:

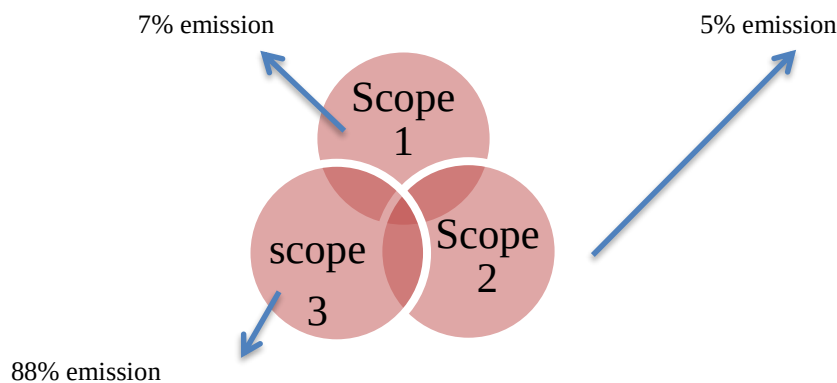


Fig 1: Scope emissions of the F&B industries

If the industries are adopting this method to mitigate the environment pollution then it will become beneficial for the industry as well as for the society also. To comply with these obligations there is a risk of grey area which is adopted by the industries mainly to show the consumers and other stakeholders that industries are fulfilling their environment responsibility but not in reality.

v. Greenwashing

To shows their environmental friendly action, sometimes companies engage themselves in the act of greenwashing because of high pressure from the society and other stakeholders. To understand this grey area, this paper extends their scope in understanding the concept of “Greenwashing”.

Instance, a case raised against the fast-food chain is “McDonald’s” for their restaurant opens its first net-zero restaurants.

This McDonald establish there restaurant by meeting all the requirement establish by the UK Green Building Councils net-zero carbon building framework. Although they are constructing their restaurants which have less carbon footprints but Greenpeace, an organization of UK disclose some facts of the restaurants by alleging them for the greenwashing. Anna Jones who is the campaigner of Greenpeace states “if the menu of restaurant still contains meat and dairy in their products, then these restaurants shall be called as: McGreenwash. On the basis that solely the animal agriculture is responsible for the GHG emission and restaurants which are serving animal products can’t call them “green”. To become a restaurant “green” or “all natural” they have to shift their menu from animal-based products to plant-based products.

The McDonald’s example is given to understand the concept of greenwashing and the act of greenwashing effect on the environment more.

The act of greenwashing is controversial because the positive communication drives the consumers to buy the green product, in reality it’s not green. This will lead more environmental breakdown as well it also effect on the company’s reputation.

DATA AND MEASURES

To evaluate the data of environmental footprint by the F&B industries, this paper collect the data of the two F&B industries i.e. Coca-Cola and Nestle sustainability report from 2019 -2022 and from 2020-2023 respectively, where the industry target their environment action, measure their activity and claims their environmental friendly actions.

a. Coca-Cola sustainability report from 2019-2022

Sustainability report of 2019: Their claim of water consumption improved efficiently by using only 1.8 litres water used for per final product from previous year 1.89 litres used. But still the company themselves states that there aim to reduce the 25% of water use by the 2020 doesn’t meet because of the change in products and packaging.

The industry introduces a project name “world without waste” with three principal goals:

- 100% recyclable packaging by 2025,
- Collect and recycle their each can and bottles by 2030,
- Bring all the stakeholders including supply chain, consumers and customers to support these goals.

The company’s new platform- Costa Coffee which introduced by the Coco-Cola in 2007 claims that till 2018 they recycled 140 million tons of cups by recycling process adopting the circular economy process.

The Coco-Cola set a slogan in 2013 “drink in your hand” to mitigate the GHG emission at full value chain stage. The industries claims that they almost mitigate 24% towards the target set end of 25% for the year 2020. The industry not only limited to this but also initiate “Science-based Target” for the absolute mitigate of 25% of GHG emissions by 2030.

Sustainability report of 2020: Water use efficiency reduced by only 1.84 litres per litre of final product. Still the industry doesn’t achieve the 25% water goal by 2020 due to change in product and packaging.

For the waste management, the three fundamental goals achieved as follows:

- achieved 90% globally for recyclable packaging by 100% recyclable packaging by 2050
- 22% bottles collected across all materials and 11.5% PET plastic use
- set new virgin plastic reduction goal

Also, for the GHG emission target, the industry achieved goal of 25% reduction in relative emission by 2020.

Sustainability report of the year 2021: clearly shows the water management as water use efficiency reduced by only 1.81 litres per litre of final product, in the context of waste management Coca-Cola claims there three fundamental goals were achieved and in the context of GHG emission after achieving the 25% of relative GHG reduction. The industry set their new goal of absolute reduction of emission by 25% by 2030.

In the year 2022 sustainability report the Coca-Cola again claim that their water used were reduced by the 1.79 per litres in the per products, also their aim of Costa-coffee to use reusable cups increased by approx. 14% of total beverage volume served in this year, and in the GHG emissions the industry achieved 7% reduction in science base target of absolute reduction of emissions by 2050.

b. Sustainability report of Nestle from 2020-2023:

Sustainability Report of 2020: In this year the Nestle commits that they will become Zero environment impact by the 2030 which includes the water sustainability, waste management and climate change.

Water sustainability: Industry claims of reducing 35% direct water withdrawal per tonne of product only achieved 32% in the year 2020

Waste management: Industry claims that they are improving the packaging material and they achieved their claims in 2020.

Climate change mitigation: The industry claims that they achieved the target set by the 2020 which includes: Reduction of GHGs emission in Scope 1&2 per tonne product in each production by 35%, 10% reduction in the distribution channel, 10% reduction in major warehouses, and enlarged the use of natural refrigerator.

Sustainability Report of 2021:

Water Sustainability: In this year Nestle certified as AWS standard. Pledge to aid the positive water impact by 2050.

Supporting the agriculture sector by educating the farmers and launch a new approach for management of water in agriculture to accomplish their net zero commitment and achieve 50% of elements regeneration by 2030.

Waste generation and management: The industry states to reduce their water and maximise their recycling of the products to promote the circular economy approach. Also concern on the sustainable transformation for their packaging. Although their packaging process emits 10% of GHGs emissions and tried to improve packaging and achieve net zero emission industry by 2050.

GHG emissions: The industry aims to reduce their absolute emissions by 20% till 2025 in compare to 2018 and the same emission by 50% till 2050. Claiming deforestation-free by 2022 in meat, palm oil and sugar and by 2025 for cocoa and coffee.

Sustainability report 2022:

Water management: Water withdrawals were reduced to 97.1 million from the 98 million in 2021.

Waste generation and management: The industry claims that for their waste reduction of plastics from the environment:

Using plastics from renewable material by 36% (39.5% in 2021)

81.9% plastic recycled (85.4% in 2021) and 85.8% plastics were recycled and reusable (49% in 2021)

The circular economy also achieved to reduce. Reuse and recycle till 3.6 million tons (3.8 million tons in 2021).

GHG emissions: the industry claims that they achieve 99.1% of their deforestation-free resources and they reduce 3.1 million ton of CO2 through nature based solutions

Sustainability Report 2023:

Water management: Direct water withdrawals reduced to 95.6 million.

Waste generation and management: The plastic used after recycling were increased by 83.5%, recycled and renewable plastic production by 41.5% and virgin plastic reduction by 14.9%.

GHG emissions: Deforestation-free production by 93.4%

This data of the both industries were evaluated by this paper and findings were mentioned in the part.

FINDINGS:

a. Coca-Cola Industry findings:

The sustainability reports of 2019 and 2020 have some mismanaged their calculation into the added sugar in the products which shows the manipulation of the industries towards the consumers' consumption. Also, the sugar content in the beverage of the industry came into a controversy in 2019, a greenwashing accusation on the Coca-Cola for their green label to manipulate the consumer by claiming "Sweetness from Natural Resource" to represent themselves as using natural sweetness but in reality the beverage still contains 6.6% sugar which is not a healthy drink.

Also the industries water used in the per final product till 2020 achievement of reducing 25% has not their target due to change in the product and packaging. The water consumption in the final product and the packaging of the product, both are the different sector and it causes that the claims were not actually fulfilled.

However, after analysing the revenue of the industry, the annual revenue of the company from 2020 to 2023 increased. As, 2021 revenue increased by 17.09% from 2020 revenue, the 2022 revenue increased by 11.25% in comparison 2021 and the latest annual revenue of 2023 increased by 6.39% from the year 2022.

This concludes that, the finance or the funding of the industry were increasing but on the cost of the environment

b. Nestle industry findings:

From assessing the sustainability report of the Nestle from 2019 to 2023, the industry claims that they are continuously act for the deforestation-free plantation. The industry set a target in 2010 after their controversy to reduce the use for palm oil to save the forest, the industry claims that by 2020 they will verified as above 90% they become deforestation-free. But still their report of 2020 shows that only achieved 70% of their target achieved and the data for rest 30% were not traced or not are deforestation-free. This shows the lack of monitoring in the activities of the industry or lack of action to achieve their target.

This paper also concentrates on the financial status of the Nestle industry of India, every year from 2016 data the revenue of the industry is increasing. The revenue is calculated in the Indian Rupees, the industry earned Rs. 174.23 Billion in the year 2022 which is increase as by Rs. 151.87 Billion in the year 2021. Gradually the revenue was increased as in the year 2020 the total revenue were generated to the Rs. 133 Billion rupees and in the year 2019 the total revenue is Rs. 123.7 Billion. This shows that funding of the industry is increasing but on what cost? The funding or yearly revenue were generated on the cost of the environment as the paper analyse the Nestlé's waste generation, plastic pollution, water pollution and the act of deforestation which causes the GHG emission and result into the environmental breakdown.

Hence, both the industries are clearly not accomplishing their environmental obligation on the basis they are stating in their sustainability report.

The reports from the biggest 50 F&B companies both Nestle and Coca-Cola emits almost 90% of emission in the Scope 3 of the GHGs emissions and both the companies doesn't clearly disclose their Scope 3 emissions in the report and also these emissions are not addressed by the industries.

IMPLICATION:

These industries effect the environment erroneously from their activity. There are many cases where the Coca-Cola left the region into lack of water or groundwater exploitation.

The case of Rajasthan in the year 1999, when the industry of Coca-Cola arrived in the states the decline in the water level groundwater increased and the villagers were unable to irrigate their agriculture land. Many of the Indian land faced a serious decline in the water level after the industry formed. One of the state of India, Varanasi has also experience the over-use of the water resource and also experience the wells were started to dry.

The research shows that Coco-Cola were accused for threatening of groundwater supplies across India and various rural areas become victim of this and blaming the industry for aggravating this problem. In 2014, the Indian Government closed the plant of Coca-Cola situated in the state of Uttar Pradesh because of the excessive groundwater pumping. Although the industry initiate program for water replacement but due to dry monsoon the water depletion still remain. The major case were spotted in the Kerala in the year 2019, Coco-cola operates almost 58 water intensive bottling industry in India. Kerala experience droughts which were occur because of dried up groundwater and wells and the people were forced on the water supplies provided by the government. In 2021, GreenPeace publish an article where the title "Coca-Cola it's time to stop your pollution at source" clarifies that after the

various claims still the industry was unsuccessful in achieving those claims. The article states that many activist around the globe where protesting and point out some issues as:

“that the hilltop is not only covered with the single use plastic bottles littered but now there is increase with new fossil fuel designed throwaway plastic bottles.”

The industry started a project for their waste management, but the brand audit report of 2018 of the Break Free from Plastic , surveys the ocean of Greece and identified 2,981 plastics of the top branded F&B industries, including Coca-Cola. The organisation claims that most of the plastics were already mixed into the landfills and it's impossible to collect them or any further action to reduce the plastic pollution. This accusation becomes the driver for the industry to initiate the project for reducing their waste generation.

Also, taking example of the Nestle industry the act of using high palm oil resulted into the deforestation. Instance, a website advertises in the year 2010 that Nestle claims that they use only deforestation-free raw materials in coming 10 years. But the website claims that most products of the Nestle were made from the palm oil and the industry used 455,000 tons of palm oil alone in 2019 and the farming of oil alongwith destroying the rainforests (deforestation) also impacts the climate.

Today's world is suffering from climate change, and environmental pollution and these issues effect the freshwater pollution rivers and other water system in the world either become dry or polluted. The contribution of F&B industries in raising these effects plays an important role such as Nestle. The scholars argue that the Nestle, is monopolizing on the water sources and use for their products. The Nestle were also accused for using the water withdrawals from the stressed area, where the water is already beneath the appropriate water level, almost 25% of water is withdrawal from the water-stressed area. Furthermore, the water discharged from the operation of the industry is not clearly defines their recycle and reusable of that water discharge. This shows the loopholes on the part of the Nestle industry in the treatment of the wastewater.

This are the some implication were assessed by the organisations and scholars and these implication were done not an only by the F&B industries

CONCLUSION:

The responsibility of the industries is not only to make profits but also towards the society, environment and natural capital. The industries use all those resources which are available in the ecosystem whether it is water, land, soil and other natural capital. Assessing the sustainability reports of the F&B industries, the industries states their claims and achievement in a positive way but in reality, both the industries are either unable to achieve those goals or accused of the greenwashing for their operations.

This paper assesses the data of the two F&B industries and this will help the society and organisation to understand in making their choices of the products they are using or consuming is environmental- friendly or not. This also helps the other industries to minimise their further environmental footprint because these industries are highly depend on the natural capital and if they harm the environment then they themselves will not survive in the society.

This paper is not completed here but this raise further question that the harm is already done by the industries and still these activities were not stopped or reduced by the respective industries. So, how can a beverage industry substitute or control the water use or how the industry reduced their energy consumptions because the cooling or steaming feature for the production, procurement or for the shell life of the food or beverages products are necessary to sustain them.

Although there are various technologies which proves a better choice for the industries specifically for the F&B industries to use for minimising their wastewater generation, reduce the waste generation or mitigating the GHGs emission from the atmosphere and ecosystem but still these industries are not fulfilling their responsibility.

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