

Nestlé's Role in Global Food Security, Climate Change and Consumer Health

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Abstract- Nestlé, as a global leader in the food and beverage industry, plays a pivotal role in addressing critical challenges related to food security, climate change, and consumer health. This paper examines Nestlé's strategies and initiatives aimed at contributing to global food security by enhancing sustainable agricultural practices, reducing food waste, and promoting responsible sourcing. The study also explores the company's efforts to mitigate the impact of climate change through carbon reduction initiatives, sustainable packaging, and energy-efficient operations. Additionally, Nestlé's focus on consumer health is analyzed, highlighting its commitment to offering nutritious products, promoting healthy lifestyles, and reducing harmful ingredients such as sugar and salt in its offerings. By evaluating Nestlé's multi-faceted approach, this paper underscores the company's potential to influence positive change at the intersection of food security, environmental sustainability, and public health, while also identifying areas for future improvement and broader impact.

Index Terms- Food Security, Climate Change Mitigation, Sustainable Agriculture, Consumer Health, Corporate Responsibility

I. INTRODUCTION

Nestlé is a global food and beverage company headquartered in Vevey, Switzerland. It is one of the largest companies in the world by revenue and is involved in various product categories, including:

1. Dairy Products: Milk, yogurt, and infant formula.
2. Bottled Water: Brands like Perrier and San Pellegrino.
3. Confectionery: Famous for chocolates like KitKat, Smarties, and Quality Street.

4. Coffee: Nescafé and Nespresso are some of its flagship coffee brands.
5. Frozen and Prepared Foods: Stouffer's, Lean Cuisine, and Hot Pockets.
6. Pet Care: Nestlé owns Purina, a leading pet food brand.
7. Health Science and Nutrition: A growing segment focused on medical nutrition.

Nestlé is known for its significant global reach, operating in over 190 countries. The company has been involved in various sustainability and social responsibility initiatives, focusing on water conservation, reducing plastic waste, and improving nutrition globally. Nestlé, a global food and beverage giant, has a rich history and extensive presence worldwide. It began in 1866 with Henri Nestlé's infant formula, growing into a multinational corporation. The company now boasts over 250,000 employees and produces a wide range of products, including baby cereals, dairy products, beverages, chocolates, pet food, and more (Singh & Alazmi, 2019).

Nestlé has continuously innovated through aggressive research and development. This strategy is supported by its "Creating Shared Value" initiative, which emphasizes sustainability and responsible business practices, particularly in its agricultural supply chain (Kruschwitz, 2013).

The company has also been involved in various global markets, adapting its strategies to local contexts, such as in Bangladesh, where it follows a tailored marketing and sustainable growth model (Mohajan, 2015). Furthermore, Nestlé's marketing success in India, particularly with the Maggi brand, exemplifies its dominance in specific categories, holding a market share of over 79% in the noodle sector (yadav, 2023).

Nestlé's sustainability efforts, particularly in agriculture, show its long-term commitment to social and environmental well-being. By offering technical assistance to rural farmers, Nestlé contributes to sustainable production and improved crop quality (Jöhr & Bruckner, 2002).

In conclusion, Nestlé's success can be attributed to its innovative products, strong marketing strategies, and dedication to sustainability across its global operations.

Nestlé has had significant global impacts, spanning multiple sectors such as economics, agriculture, and environmental management. Here are some notable effects:

1. **Stock market influence:** A major policy change in Nestlé's stock ownership in 1988 led to dramatic shifts in the prices of its shares and impacted several other companies on the Zurich stock exchange. This event highlighted the company's strong influence on financial markets (Loderer & Jacobs, 1995).
2. **Brand image and profitability:** Research shows that factors like brand personality and word-of-mouth significantly contribute to Nestlé's profitability, particularly in Pakistan. While brand packaging had a weaker influence, overall, the brand image was a key asset for profit generation (Akhtar et al., 2017).
3. **Water management leadership:** Nestlé's extensive water use across its value chain has pushed the company to lead initiatives in industrial water management. The company has shifted towards collective water stewardship to better address the environmental impacts and ensure long-term water security (Galli & Vouvouras, 2020).
4. **Negative impact of infant formula marketing:** Nestlé's aggressive promotion of infant formula, particularly in low- and middle-income countries without adequate access to clean water, has been linked to increased infant mortality. A study estimated that this led to approximately 66,000 infant deaths in 1981 due to contaminated water used in formula preparation (Anttila-Hughes et al., 2018).

In 2024, Nestlé continues to focus on sustainability and innovation while addressing various global challenges:

1. **Plastic Reduction:** Nestlé is investing up to \$2 billion to reduce its use of virgin plastic by one-third by 2025, focusing on food-grade recycled plastics. The company is also promoting innovation in packaging through venture funding for start-ups developing sustainable materials and recycling systems (Scott, 2020).
2. **Sustainability in the Supply Chain:** As part of its long-term strategy, Nestlé is committed to sending zero waste to landfills and reducing food loss throughout the supply chain, from agriculture to consumers. The company emphasizes resource efficiency and waste reduction to meet global sustainability goals (Lagger & Oceania, 2021).
3. **Crisis Response during COVID-19:** Nestlé South Africa exemplified multi-stakeholder partnerships during the pandemic by focusing on community support and creating shared value (CSV) beyond mere philanthropy. This effort included collaborating with various stakeholders and supporting health-care workers (Pillay & Scheepers, 2020).

Nestlé plays a significant role in global food security, climate change, and consumer health through its business practices and sustainability initiatives. Here's a breakdown based on various research papers:

Global Food Security

Food safety and quality are critical in the food industry, with manufacturers responsible for delivering safe, high-quality products. Poor management of these aspects can harm consumers' health, reduce nutritional value, and damage the manufacturer's reputation. Nestlé, a leading global food and beverage company, operates in 190 countries and offers over 2,000 brands. Its success is attributed to strong leadership, a focus on health and well-being, and a commitment to improving nutritional profiles (Chung et al., 2020).

Nestlé contributes to increasing global access to nutritious food, which is vital for sustainable social and economic stability. The company emphasizes long-term growth and sustainability in its supply

chain, driven by consumer awareness of sustainable practices (Raja et al., 2021).

It also engages in collaborative efforts to promote sustainable diets that meet the needs of future generations while balancing environmental and farming challenges (Green et al., 2018).

We are witnessing significant changes in global food systems and dietary patterns, with a growing focus on nutrition and food security. While globalization has increased food variety and access, it has also led to uneven availability of healthy, affordable options. Many populations are forced to buy cheaper, nutritionally poor food. This paper explores how globalization, the practices of transnational food companies, and the rise of processed foods contribute to shifts in food security and nutrition.

The research indicates that urbanization and foreign direct investment have increased the availability and consumption of processed Western foods due to the presence of large food corporations in local markets. These corporations influence consumer preferences through sophisticated advertising and marketing strategies, often disadvantaging small farmers who struggle to compete with their international standards and market power. This can undermine food security and sovereignty, leading to malnutrition and decreased economic productivity.

The paper argues that while globalization and the practices of large food companies can exacerbate food insecurity and malnutrition, they also have the potential to contribute to solutions. It aims to highlight flaws in the global food system to promote more equitable, sustainable, and healthy food systems in developing countries (Black, 2016).

Climate Change

Nestlé actively works towards reducing its environmental impact, notably by focusing on sustainable sourcing of fats and oils, which contribute a significant portion of the company's greenhouse gas emissions. The company aims to achieve deforestation-free supply chains and integrate climate-resilient products into its portfolio (Pfeiffer & Cooper, 2022).

Additionally, climate change has profound effects on food security, with altered agricultural yields and increased health risks, and Nestlé participates in mitigating these risks through various sustainability programs (Wheeler & Von Braun, 2013).

Consumer Health

With 65% of consumers seeking sustainable options, companies must provide affordable, accessible, and clearly labeled products. The food industry can accelerate this transition by offering clearer information, ensuring affordability, and making sustainable choices attractive. Nestlé's role is discussed as an example of how global food manufacturers are working to promote regenerative farming, reduce carbon footprints, and innovate sustainable products. Collaboration between companies, governments, and consumers is essential for achieving net-zero goals. Nestlé places significant emphasis on consumer health and nutrition, responding to growing concerns about obesity, diabetes, and other diet-related diseases. The company has reformulated many of its products to reduce sugar, salt, and unhealthy fats, while increasing the nutritional value of its offerings. Nestlé's research and development focus on creating healthier alternatives, such as plant-based products, to meet changing consumer preferences. Additionally, the company promotes responsible marketing, especially when it comes to products aimed at children, to encourage healthier eating habits.

Nestlé has made significant efforts to improve consumer health by addressing global issues such as obesity. The company enhances the nutritional profile of its products and educates consumers on healthy eating habits (Nestle, 2006).

Water Shortage

Water is an important necessity for our daily life, without it our life will stop. There are many reasons for water shortages around the world, for instance, climate change, global warming and clean access to water. By the time climate change effects are increasing and so are water-related issues because both are interlinked. Some area sees more flooding's while others face droughts. Water is vastly used for growing crops and ingredient, and it is a critical issue for Nestlé.

Water Efficiency

Improving water efficiency is vital because we can divert the remaining water for other important things. Nestlé is aware of its responsibilities' and uses water efficiently in its operations. Nestlé annually evaluates water associated perils at their facilities. Nestlé studies water stress in the regions where they operate to use water and point out the factories where water matters most. If there is water stress in area Nestlé works permanently to conserve water by robust auditing and improved technologies.

Water Stewardship

Water stewardship advocacy is addressing water scarcity together, Nestlé and communities. The decreasing strain of water on the global level is not possible by one company, it needs collaborations. Nestlé has come together with Multi-Stakeholder Platforms (MSPs) which brings together governments, companies, and stakeholder for better water solutions. Nestlé is a member of MSPs in many countries such as Peru, South Africa and Bangladesh (Nestlé, 2019).

Nestlé's Water Commitments

Nestlé's Water Commitments is expanding in many MSPs, now it includes UN CEO Water Mandate, the Alliance for Water Stewardship (AWS) and the 2030 Water Resources Group (WRG). These platforms are important for strong local network and stakeholder engagement. The 2030 WRG has projects in fourteen locations. World Bank hosts 2030 WRG since 2018, moving from International Finance Corporation. Nestlé has implemented AWS program in twenty-seven locations. Nestlé is committed to AWS by 2025 in all its factories, which is good because it is third party certification and standard for Nestlé manufacturing facilities, and other Nestlé food processes will follow suit.

Nestlé Engaging with Employees

For Nestlé advocating for better water stewardship is a business-wide endeavor. Hence including employees for improving Nestlé's industry standards. In 2019, Nestlé hosted Livestream seminar on our Caring for Water initiative about three hundred fifty employees attended the seminar, with senior members of Nestlé Waters, Operations and a CSV Council member answering employees' questions on Nestlé's water usage (Nestlé, 2019).

McCloud and Nestlé

McCloud River Timber Company in McCloud, California, was found in 1897 and was the lifeblood for the area. Winnemem Wintu tribes have been living there for generations due to logging of forests. In 2002 logging strict legislation was introduced so they turned to abundant spring waters flowing from volcanic aquifers in the area. McCloud community board allowed Nestlé Waters North America to build (at one million square feet) the largest water bottling plant in the US which can pump five hundred and twenty million gallons of spring water annually (Herrmann, 2020), and extract unlimited groundwater. In return, Nestlé has to pay three hundred thousand and fifty thousand dollars to MCSD and two hundred forty jobs with its operation. But many believe it is the water industry siege on Mount Shasta (Little, 2018).

Water shortage is faced by businesses, community, government, and environmental challenges are mounting with the passage of time. Water scarcity can have significant bad impact on economic stability and social prosperity. In 2012, the World Economic Forum Global Risks Report suggest the top five global risk include water for consecutive eight years (Bulcke et al., 2020). Water shortages require an innovative solution for instance development of new dams and reducing risk to the environment.

Water shortage is a huge problem, to solve this problem we all need to come forward and develop solutions. Governments around the world need to have a clear vision for water, they must build appropriate infrastructure for water usage, and educate corporations and people. Water is the basic need of all human being so we must all share the responsibility of conserving it; we should not let any company or country take control of it. Companies should include water-saving policies to incorporate social responsibilities all over the world.

If Nestlé is saving water, it will help us globally, it will reduce draughts and water shortage. We will be saved from rising water costs and political conflicts. Nestlé initiatives can preserve our environment as all companies should practice this. Water will be available for recreational purposes, for example watering vegetable gardens, flowers and lawns. Nestlé

can build safe communities around the world because water is used by firefighters, hospitals, restaurants and large companies can help these communities.
Energy Needs

Communities need energy services to meet basic human needs, for instance, cooking, lighting, mobility, and communications for production processes. Quality of energy is important for the development process, and development needs to sustainable, energy services need to have a secure and low environmental impact. Sustainable economic and social developments need affordable energy resources which are sustainable energy services and essential for human beings. A report shows that in 2004 eighty-five per cent primary energy is provided by fossil fuel and burning of fossil fuel accounted for fifty-six point six all anthropogenic GHG emissions (Edenhofer et al., 2011).

Around the time of the industrial revolution, the population of the world was seven hundred million, now it is seven billion and by 2050 it is predicted to be nine billion, and ten billion in 2100. Most of this population growth will be in Africa and Asia, with robust economic growth there will pressure on energy supply. In 2009, The International Energy Agency (IEA) predicts that World's energy demand increases from twelve-billion-ton oil equivalents (t.o.e.) to seventeen or eighteen billion t.o.e. by 2035 under current policies(Chu & Majumdar, 2012). The carbon-dioxide increase will be twenty-nine gigatons per year to thirty-six or forty-three gigatons per year. Energy conservation, efficiency and decarbonizing are important for clean energy.

Nestlé Zero Waste is an important initiative by Nestlé, and they started working on it in different countries. The Fawdon project is one of many projects in which Nestlé is investing in. in Panama, Nestlé gave livestock farmer a small-scale anaerobic digester, which turns animal waste into biogas liquid fertilizer and for cooking (Green energy | Nestlé Global, 2020). By this project, the farmer does not rely on fuel or wood and there are signs of reduced deforestation in the area. Nestlé is implementing similar projects in Mexico, China and Pakistan.

Human behaviour turns positive when they do good, people believe producing green energy makes a

difference, and the workforce can focus on things which they think are important for the environment. Bacteria are important for reducing energy consumption (Green energy | Nestlé Global, 2020).

Every year about one three billion tons of food is wasted, Food wastage footprint of CO₂ is three point three billion tons into the atmosphere every year (*FAO - News Article: Food Wastage: Key Facts and Figures*, 2013). In South Africa energy wasted spend annually on producing food is enough to power the city of Johannesburg for approximately sixteen weeks (Bormann, 2017). It is estimated by 2050 gas emissions due to food loss and wastage can reach five point seven to seven-point nine Gt CO₂e per year(Bormann, 2017). This type of energy waste is happening in farm production, value chain, storage issues, distribution and packing of food, and by consumers. In 2019 Nestlé started working with the supplier to point out supply chain food waste and loss, and internally working to reduce waste.

Nestlé is committed to reducing losses in the dairy chain, Nestlé worked with the World Resource Institute to calculate milk losses in thirty key factories in different countries. Food Loss and Waste Value Calculator is used by Nestlé to assess food losses, in 2019 milk losses were zero-point one five per cent of production. In West Africa and Indonesia losses of palm oil for smallholder is determined with the help of Earthworm. In Caribbean and Latin America one hundred twenty-seven million tons of food is wasted every year, and forty-two million people in these areas face acute undernutrition. Inter-American Development Bank and Nestlé created a platform #SinDesperdicio, which address issues of developing policies, creating knowledge database, creating the innovating project, and encouraging responsible consumers. The energy need is increasing as the societies are developing, new research method should be introduced to meet the challenges of energy. The best solution so far is green and sustainable energies. The business should divert resources to have zero impact on the environment because if they do not do this now, we can head for big troubles very soon. Companies like Nestlé should work on environmental performance, use natural resources, reduce their impact on the environment, look forward to long-term using in raw material and water. Nestlé has life cycle

approach which involves partner from consumer to farmers for improving environmental impacts of Nestlé all activities, they use resources efficiently, sustainably and achieve zero waste, and all other companies should follow this strategy.

Sustainability is helping the environment, if companies like Nestlé play an important role more companies will join, and we all will be able to reduce our impact on the environment. Experience and expertise are important for green environment, global innovation platform is important for the environment. New technologies can reduce carbon impact on the environment.

Land Use

The land is important for the food production system in the world and the land is stressed by an unparalleled level of demand. Climate change is also adding to the stress problem in some key areas. World's cultivation has grown to twelve per cent over last fifty years, at the expense of wetland, forest and grassland habitats, at the same time world's irrigated area, are doubling. Distribution of land is uneven in many countries. Only in sub-Saharan Africa and South America offer some scope for expansion of land.

Everything depends on the soil to grow; we need a sustainable supply of food to health. Globally resources are used in an unsustainable manner. It is believed that if the whole world consumed at the same rate as the richest countries do, we will need three to five piles of earth to sustain such consumption. We have created unsustainable habits if we keep on going like this, knock-on effects on natural habitats, animals, and people will be severe. It is predicted if we keep our business as usual to waste, production and diets then by 2050 the extinction rate could reach one thousand forty-three extinctions per million species (*Halting the Extinction Crisis*,.). Every year about eight million tons of plastic is dumped in the ocean, and over ninety per cent of birds have plastic pieces in their stomachs (*Plastic Pollution: Facts & Figures - Surfers Against Sewage*, 2023.). Third of all the food produced for human consumption is lost or wasted.

Nestlé in 2018 started hundred per cent packaging recyclable by 2025 to prevent litter in ocean and landfill, by 2019 they made strong progress in the

recycling of many brands (*Nestlé Aiming at 100% Recyclable or Reusable Packaging by 2025*). Nestlé believes biodiversity is important for business in 2020, One Planet Business for Biodiversity (OP2B) coalition of which Nestlé (*Nestlé Joins "One Planet Business for Biodiversity" Coalition*,.) is signatory by which it has the chance to show leadership in biodiversity protection.

About one point four billion hectares of land which is twenty-eight per cent of world's agriculture area is used to produce wasted or lost food. Agriculture is responsible for the majority of the threat to at-risk animal species and plants. Annually seven hundred fifty billion dollars directly related to economic consequences of food wastage (excluding fish and seafood) (*Reducing Food Waste and Loss | Nestlé Global*,).

Land usage is important for sustainable food resources, Nestlé initiative are impactful because it improves the quality and fertility of the land. If we continue on our ways of eating, we can devour our plant and an additional 593 million hectares (*Long-Term Forest Conservation and Restoration | Nestlé Global*,) will be needed. Nestlé has taken steps to reduce farmland globally. Agricultural changes are related to human eating habits which are needed for better impact on a global level.

Land should be shared by different businesses because it can bring value to land, and less land will be used to grow more and sustainable food for all. Land can be damaged by continues agricultural activity but there should be a way to keep land fertilized for future generations. The companies must create an ecosystem which can benefit all in and out of this system.

Nestlé is the world's largest food and beverage company hence it is their responsibility to provide guidance to other companies and address pressing issue related to land. Nestlé is working with the World Cocoa Foundation and IDH (Sustainable Trade Initiative) to understand soil fertility and to increase fertilizer use to improve farmer income (*Joint Action for a Deforestation-Free Future – World Cocoa Foundation*, 2019.). Livestock farming is another activity responsible for soil erosion worldwide. If land stress increases companies will have to face closure

and it will hurt the consumer. Challenges are high and regulation are less around the world which needs to be addressed immediately.

CONCLUSION

Nestlé's role in global food security, climate change, and consumer health involves promoting sustainability, improving nutritional quality, and mitigating climate-related risks. The company's long-term strategies reflect a balance between growth, health, and environmental responsibility.

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