



Tea Plantation Companies Contribution towards Sustainable Development Goals: Qualitative Inquiry in Sri Lanka

Nuwangi Dilrukshi Perera ^{a*} and Vilani Sachitra ^a

^a *Department of Commerce, University of Sri Jayewardenepura, Nugegoda, Sri Lanka.*

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The United Nations' Sustainable Development Goals (SDGs) are not specific to one industry; they help every industry achieve a sustainable future. This study aims to investigate the contribution of Sri Lankan tea plantation companies towards the SDGs and how tea plantation companies enhance a sustainable future for their organizations. The qualitative research approach is employed under an exploratory research design. A purposive sampling technique was used to collect data from ten factory managers using a semi-structured interview protocol. And thematic analysis is employed to analyze the data. The findings revealed that SDGs provide a universal and visionary framework for contributing to economic, social, and environmental factors and lead to achieving a sustainable future for tea plantation companies. The SDGs are relevant to tea plantation companies because those SDGs assign different weights to business practices. Goals such as no poverty, good health and wellbeing, zero hunger, gender equality, sustainable cities and communities, quality education, peace and justice, and strong institutions are important in the social dimensions. And also, affordable and clean energy, climate action, responsible consumption and production, life below water, life on land, clean water and sanitation are important SDGs in the environmental model. And decent work and economic growth, industry/innovation and infrastructure, reduced inequality, and partnerships are the SDGs for the economy. Further, the majority of the SDGs contribute to enhancing society and the environment. Intriguingly, it was revealed that the willingness of the shareholders to implement socially-oriented projects is a major

problem in the tea plantation sector. There is a scarcity of literature grades in SDGs in tea plantation companies in the agriculture sector. As a result, this research has delved deeper into tea plantation companies in the agricultural industry.

Keywords: Contribution; sustainable development goals; tea industry; sustainable future.

1. INTRODUCTION

The 2030 agenda for the United Nations Sustainable Development Goals (SDGs) was launched in 2015 to end poverty and hunger while restoring and sustainably managing natural resources [1]. A set of 17 aspirational objectives with 169 targets is expected to guide the actions of governments, international agencies, civil society, and other institutions. The SDGs are not specific to one industry; they help every industry achieve a sustainable future (agriculture industry, manufacturing industry, mining industry, etc.). The SDGs have potentially major implications for all sectors of the global economy in many ways the food, drinks, and consumer goods sector is at the heart of the drive towards a more sustainable future and is undoubtedly able to drive sustainability goals [2].

The present study mainly focuses on the agriculture industry, which provides a significant contribution towards rural development, poverty reduction, and food security in developing countries like Sri Lanka. Agriculture is generally seen to be important in contributing, especially to SDG 1 and SDG 2, which are to end hunger, achieve food security, improve nutrition, and end poverty in all its forms everywhere, and organic agriculture contributes to almost all aspects of the SDGs. The literature on achieving SDGs through organic agriculture has been predominantly conducted in the north and northeast regions, such as in Thailand (rice) and the People's Republic of China (PRC) (tea) [3]. In fact, Mhlanga, *et al.* [4] argue that three years after the adoption of the goals, there is a substantial risk that for many agribusiness companies, the SDGs will end up being not much more than a communication tool. That means the goals are only practically used within the next 3 years, so the companies cannot get the previously determined objectives as they believe.

Among the agriculture industry, the tea plantation sector, as a labor-intensive sector, becomes a major source of livelihood for millions of families in developing countries [5]. Tea is the world's most consumed beverage after water. Sri Lankan tea is recognized as Ceylon tea all over the world

for its high quality, which resulted in Sri Lanka being the fourth largest tea producing country in the world with the rank of second-leading black tea exporter in the world [6]. The tea plantation sector plays a significant and prominent role in the economy of Sri Lanka in terms of national output, employment, and net foreign earnings [7]. As a result, Sri Lanka's primary crop, tea, is regarded as the country's economic driving force, providing for 240,637 million in export earnings (Central Bank Report, 2020). Also, the contribution of the tea industry is strategically important in the socioeconomic and ethnic-cultural environment of Sri Lanka for two primary reasons. First, the tea sector is the most labor-intensive sector in the country, employing 10% of the 8 million-strong workforce and directly employing nearly 900,000 people (Central Bank of Sri Lanka, 2020). Secondly, a local plantation population of almost one million people is completely reliant on national plantation companies for survival, whereas hundreds of localities, the regional marketplace, smaller businesses, and associated facilities are dependent on the plantation for the sake of their existence [6].

The main objectives of the SDGs are to end poverty and hunger while restoring and sustainably managing natural resources. According to the Talawakelle Tea Estates PLC Annual Report [8], they try to reduce hunger by providing free lunch for estate children, promoting better nutrition among communities, providing clean water and sanitation facilities to estate communities, and ensuring water bodies are conserved and protected from pollution. Moreover, the Martin Bauer Group sustainability report [9] indicated that the company uses parameters to test wastewater before releasing it into the environment, and they try to control marine pollution and protect marine life. In line with that, Bogawantalawa Tea Estates PLC's annual report [10] stated that to be environmentally sustainable, they followed key initiatives, including R & D projects that help to utilize natural fertilizers and the promotion of efficient water management. Additionally, they have switched to non-conventional renewable energies such as solar and hydropower.

On these notes, we can observe that tea plantation companies use some approaches to adapt the SDGs, while they attempt to get sustainable future to the organization. If any business follows the SDGs, it opens up new opportunities and greater efficiency benefits; it drives innovation; it enhances reputation. If companies have a reputation for sustainability, then they can attract employees, customers, B2B customers, investors easily [7].

According to the information in the above annual reports, tea plantation companies are following certain procedures to comply with the SDGs. It is vital to conduct an in-depth investigation into the relationship between SDGs and tea plantation companies in the Sri Lankan context, thereby providing a comprehensive understanding of how tea factories can achieve their future sustainability. Thus, the study investigates the contribution of the tea plantation companies in Sri Lanka to ending poverty and hunger while restoring and sustainably managing natural resources. Therefore, this study focuses on the research questions:

Examine what are the main approaches that are used by tea plantation companies to comply with the SDGs

Examine how do the SDGs assist the long-term strategic objectives of the tea plantation companies to accomplish a sustainable future

This study will be useful to the management of tea plantation companies to formulate approaches to achieve their long-term objectives of complying with the SDGs. The SDGs promote the knowledge, skills, values, and strategies needed to create a sustainable tea industry that guarantees environmental protection and conservation, promotes social equality, and promotes economic sustainability. Moreover, the framework developed could provide the extensive knowledge required for the tea plantation companies in Sri Lanka to carry on their business in a sustainable manner and gain comparative advantages over their rivals.

Although there is so much literature available in the agricultural sector, fisheries, and livestock regarding their contribution towards SDGs. However, there is a scarcity of literature grades in contributions towards SDGs in tea plantation companies under farming. Therefore, the scope of this research has delved deeper into contributing toward SDGs in tea plantation

companies under the agricultural sector. So, through this study, a better understanding of the contribution of the tea plantation companies to the SDGs has been provided.

2. LITERATURE REVIEW

2.1 Sustainable Development Goals (SDGs) and Tea Plantation companies

The main agenda of introducing the UN SDGs is to protect the planet, end poverty, guarantee the well-being of people, and continue with the development agenda. The 17 SDGs and the 169 targets have been considered in multidisciplinary approaches worldwide, whereas several environmental, economic, and social development concerns have been addressed by the UN 2030 Agenda [11].

The 17 SDGs are: no poverty, zero hunger, good health and wellbeing, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry/innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace and justice strong institutions and partnerships [1].

Setboonsarng and Gregorio [3] opined that agriculture is generally seen to be important in contributing, especially to SDG 1 and SDG 2, which are to end hunger, achieve food security, and improve nutrition; and end poverty in all its forms everywhere, and agriculture contributes to almost all aspects of the SDGs. In this sense, since the tea production process is labor-intensive, providing jobs in remote rural areas leads to contributing towards SDG1 and SDG2.

Nguyen et al. [12] revealed that contract farming is supported to achieve SDG1 in Vietnam. Implementing contract farming helps to improve productivity. Then the higher harvest gives a competitive advantage to enter an international market, and market share increases, which then gives higher wages to workers. So those higher wages help people to reduce poverty. However, Wal [13] argues that the real primary producers' prices, like those of many other agricultural commodities, have plummeted in the last three decades. Low pricing is threatening the tea industry's long-term viability, as well as the livelihoods of tea plantation workers and small-scale growers.

Ridho, *et al.* [14] empirically proved that SDG 8 (decent work and economic growth), SDG 16 (peace, justice, and strong institutions), and SDG 17 (partnership for the goals) are the most active SDGs within tea companies in Indonesia.

Hong, *et al.* [15] stated that responsible tea companies need to maintain sustainable tea production without polluting the soil, air, and water. That means producing tea without synthetic chemicals synthesized as pesticides, fungicides, herbicides, and fertilizers. This is in line with SDG12, i.e., responsible consumption and production.

Onyango and Muchina [16] indicated that the tea factory commits funds to undertaking environmental reporting factors that include undertaking forestry activities, protection of wildlife, soil fertility management, use of renewable energy, and innovative energy conservation measures. The study further reveals that tea factories have benefited from adopting environmental and energy factors such as forestry and wildlife management. It shows the contribution of tea plantation companies to SDG13: climate change.

Tea plantation companies need to carry out well-structured initiatives and campaigns to protect and conserve ecosystems (forests and wildlife) [17]. Martin Bauer group sustainability report [9] they state that they use parameters to test wastewater before releasing it into the environment, and they try to control marine pollution and protect marine life to show the contribution of the SDG14 of Life below Water.

Pilapitiya *et al.* [18] disclosed that to align with the SDG9-Industry Innovation and Infrastructure, tea plantation companies use modern technology (automated operations) and carry out some research and development activities relating to innovation regarding tea. The Talawakelle Tea Estates PLC sustainability report [8] stated that as a tea plantation company, they engage in hydropower generating processes to show their contribution regarding the 7th SDG of affordable and clean energy. This report further emphasized that the company carries out regular health and safety risk assessments and reviews health and safety standards to increase the good health and well-being of their estate workers and conducts extensive child development programs and vocational training to empower young people in residential communities. These convey the contribution of tea plantation companies to the

SDG3-of good health and wellbeing and SDG4-Quality Education. Agarwal *et al.* [19] state that the 5th SDG of gender equality is essential for human rights and social justice, and that enhancing gender equality provides several potential business benefits, including a more efficient and satisfied workforce and a more stable supply chain.

Moreover, Dilmah Ceylon Tea Company PLC Sustainability Report [20] indicated that they organized youth empowered through youth development programmes to reduce inequality in the tea industry (SDG10). To ensure SDG11-sustainable cities and communities, Martin Bauer Group provides housing, water, sanitation, and health facilities to tea estate workers [9]. Onyango and Muchina [16] indicated that the tea factory commits funds to undertaking environmental reporting factors that include undertaking forestry activities, protection of wildlife, soil fertility management, use of renewable energy, and innovative energy conservation measures. The study further reveals that tea factories have benefited from adopting environmental and energy factors such as forestry and wildlife management. So, according to this article, shows the contribution of tea plantation companies to the 13th SDG of climate change.

Finally, Dasandi & Jankin [21] point out the paramount importance of peace, justice, and strong institutions, recognizing the effectiveness, accountability, and centrality of institutions involved in promoting sustainable development. However, there are major barriers to measuring the progress of SDG 16 and assessing how such progress will affect a country's ability to obtain other SDGs.

Generally, the findings of the literature show that tea plantation companies make a significant contribution towards SDGs. However, it appears that most previous studies did not take place in the Sri Lankan context, so the current study aims to gather new and meaningful insights, views, and opinions regarding the contribution of tea plantation companies in Sri Lanka context to SDGs and how those companies practice the SDGs for a sustainable future.

3. METHODS

The qualitative research approach is employed under an exploratory research design. The main method of data collection was face-to-face

interviews based on the interview protocol. Despite issues regarding causality, the inductive approach is easily reproducible, especially in environmental studies [22].

The scope of this study includes tea plantation companies in Sri Lanka. In the current situation, there are nearly 1000 tea plantations in Sri Lanka [23]. The population of this study includes all the tea plantation companies in Sri Lanka. In order to obtain the desired sample size for the interview, the tea plantation companies that are registered on the Colombo Stock Exchange in Sri Lanka were considered. Because of the high cost of implementing the UN SDGs, it is not practical to implement the SDGs for small and medium-sized tea plantation companies. Accordingly, 10 tea plantation companies were selected as the sample. Purposive sampling, which is a non-probability sampling method, was used to obtain the desired sample size. The study collected data from factory management at tea plantation companies in Sri Lanka. The semi-structured interview protocol was developed to gather data from the selected sample. The guiding map used for the interview protocol is illustrated in Appendices, Table 1. The interviews were conducted via telephone and virtual meetings (zoom), as it is the safest communication channel during the pandemic outbreak period and will generally have a higher response rate [24]. The responses were coded based on the tea plantation names, such as TPC1, to identify the response differences in terms of different plantation companies.

An interview consumed 60 to 90 minutes, and the data collection period was carried out from February to April 2021. Upon completion of the interviews, they were transcribed, and these transcriptions were read and re-read to ensure the reporting of all necessary details. Transcriptions were then systematically scanned to identify and label the most important and relevant data. The thematic analysis was utilized to identify the main approaches that are used by tea plantation companies to comply with the SDGs and examine the long-term strategic objectives of the tea plantation companies to accomplish a sustainable future via SDGs.

4. FINDINGS /RESULTS

The interviews were conducted with 10 tea plantation managers. The demographic characteristics of the respondents were shown in Table 1.

Table 1. Demographic characteristics of the respondents

Factors	Frequency
Gender	
Male	8
Female	2
Age	
30 - 45 years old	5
45+	5
Education	
Bachelor's Degree	1
Master's Degree	4
Ph.D. or higher	5
Experience (Number of years worked)	
01-Mar	4
03-Jun	5
More than 6 years	1

First, the study evaluates the perception of tea planters regarding the SDGs. It is essential to focus on the benefits they can reap for the future of their businesses by implementing the SDGs. Most respondents have commented that being a tea plantation company is very sensitive to environmental and social aspects. So, they said that social and environmental best practices are a key input for their business.

Being a tea plantation company, we are very sensitive to business to maintain a sustainable business, especially in the environmental and social aspects. Since our business is highly dependent on weather conditions and environmental-related things like ecosystems and water resources, solar conditions, etc., And another thing is our business as a social aspect business model, highly dependent on the community-based workforce. Therefore, social, and environmental best practices are a key input for our business (TPC1).

Additionally, another five tea plantation companies especially indicated that SDGs are a world-recognized framework, and it is very valuable and very useful for their business model to enhance their practices and achieve sustainable outcomes.

The UN Sustainable Development Goals and the UN SDG framework are the most comprehensive and fluent framework for us to follow as a sustainable plantation company. Because this framework provides lots of guidelines and some key. As a result,

the UN SDGs are extremely useful, and they serve as the primary framework for us to design, develop, and improve our practices in accordance with the world-recognized, national, and international frameworks (TPC9).

Furthermore, TPC4 stated that businesses that engage with the SDGs can benefit from new market opportunities and improved engagement with customers and stakeholders:

I believe SDGs provide a universal and visionary framework for us to provide quick solutions to our stakeholders by engaging with them. Then we can benefit from new market opportunities and improved engagement with customers and stakeholders. (TPC4)

These findings show that the SDGs contribute very well to fulfilling a sustainable future for the tea plantation companies. So, it is important to comply with the UN Sustainable Development Goals (SDGs) when conducting business practices.

The following section explains the findings related to the main approaches that are used by tea plantation companies to comply with the SDGs.

4.1 No Poverty- Enhancing Prosperity

"No Poverty" is the first SDG, so as a tea plantation company is important to contribute to this goal to show the contribution to the social aspect. Most respondents (06) said they provide housing facilities, financial support, and infrastructure facilities like road access, and education facilities to contribute to that goal.

When we are talking about "No poverty" for all tea plantation workers the "Home for every Plantation communities" program are were key initiative that we have initiated by several years before..... Therefore, under the "Home for every Plantation communities" program, we covered three pillars; youth empowerment; health and nutrition; living condition Improvement. So, under the "Home for every Plantation Community" program we are addressing this No poverty sustainable development goal. (TPC1)

Further, one respondent said that by providing clean water to people living in plantation areas they were working to achieve this goal:

We implement the new project this year. In this project, we provide clean drinking water within the estate community. Because unclean water causes chronic sickness to them. Then that sickness affects their ability to work, then it is blocked their incomes. (TPC7)

4.2 Zero Hunger- Ending Hungriness

"Zero hunger" is the second SDGs. Hunger is one of the leading causes of death in the world. So, according to the findings of the interviews convey the contribution to that goal was helped to show their social responsibility. So, TPC6 indicated that they provide food and welfare packages to comply with that goal.

Under the Zero hunger program, we are plan to the regular program to provide food and welfare packages for the estate workers. It is included free mid-day meals and some children-focused nutrition improvement and pregnant mothers-focused nutrition improvement programs, and they are some allocation to enhance their diet and calorie value. (TPC6)

Another alluring finding that derived from the company 2 and 4. That is they said they provided the dry food vouchers during the COVID-19 lockdown period.

The lockdown period was a very difficult period for all the people. So, our management decided to give dry food vouchers to employees to buy foods needed for daily living. (TPC2)

4.3 Good Health and Wellbeing- Immunization

"Good health and wellbeing" is the third SDGs. The World Health Organization (WHO) defines health as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity (WHO, 1948). Also, wellbeing means the state of being comfortable, healthy, or happy. Hence If the employees within the estate are happy and healthy its helps companies to achieve their goals. So as tea plantations highly concern about such matters. It proves the finding of the respondent.

Our comprehensive immunization and health care programs and supportive medical

services have enabled us to provide a better quality of life for the people working on our estates. Furthermore, we are fully committed to providing a safe and clean work environment for all employees and ensuring their health and safety in the workplace by expanding preventive and safety measures in all manufacturing and processing sectors, provide formal training and education on relevant health and safety, comply with applicable national health and safety laws and regulations and safety standards, programs and objectives. (TPC1)

4.4 Quality Education- Education Privilege

“Quality education” is the fourth SDGs. Quality education is one that focuses on the whole child - the social, mental, and physical development of every child, regardless of gender, socio-economic status, or geographical location. As a tea plantation company, they organized development programs, distribute the school items, give scholarships to contribute to that goal.

We are providing some facilities and monitoring things to enhance the plantation sector education facilities (distribute schoolbooks and uniforms), and some other development programs also we conduct to enhance the quality of education level. (TPC2)

At the time of the interview with tea plantation company 10 revealed a major problem in the plantation sector. He said within the plantation sector the children's participation in education is very much low. So, when talked with him it seemed that they had made a huge contribution to solving this problem.

In quality education, we are focusing to provide some input to enhance their education participation. Because that is the major problem in the plantation sector. Therefore, we are empowering by doing some analysis and regular monitoring to identify their education participation. (TPC10)

4.5 Gender Equality- Gender Balance

Gender equality is occurred when people of all genders have equal rights, responsibilities, and opportunities. The fact that there is gender equality in any business reflects the fact that

everyone in the business is treated equally. Tea plantation companies use various measures to promote gender equality. It was clear from answers from the respondent. On one occasion, a third tea plantation company said that they had organized special projects to empower women to enhance women's independence.

Gender and workforce diversification also our key aspect we are considering under the Social development. Specially enhance the women and their independence through providing some entrepreneurship opportunities. (TPC3)

Furthermore, most respondents (6 out of 10 respondents) indicate they recruitment, training & development, promotions, and performance appraisals of employees do irrespective of gender. The following quotes show the contribution to Gender equality.

We proper value is offered to female workers, as we are paying wages according to a structured salary system and there is no disparity with male salary. (TPC4)

This is something new that we found in an interview with company 5. That is called "Mini parliament". They get participation in both males and females in the decision-making process and give equal chance to females to express their opinion.

We conduct Community Development Forum (mini parliament) -Women are also given an equal role to participate and hold office at the CDF, ensuring that the views of the largely female workforce are represented. (TPC5)

4.6 Sustainable Cities and Communities- Healthier Cities

“Sustainable cities and communities” is the eleventh SDGs. When it comes to cities and communities' sustainability, it is based on creating business opportunities, securing housing, and building resilient societies and economies. Some respondents showed the contribution to this goal as below.

Our estates support over 40,000 people who live within our estates. We are providing them good housing, water, sanitation, and health facilities to build capabilities to empower and uplift their living conditions. (TPC1)

In addition to that due to the current Covid-19 situation, some tea plantation companies take action to secure their employees. So, using that tries to create sustainable cities and communities.

We necessary precautions were taken well in advance to keep not only our staff but also the estate community safe during the COVID -19 pandemic. Appropriate protective gear was provided while sanitization was made a priority thereby ensuring that the virus was not contracted or spread among our workers. (TPC10)

4.7 Peace and Justice Strong Institutions- Long-Term Stability

The sixteenth SDGs stands for "Peace and justice strong institutions". All business organizations need to consist of peace and justice, otherwise, there is no survival. So, the below quotes show one way of contributing to that goal.

We adhere to the best and ethical practices of business and governance to ensure that our operations are transparent, accountable, and fair. We have a solid foundation for nurturing industrial peace. We avoid any form of social prejudice, discrimination, and coercion, and child labor. And we have given the absolute freedom & opportunity for employees to join Estate Trade Unions and Associations. (TPC9)

In addition, many of the interviews that have been conducted have shown the Open-door policy methodology. So according to the findings of the interviews can identify Open-door policy is the key method that can be used to bring about justice and peace in business.

Our Open-door policy encourages employees to bring forward their grievances and concerns (TPC8)

4.8 Decent Work and Economic Growth- Economic Prosperity

Decent work and economic growth is the eighth SDGs. That goal refers achieved by increasing the economy's ability to produce goods and services while providing job opportunities. It is not only good for the company, its benefits the overall economy of the country. So as tea plantation companies they work to achieve this goal. The below quotes provide evidence for that,

With 16 tea estates in both the High and Low Cultivation Zones, we provide a wide range of employment opportunities under fair labor practices. (TPC10)

We give preference to our local suppliers, provided that they meet our procurement criteria. This paves the way for our local suppliers to create value and strengthen their businesses, with trickle-down benefits spreading across the society. (TPC3)

4.9 Industry/ Infrastructure- Innovation and Technological Outcomes

The ninth SDGs indicates Industry/ innovation and infrastructure. Tea plantation companies have decided to invest in more resilient infrastructure and ensure sustainable industrial development. One of the respondents said due to the high competition in the sector they always try to work with new technology. The below show the extract from their practices.

We are implementing some management models like the "harvester program" and "revenue sharing model". And also, some technology applications like, we have fully implemented the "Waying model" which was previously done as manual work. However now we developed that model with the online application. And it will improve the supervisory level and the use of fertilizer efficiency through the technology application (TPC1)

When comes to the infrastructure side, majority of respondents said they engage with infrastructure development programs to show their CSR engagement to society.

We constructed new housing units for workers, field restrooms for tea pluckers, and constructed a retaining wall for the factory division. (TPC6)

4.10 Reduced Inequality- Similar Chances

Reduced inequality is the tenth SDGs, bring about reducing inequalities among communities. All participants in the interview agreed that no one should be discriminated against in the business environment. Because by doing so, a business will not be able to achieve business goals collectively. So, inequality is the unequal treatment of people based on gender, sexuality,

accent, or race in the workplace. Therefore, respondents said that they introduced various methods to achieve equality within their business environment.

We create shared value across our estates, giving the opportunity to communities. And we link productivity into the wage mechanism and usher in greater equality across our operations. (TPC8)

4.11 Partnerships- Goals of Unity

The last SDGs indicates Partnership. In this goal tea plantation companies' effort to foster the partnership for the goals and their delivery. One respondent says in partnership with "Save the Children" they would still be implemented the "Mother and child-friendly environment" project for all estates.

In partnership with "Save the Children," we have implemented a "Mother and child-friendly environment" project for all our estates to improve the health and wellbeing of women and children in the estate community. (TPC2)

In addition to that, most tea plantation companies are maintaining good relationships with different types of organizations to achieve their determined objectives.

We have consistently partnered with governmental, national, and international organizations for technical expertise and guidance, essential collaborations on the journey of sustainability. As an example, we maintain partnerships with the National Institute of Plantation Management (NIPM), Biodiversity Sri Lanka, Forest department Sri Lanka. (TPC8)

4.12 Affordable and Clean Energy - Cleaner Environment

Affordable and clean energy is the seventh SDGs with a focus on the need for climate action. The following quotes show some of the methods used by most tea plantation companies.

Under this goal, we strive to be energy efficient, relying on and planting fuelwood for factory processing operations, generate hydroelectricity. (TPC1)

We are fully committed to minimize the use of fossil fuels and thereby, reduce

greenhouse gas emissions and adopt sustainable energy sources. (TPC6)

However, some indicated that to contribute to that goal they follow several other ways as well.

We implement the below ways to contribute to that goal. Used the energy efficient machinery and equipment, Optimizing natural light in factories, training on energy conservation under Rainforest Alliance. (TPC9)

4.13 Responsible Consumption and Production- Wise Consumption

Responsible consumption and production is the twelfth SDGs. "3R" method followed by a majority (8 out of 10) of tea plantation companies to use to contribute to this goal.

We are efficient in the way we use our resources and follow through with the '3Rs' in managing our solid waste. (TPC1)

In our plantation sector 3R (Reduce, Reuse, and Recycle) concept is practiced in all stages of the value chain and the production of compost from our biodegradable waste is being carried out (zero waste within the plantation) (TPC5)

As well one company said that they contribute that goal as follows.

We do Quality checks prior to production (through a trial batch), during production (through samples), and prior to packaging (individual silo samples) (TPC7)

Minimalist packaging that complies with food safety regulations in its product designs- the aim of reducing the non-recyclable content of its packaging (TPC8)

4.14 Climate Action- Smoothy Climate

Thirteenth SDGs denoted for Climate action. In line with findings from the respondents, they said by implementing climate-friendly land use, conservation, and agriculture policies can achieve this goal.

Improving the soil conditions and maintains the current ecosystem services for the plantation and our cultivated area, is very important. Therefore, we have lots of programs to improve the ecosystem and the biodiversity with the plantation land area. and the forestation activities. (TPC4)

Further, throughout all interviews get findings of one of the common programs conducted by every tea plantation company. That called the Forestry project.

As a tea plantation company, we are very concerned about our environment. So, we conduct Forestry projects. At present, there are 600,000 trees on estates and our goal is to achieve 1 million trees. (TPC5).

4.15 Life below Water- Clean Water

Life below water is the fourteenth SDGs, raises the need to preserve life below water. To contribute to that goal the main findings of the data are annual water quality testing, prevent water contamination, harvesting rainwater, chemical-free buffer zone are used. It was clear from the interviews with them that tea plantation companies play a special role in achieving these goals.

We have monitoring and reducing in agrochemical usage of water and developing chemical-free buffer zone and wastewater purification systems. As a company, we have collaborations with the International Water Management Institute and doing annually testing about the quality of water. (TPC1)

Our company thinks that people should be aware of the importance of sustainable water, so we organize programs to educate staff and communities and our company uses rainwater for harvesting purposes. (TPC2)

4.16 Life on Land- Protection of Surface

Fifteenth SDGs draws attention about the need for a greater care about life on land. The findings of this study found all tea plantations give priority to achieve this goal.

Land is the most important resource of the plantation company. Because lands combine with the harvest of plantation company. So, in every aspect, our company has a duty and also huge responsibility to protect the land. So, we give priority to that. (TPC10)

The main ways of contributing to that goal can identify from the below respondent answer.

We have testing soil for carbon, PH level, and other nutrients and also planting of green manure and shade trees. we used

Dolomite applications to correct PH imbalances not only that but also Planting grass and other cover crops in vacant patches. And also, we are composting, forking in pruned fields, and burying weeds. (TPC7)

4.17 Clean Water and Sanitation- Less Disease

The sixth SDG emphasizes the need for clean water and sanitation. It was clear from the findings of the majority of tea plantation companies that, clean water and sanitation are the basic needs of any individual, and therefore they believe fulfilling that need is the responsibility of all tea plantation companies.

Under our dedicated community program, providing clean water and sanitation facilities to our estate communities, our focus is on water treatment facilities to ensure that our water resources are protected from pollution.....we have collaborations with the International Water Management Institute and doing annually testing about the quality of water.. (TPC8)

Moreover, the study elaborates the challenges faced by tea plantation companies in contributing to the SDGs.

To do those initiatives & to implement those kinds of aggressive changes in the business-oriented company, stakeholders & all the shareholders must be aware. Otherwise, they will not provide approval for any investment in those kinds of things. Therefore, that is the key issue when we are going for this long-term environment or social related project. (TPC4)

Another challenge identified in the interview was the financial problems that would arise in the implementation of these measures.

And another thing is the motivation of the government and other financial instruments (loan). That kind of thing very much necessary to implement & practice UN SDGs. When talking about (Solar rooftop) it is a definite requirement from the financial aspect of the bank or government. So financial is a very challenging thing currently. (TPC5)

Most findings highlighted that the current Covid-19 situation poses a significant challenge to businesses.

We do not implement any new projects in 2020 year due to the Covid 19 situation. Because in the enhance the current project into next level should happen some backward trend in 2020. (TPC3)

Finally, we assess how the SDGs assist the long-term strategic objectives of the tea plantation companies to accomplish a sustainable future. It is important to recognize the success of the actions have taken and identified how long-term strategic objectives contribute to tea plantation companies to accomplish a sustainable future.

So according to the finding, most companies use key performance indicators to evaluate the success.

We followed a very comprehensive & detailed reporting structure..... We have internal & external communication regularly to evaluate our performance in every aspect. Therefore, we have a database with all our Key Performance Indicators (KPIs) & relevant information & data. (TPC5)

In addition to that few respondents said that they follow the cost and benefits approach to evaluate the success of the project that they conduct.

We are processing a cost-benefit analysis of the company's welfare project and we organized discussing programs to check whether the previously determined objectives are actually helped to upgrade the living standard of the employees. (TPC2)

The findings indicated that the SDGs are relevant with the different weightage to businesses and practices. Especially in social aspect goals, like no poverty, zero hunger, good health and wellbeing, quality education, gender equality, sustainable cities and communities, peace and justice strong institutions. And also, affordable, and clean energy, responsible consumption and production, climate action, life below water, life on Land, clean water, and sanitation are important SDG in the environment model. And decent work and economic growth, industry/innovation and infrastructure, reduced inequality, partnerships are the SDGs for the Economic aspect. (Appendices Table 2 shows the key findings of the study).

5. DISCUSSION AND CONCLUSION

The study explored how tea plantation companies contribute to the SDGs to ensure their organization's long-term viability. So, the findings of the study provide comprehensive knowledge regarding the contribution of tea plantation companies toward SDGs and show how they have achieved a sustainable future.

Jones [2] revealed that the SDGs have potentially important impacts on all sectors of the global economy in many ways. The food, beverage, and consumer goods sectors are at the core of moving towards a more sustainable future. The main findings of Jones [2] are very similar to the outcome of this study, showing that SDGs are the very comprehensive and fluent framework for tea plantation companies to follow as sustainable plantation companies. The findings of this research showed that to contribute to the "No Poverty" and "Zero Hunger" goals, tea plantation companies must implement the project to improve youth empowerment, health, nutrition, and living conditions. These findings are consistent with previous research conducted by Setboonsarng and Gregorio [3], opining that agriculture is widely regarded as important in contributing to SDGs 1 and 2, which aim to end hunger, achieve food security, improve nutrition, and eradicate poverty in all its forms worldwide.

Tea plantation companies believe gender and workforce diversification are key aspects they need to consider under social development. So, they enhance the women and their independence by providing some entrepreneurial opportunities. As Agarwal et al. [19] mentioned, gender equality is essential for human rights and social justice, and enhancing gender equality provides several potential business benefits, including a more efficient and satisfied workforce.

Tea plantation communities are a part of our society; therefore, without improving their hygiene and sanitation practices, the health of the whole society will be at risk. Their health conditions will adversely affect the entire tea industry and the overall economy of the country due to a lack of sanitation practices. Findings revealed that tea plantation companies provide clean water and sanitation facilities to their estate communities, and the focus is on water treatment facilities to ensure that water resources are protected from pollution.

As Chapagain and Hoekstra [25] identified, tea consumption benefits the economies of the nations where it is produced. So that indicates the contribution to the goal of decent work and economic growth. The finding of this study seems to be the same as the tea plantation companies providing a wide range of employment opportunities under fair labor practices. So, the decrease in the unemployment rate leads to increased economic growth in the country. As Pilapitiya and Silva [18] disclosed, tea plantation companies implement an online application that was previously done as manual work while aligning with the SDG of Industry Innovation and Infrastructure. The study further demonstrated that they have consistently partnered with governmental, national, and international organizations for technical expertise and guidance, essential collaborations on the journey of sustainability.

The purpose of responsible tea cultivation is to maintain a sustainable tea industry without polluting the soil, air, and water [15]. So, that meaning is similar to the SDG of responsible consumption and production. Our findings reflect that the "3R" (Reduce, Reuse, and Recycle) concept is practiced at all stages of the value chain. Furthermore, tea plantation companies are testing soil for carbon, pH, and other nutrients, as well as planting green manure and shade trees. These actions reflect that the tea plantation companies create well-organized efforts and campaigns to safeguard and conserve ecosystems (forest and wildlife) to show their contribution to the 15th SDG of Life on Land [17].

Dasandi & Jankin [21] pointed out the consideration of the paramount importance of peace, justice, and strong institutions, recognizing the effectiveness, accountability, and centrality of institutions involved in promoting sustainable development. The findings revealed that tea plantation management adhered to the best and ethical practices of business and governance to ensure that their operations are transparent, accountable, and fair. They avoid any form of social prejudice, discrimination, coercion, or child labor. They have also given employees the absolute freedom and opportunity to join estate trade unions and associations.

The study is intended to provide insights into the primary ways utilized by tea plantation companies to comply with the SDGs and how the SDGs can aid the tea plantation companies' long-term strategic aims to achieve a sustainable

future. The findings of the interview and the results of the scholarly study show that the tea industry's contribution to the SDGs can help them achieve a sustainable future for their business and thereby enhance their social contribution to society. By evaluating the data and comments of respondents, ideas were made to improve the contribution to UN SDGs and ensure companies' long-term viability.

Based on the findings of this study and the current emerging circumstances in Sri Lanka, the study highlights the following managerial implications to improve the contribution of the tea plantation companies to the SDGs. These recommendations will assist in the improvement of identified actions, eventually assisting in the enhancement of tea plantation companies' contributions to the SDGs and creating a sustainable future for the tea plantation companies.

It is proposed that an alcohol and drug reduction program (personal development programs) be implemented to improve the community's physical and psychological well-being by lowering their alcohol intake. It may be a meaningful action to show the contribution to the SDG of quality education as well. To demonstrate the contribution to that goal, can propose that the children of tea estate workers be empowered through digital learning. The contribution towards the affordable and clean energy of SDG could be enhanced through providing LED bulbs to the buildings and premises of the estate communities. It is also suggested that obtain SA 8000 industry standards and fair-trade certificates to create a globally recognized work environment. Moreover, gathering one-sided papers and reusing them, as well as replacing inefficient machinery with more efficient machinery to avoid material waste, would be a great approach to respond to the SDG of Responsible Consumption and Production.

Moreover, conducting training programs about biodiversity enhancement in the estate communities would be an effective way of contributing to the Climate Action and Life on Land SDGs. Furthermore, organizing community-based initiatives to teach people about rainwater harvesting will be an efficient way to promote the SDG of Life Below Water. As well as reducing inequality, is another crucial SDG that tea plantation companies contribute to. So, to ensure that goal, recommend that discriminating laws,

policies, and practices should be repealed and that equal opportunity should be ensured via suitable legislation, policies, and actions. Additionally, developing a culture of zero tolerance for harassment strengthens the goal of the institutions of peace and justice. And maintaining a pleasant and effective relationship with the government is also advantageous in terms of contributing to the SDG of partnerships.

Finally, as respondents revealed, the willingness of the shareholders to implement socially oriented projects is a major problem in the tea plantation sector. (Book donations, rainwater harvesting programs, etc.) So, without the shareholders' willingness, they will not approve of any investment in those kinds of projects. So, to overcome that issue, action must be taken to obtain participation from the shareholders when discussing programs that can be implemented to upgrade the living standards of the employees. Further, another barrier to contributing to the SDG is the motivation of the government and other financial instruments (loans). Because such loans and other financial facilities are critical for implementing the SDGs, Therefore, if the government and other financial institutions assisted such initiatives by granting specific credit facilities, the contribution to the SDGs would increase. Moreover, when it comes to plantation procurement, it is best to offer precedence to our local suppliers. This paves the way for our local suppliers to create value and strengthen their businesses.

This study carries some limitations despite the contributions it offers. Due to the difficulty of collecting data during the pandemic period, the sample size selected represents a very small portion of the target population; there are nearly 1000 tea estates around the country. So, there may be some shortcomings in the results obtained in this way.

Since the study limited its focus on the tea plantation sector, the generalizability of the findings into other agricultural areas such as paddy farming, horticulture, fisheries, and so on, is limited. So, given this limitation, I propose researching the SDGs while also including other agricultural sectors by going beyond the tea plantation sector using the qualitative method or by conducting quantitative research. It is also proposed to investigate estate communities' perceptions of tea plantation companies' contributions to the SDGs, as well as the long-term impact on their livelihood.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDICES

Table 1. Interview protocol guideline

Variable	Item description	Measurement Items
The future sustainability of tea plantation companies	The future sustainability of tea plantation companies is an approach to creating long-term value by taking into consideration how tea plantation companies operates in the ecological, social, and economic environment.	Future sustainability Financial performance Operating profit margin, sales growth (Vintila, <i>et al.</i> , 2015) Non-financial performance Innovation performance, market share, and operational key performance indicators (Hyvönen, 2007)
No poverty	SDG 1, placing an emphasis on ending forms of extreme poverty	Tea plantation workers housing, basic amenities, salaries [26]
Zero hunger	SDG 2, which aims to end hunger and achieve food security with improved nutrition	Programmes and events that conduct by tea plantation companies to focusing on promoting better nutrition among communities [27]
Good health and well-being	SDG 3, focusing on ensuring healthy lives and promoting well-being	Immunization health and safety program for tea workers [28]
Quality education	SDG 4, inclusive and quality education for all	Training and development programs to all employees, across all staff grades
Gender equality	SDG 5, focusing on gender equality	Tea plantation companies Recruitment, promotions, compensation, and rewards determined process [20].
Clean water and sanitation	SDG 6, which emphasizes the need for clean water and sanitation	Clean water and sanitation facilities to estate communities, and water bodies protection processes. [8]
Affordable and clean energy	SDG 7, advocates the need for affordable and clean energy	Factory operations, hydropower generating process
Decent work and economic growth	SDG 8, sustaining inclusive and sustainable economic growth with productive and decent working conditions for all	Job opportunities, Contribution to GDP [20].
Industry, innovation and infrastructure	SDG 9, which intends to foster industry, innovation, and infrastructure	Modern technology (automate operations) research and development activities. [18]
Reduced inequality	SDG 10, bring about reducing inequalities among communities	Youth empowered through the youth Development Programmes [20].
Sustainable cities and communities	SDG 11, an attempt to ensure that human settlements and cities are inclusive, safe, resilient, and sustainable	Housing, water, sanitation, and health facilities to estates workers. [9]
Responsible consumption and production	SDG 12, with a focus on sustainable consumption and production patterns	Generation of renewable energy. p20].
Climate action	SDG 13, with an emphasis on the need for climate action	Agricultural interventions- tree planting [29]
Life below water	SDG 14, raises the need to preserve life below water, especially rivers and oceans	parameters to test wastewater before releasing it into the environment, methods that use to control marine pollution and protect marine life. [3]
Life on land	SDG 15, draws attention about the need for a greater care about life on land	Campaigns to protect and conserve ecosystems-forests, wildlife [20].
Peace and justice strong institutions	SDG 16, which advocates peace, justice, and strong institutions	Good governance practices, ensuring that operations are transparent, accountable and fair. [8]
Partnerships to achieve the goal	SDG 17, effort to foster the partnership for the goals and their delivery	Government, NGO's and not-for-profit organizations to develop partnership relationships.

Table 2. Summary of the key findings

Main approaches to comply with the SDGs
<p>Social factors</p> <ul style="list-style-type: none"> • No poverty- Enhancing prosperity • Zero hunger- Ending Hungriness • Good health and wellbeing- Immunization • Quality education- Education Privilege • Gender equality- Gender balance • Sustainable cities and communities- Healthier Cities • Peace and justice strong institutions- Long-term stability
<p>Economic factors</p> <ul style="list-style-type: none"> • Decent work and economic growth- Economic prosperity • Industry/ innovation and infrastructure- Technological Outcomes • Reduced inequality- Similar Chances • Partnerships- Goals of unity
<p>Environmental factors</p> <ul style="list-style-type: none"> • Affordable and clean energy- Cleaner environment • Responsible consumption and production- Wise consumption • Climate action- Smoothy Climate • Life below water- Clean Water • Life on land- Protection of surface • Clean water and sanitation- Less disease
<p>Challenges</p> <ul style="list-style-type: none"> • Lack of awareness of stakeholders • Financial constraints • Technical capabilities • Quality issues • Pandemic situation
<p>Long-term strategic objectives</p> <ul style="list-style-type: none"> • Follow a very comprehensive & detailed reporting structure • Processing a cost-benefit analysis • Design key performance indicators • Cost-benefit analysis • Progress report • Evaluation program • Sustainability audit

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