Vol. 05 | Issue 01

GREEN BUILDING COUNCIL OF SRI LANKA

THE GREEN GUARDIAN

NEWSLETTER OF THE GREEN BUILDING COUNCIL OF SRI LANKA

A CLIMATE POSITIVE FUTURE

INSIDE :

A CLIMATE-POSITIVE FUTURE'?

One of the toughest problems that humanity has ever had to deal with is climate change and global warming, which are caused by emissions of greenhouse gases like carbon dioxide. it will reveal the path to cut CO2 emissions and keep global warming to 1.5 degrees Celsius by only widely utilizing renewable energy while continuously reducing greenhouse gas emissions. Although a few degrees may not seem like much, they have a significant impact on the planet's future, throughout time biodiversity is in danger and the use of the earth's resources is far surpassing its availability. Therefore, it's not too late to attempt again and restore the environmental harm we have already caused. Thus, to fulfill the objectives and overcome the problems, a massive change must be made right away. Being a pioneering organization in Sri Lanka, the Green Building Council (GBCSL), is aware that the built environment frequently has an impact on the environment's natural resources and climate, and intended to lessen the threat and guarantee that structures emit net zero carbon dioxide or less by practicing circular economic concepts.

In quite a while, statistics show that, since 1880, the earth's temperature has risen on average by 0.14° F (0.08° C) every ten years, or around 2° F overall. As a result, modernizing the energy, agricultural, food, water, land, communities, transportation, and industrial sectors is necessary to address climate change. Yet, the pace of warming since 1981 has increased more than double.

Thus, in the Sri Lankan context, it is crucial to accomplish the aim of creating "'A Climate-Positive Future' combined with an Advanced Economy" by following a sustainable development path acknowledged by the global society. I am certain that the GBCSL's regulatory role is crucial to attaining the ambitious goal of creating a future that is climate positive. If I take into account everyone's contributions, I believe that GBCSL has made significant efforts to effectively incorporate sustainability into our built environment throughout the past few years. Not surprisingly, the 2022 year was the sixth-warmest year ever. Therefore, our ambition is to dedicate helping people realize their aspirations for a climate-positive environment while giving priority to the green building rating aspects. Everyone has to be repeatedly reminded that there is no more time for waiting; only action is left. This responsibility indeed pushes us daily to consider the effects of our choices and resolve to change what needs to be changed. Even though things aren't always easy, we should never give up fighting for what is best for a sustainable future.

Prof. Ranjith Dissanayake
Chairman
Green Building Council of Sri Lanka

EDITORIAL

THE TIME HAS COME TO CREATE A CLIMATE-POSITIVE FUTURE!

Climate change is a long-term shift in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But the rapid climate change we are now seeing is caused by humans using oil, gas, and coal for their homes, factories, and transport. We know that combating climate change is the serious challenge of our time and it threatens every aspect of human life. These are also contributing to global warming which is a gradual increase in the overall temperature of the Earth's atmosphere.

The impacts of climate change have been more and more obvious in recent years, imposing serious threats to all countries. Drought can harm human health and food production. Flooding can lead to disease spread and damage to infrastructure and ecosystems. Human health issues can increase mortality, impact food availability, and limit worker productivity. So, these impacts on different sectors of society are interrelated.

Who's going to give solutions??

Major solutions for climate change need to come from governments and businesses but Individuals can also play a part by making better choices about where they get their energy, how they travel, and what food they eat. It helps to limit our impact on climate variations. So, our individual action still has a role to play in reducing carbon emissions, but we will need systemic change to make a noticeable difference on this matter. Also, many countries are trying to become "Net Zero" by 2050. This means reducing greenhouse gas emissions as much as possible and balancing out remaining emissions by absorbing an equivalent amount from the atmosphere. In November 2022, the 27th UN Climate Change Conference (COP27) was hosted and it concluded with a historic decision to help vulnerable countries deal with losses and damages from the impacts of climate change.

Therefore, we cannot hold off any longer and must take action to prevent further damage and begin restoring our planet. It is not too late to turn around climate change and minimize its dreadful effects and it is our prime responsibility to repair the harm caused to nature over the past decades.

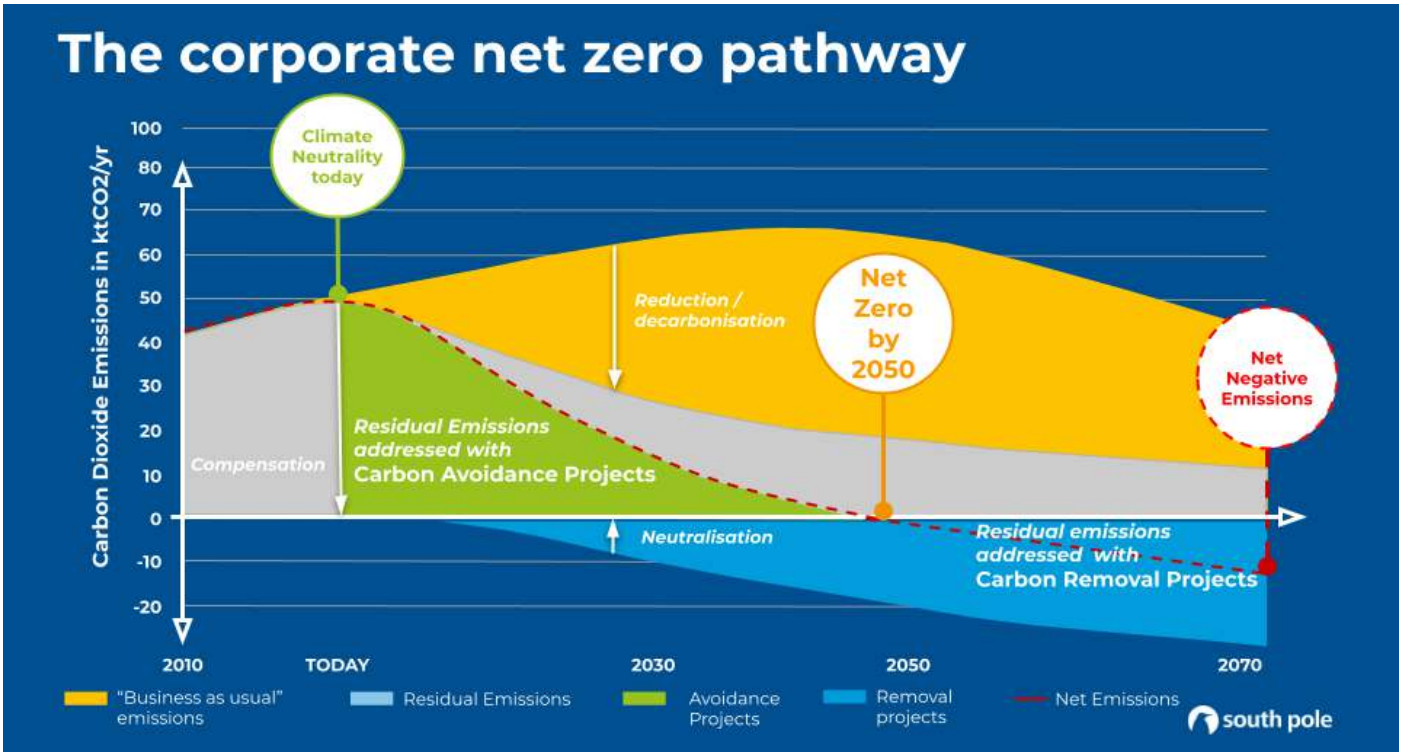
Let's start from today!

Kasuni Eranthi
Editor, The Green Guardian

CLIMATE POSITIVE FUTURE

"Nature has the upper hand, business as usual is no longer an option. As human beings, we are realizing that climate change is nature's revenge. We must learn to work with nature and not against it."

Dr. Sunita Narain
Director General, Centre for Science and Environment, climate researcher & author, conversation with Atul Arya, Chief Energy Strategist, S&P Global Commodity Insights



Reference: South pole - https://www.southpole.com/blog/guide-to-climate-neutral-net-zero-climate-positive

As per the Paris Agreement, the legally binding international treaty on climate change adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 targets to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

Towards achieving this long-term temperature goal, countries target to achieve a climate-neutral world by mid-century by reducing greenhouse gas emissions. The Paris Agreement works on a 5-year cycle continuously increasing ambitions on climate action carried out by countries. According to that, countries submitted their plans for climate action known as Nationally Determined Contributions (NDCs) in 2020.

Even if climate actions should be accelerated within this decade, it's still not that visibly impactful. Anyhow, there is a developing trend of countries, regions, cities, and companies that are establishing carbon neutrality targets. Especially in the power and transport sectors and has created many new business opportunities for early movers.

If we look at the Climate Positive Concept, it is the act of having a positive impact on the environment, rather than simply trying to lessen your negative impact. For instance, removing carbon dioxide from the atmosphere goes beyond reducing carbon emissions thus having a positive effect on climate change. That's actually a step further than carbon-neutral or normal sustainable practices.

To understand these concepts further let's look at what these terms really mean.

Carbon Neutral - Any CO2 released into the atmosphere from a company's activities is balanced by an equivalent amount being removed

Net-Zero - Cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance.

Climate Positive (Carbon Negative) - Activity goes beyond achieving net-zero carbon emissions to create an environmental benefit by removing additional carbon dioxide from the atmosphere

To achieve any of this status the first step is to account for Carbon Footprint. Then analyzing the footprint, it is possible to identify the reduction opportunities and gradually move towards Carbon Neutral and beyond.

Through this Green Guardian issue, we are focusing on how we can achieve these targets together in different ways.

Eng. Upeksha Virajini
General Manager
Green Building Council of Sri Lanka

WAY FORWARD OF ENVIRONMENTAL POLICY REFORMS FOR SUSTAINABLE GROWTH IN SRI LANKA

Environmental ascendancy in Sri Lanka has drawn interest for its long history of more than 2,500 years, beginning with the formation of the Mahameuna sanctuary in the third century BC. During the colonial era the island's forest cover was petrified to the development of plantation agriculture and the development resulted in adoption of strong legal agenda and the institutional setup for environmental management and conservation.

The constitution of the Democratic Socialist Republic of Sri Lanka (1978) recognizes protection of the environment as a duty of every citizen. Advancement of economic development, alleviating poverty, and provision of a quality life are the main challenges encountered by the Government of Sri Lanka.

Meeting these challenges, the government has discovered that the environment should be protected, and natural resources should be consciously used to achieve sustainable development (MERE 2008). The National Conservation Strategy, which was endorsed by the Government of Sri Lanka in 1988 and followed by an action plan prepared by the Central Environment Authority, was the first formal programme made by the state. A record of environmental legislations that have direct and indirect impacts on the environment are given in MERE and UNEP (2009)

Sri Lanka has a distinct set of institutions with direct and indirect concerns on environmental policymaking. Several mandatory powers are decentralized from central government to regional institutions by the constitution originally and through amendments done later. The National Environment Act (1980) had the basic provisions to setup the Central Environmental Authority, which has the foresight for a clean and green environment through service superiority and, is the main controlling arm and directing agency of protection and management of the environment.

A separate ministry for concerning for the environment was established in 1991 and with that many environment-related institutions were grouped to this central body (MERE and UNEP 2009)

Even though having all said institutional arrangement; still there are some issues in relation of the legislations and applicability to safeguard our environment. The whole administration system needs a complete reform with special allusion to the use of information technology in public administration, law enforcement, procurement, and institutional standards. The organization-level administration is now totally outdated. There should be performance-based advancement schemes and rewarding reforms in public governance.

In the current context, Sri Lanka's natural environment is under risk. That many environmental resources remain is largely a creation of the non-existence of pressures linked with development, in a country separated from major funds of foreign investment and trade for years. This means that there are likely to be far greater burdens on the country's assets in the coming years than those faced to date, as foreign investment rises, market expands, and the financial system grows. Sustaining the environmental resources that Sri Lanka owns will need proactive actions, not only to safeguard specific conservation parts, but to improve underlying conditions that are beneficial to sustainable development.

Agricultural estate growth, infrastructure improvement, and timber utilization all are likely to contribute to and be associated with Sri Lanka's economic growth. But they also have the possibility to take the lead to large levels of deforestation, with linked losses of carbon repossession, watershed, and biodiversity essential services. Likewise, these effects can be made worse by many investments in highways that make forested areas more straightforward. Correspondingly, developments in fisheries harvesting techniques and equipment will allow much higher and possibly unsustainable stages of fisheries catches and rises in industrial output will be associated with by greater levels of emissions of pollutants into water and air resources.

Emerging a basis for sensible and sustainable development will need investment in organizations, policies, and implementation power, as Sri Lanka is starting from a very low level in these areas. Not only are key policies, procedures, and standards indeterminate, but there is little ability for monitoring fulfillment, and public awareness is inadequate for high levels of responsibility regarding execution.

Strategic measures required to help safeguard that Sri Lanka's development is sustainable comprise:

- Determining fundamental incentives that drive environmental degradation, predominantly open access resource management.
- Reforming allowance allocation procedures, such that publicly accessible forest inventories precede distribution, high conservation value areas are prevented from enterprises, and royalty payment compliance on conversion resource can be examined.
- Monitoring and revising Environmental Impact Assessment rules and procedures, such that meaningful evaluations are certified for projects with the potential for large impacts, that environmental management plans are healthy, and that compliance is extensive.

- Updating Environmental Quality Standards, pollutant discharge and waste stewardship guidelines for protecting air, water, and ground resources.
- Developing key analytical dimensions within governing bodies for resolve of sustainable forestry and fisheries harvesting stages, execution of environmental controlling practices, prioritizing of protection measures, and monitoring of environmental conformity.
- Founding precision, stability, and accountability for governing decision making and environmental sanctions, so that violations of approval systems can be discovered.
- Aiding to set the conditions for a healthy and independent society to improve, which can help to examine and ensure accountability for environmental policy execution.
- Developing a chain of protection documentation needs for the extractive resources, so that sources are clear, and to set the phase for the growth of sustainable management accreditation.

At present considerable chance for the country to take improvement of its international interest and remaining environmental resources to fascinate support for measures that lead to effective protection and preservation of its ecological amenities. With the precise investments, Sri Lanka can act as an active platform for sustainable development.

Reference:

MERE and UNEP. (2009). 'Sri Lanka Environment Outlook', Ministry of Environ-ment & Renewable Energy and Renewable Energy and United Nations Environmental Programme, Colombo, Sri Lanka.

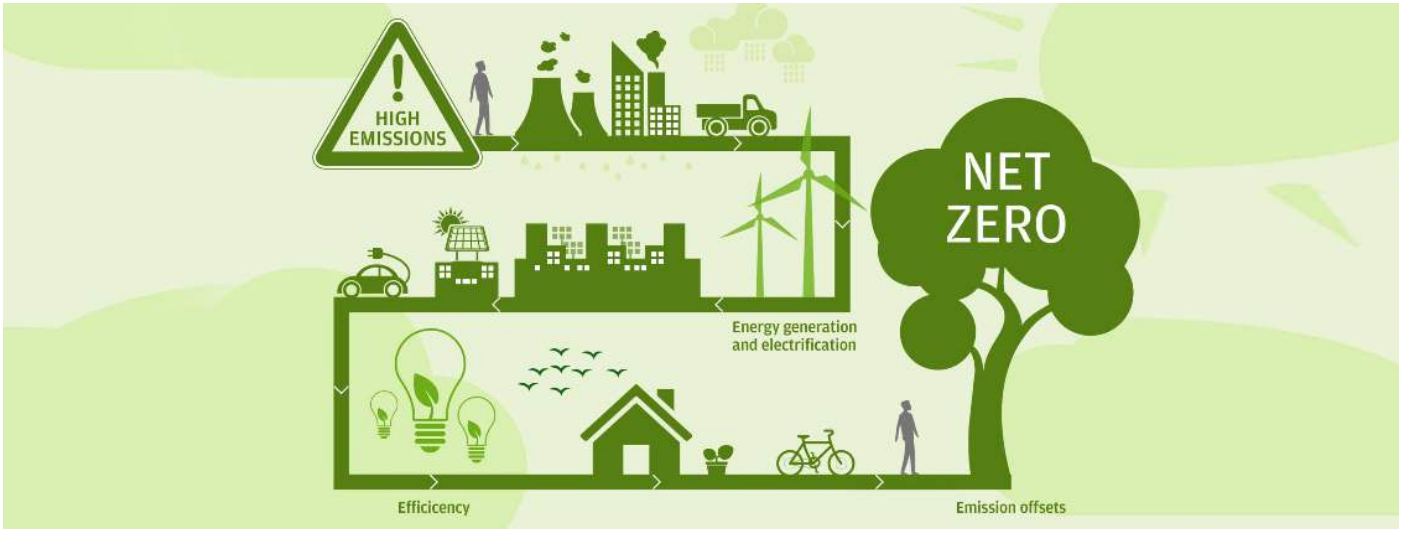
Plnr. Arthy Yogalingam
B.Sc Hons in TCP (UoM), MUD (UoM), MEM (UoC)
Town Planner, Urban Development Authority. Accredited Green Professional, GBCSL.

CLIMATE-POSITIVE FUTURE FOR SRI LANKA THROUGH NET ZERO ENERGY BUILDINGS

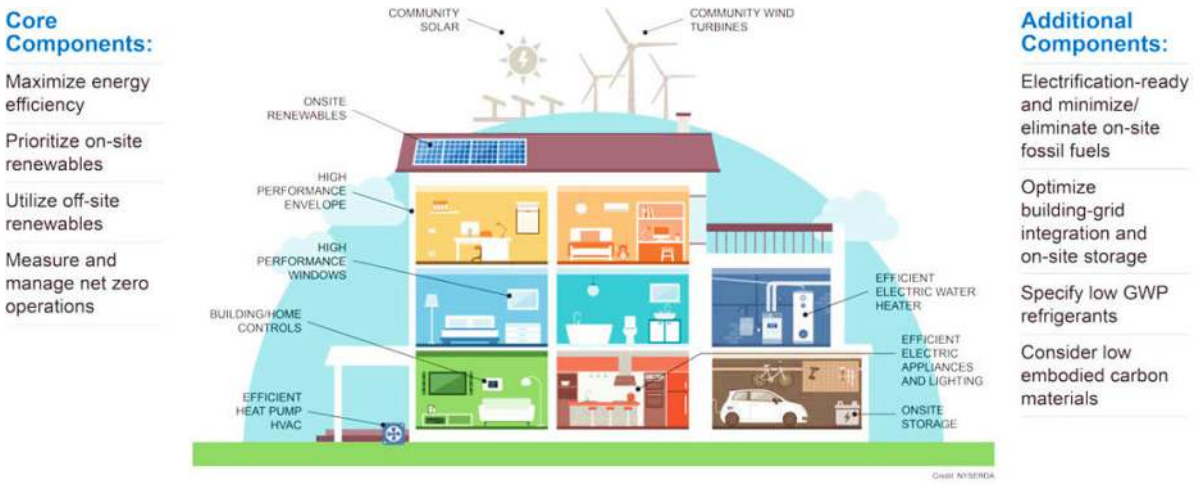
Global Warming and Net Zero Energy Buildings

In 2018, Intergovernmental Panel on Climate Change (IPCC) warned that to avoid the catastrophic impacts of climate change, global warming must not exceed 1.5o C. To achieve this target, greenhouse gas (GHG) emissions must halve by 2030 and drop to net zero by 2050. Amidst this challenging scenario, building and construction sector continued to contribute significantly in global GHG emission. The sector is responsible for 36% of energy consumption, 38% of energy related carbon emissions, 50% of resource consumption and is expected to double in total footprint by 2060.

The World Green Building Council (WGBC) believes that building and construction sector can eliminate carbon emission by 2050 through global spread of net zero energy buildings. Hence, the sector is given a major focus worldwide in reducing energy consumption and mitigating global warming. Many governments and organizations are highly interested in net zero concepts such as "Net Zero Energy" and "Net Zero Carbon", the Sri Lankan Government and Green Building Council of Sri Lanka (GBCSL) among these.



Net zero energy buildings balance their energy needs with energy produced from renewable, zero emission sources. They are highly energy efficient and consume only as much energy as can be produced on site through clean, renewable sources, in most cases, solar power. The definition of a net zero energy building has expanded to include off-site renewables, recognizing that for some projects, complete on-site renewable energy may not be feasible. While net zero energy buildings are not necessarily carbon neutral, the two performance goals are closely connected. Both require core components of energy efficiency, on-site renewables (and off-site renewables when necessary) as well as on-going management of building operations. Installing local renewable energy systems and power storage is integral to net zero energy buildings projects. The energy efficiency of the building is increased by using materials that maximize the building's insulation, energy, and temperature control. Paired with smart technology, such as energy meters and heat sensors, net zero energy buildings are cutting edge and can generate revenue through energy production and storage.



As global governments shift toward decarbonizing their economies, net zero energy buildings are becoming more popular among developers. Most countries have set net zero targets to lower GHG emission and limit climate change impacts. An integral part of achieving net zero goals is reducing the amount of initially produced emissions and increasing renewable energy generation. This is done by using more renewable energy instead of fossil fuels, creating carbon offsets through sustainable forestry, and taking energy efficiency measures regarding facilities and structures.

The popularization of net zero in everyday life and business has led to a boom in net zero developments worldwide. Many iconic net zero energy buildings all over the world are gaining much attention as their benefits become evident. According to a recent market research, the zero energy building market will reach USD 47.4 billion by 2026.

Sri Lanka's Initiatives Towards a Climate-Positive Future

As a small island and a developing nation, Sri Lanka is highly vulnerable to the adverse effects of climate change. Consequences of climate change such as temperature rise, rainfall variability and sea level rise are critically affecting almost all economic sectors of the country. Over the years the Government of Sri Lanka has launched national initiatives for facing the threat of climate change. As a result, the National Climate Change Adaptation Strategy in 2010 and National Climate Change Policy (NCCP) in 2012 were developed.

Sri Lanka is one of the states that adopted the Paris Agreement, at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris, which was an important step in committing Sri Lanka to address climate change and related issues. Further, the National Adaptation Plan (NAP) for Climate Change impacts in Sri Lanka

was established, focusing on the period 2016-2025. In the NAP, infrastructure and human settlement was identified as a key vulnerable sector to the adverse effects of climate change.

As a signatory to the Paris Agreement, Sri Lanka submitted Intended Nationally Determined Contributors (INDCs) covering commitment to both mitigation of and adaptation to climate change. In 2020, NDCs were updated, which represented more ambitious, quantified, and robust assessment of mitigation potential and adaptation measures for the next decade (2021-2030).

Sri Lanka's climate change and national sustainable development related policies seek to mainstream climate change into key sectors such as power, urban planning, waste, transport, industry, forestry etc. which are directly related to building and construction sector. Some of these sectors have already integrated climate change risks and commitments. National Energy Policy and Strategies of Sri Lanka (2019), Long-term Electricity Generation Expansion Plan 2018-2037, National Policy on Waste Management (2019), National Policy on Sustainable Consumption and Production for Sri Lanka (2019) have indicated climate change impacts and mitigation measures as well as identified low emission development strategies.

The Government of Sri Lanka recognizes improving the energy performance of buildings as an important requirement in the sustainable energy development process. To achieve this goal, Sri Lanka Sustainable Energy Authority (SEA) has introduced Energy Efficiency Building Code, which will lead to reduced energy use and lower electricity demand, hence contributing towards a cleaner environment through minimizing energy waste and harmful emissions.

Sri Lanka is committed to achieve sustainable development goals (SDGs) by 2030 and fulfilling NDCs as a signatory to the Paris Agreement. Driving the housing and construction sector towards resource efficiency and sustainability is a major requirement in achieving these commitments. Hence, Sri Lanka Sustainable Housing and Construction Roadmap 2020-2050 was developed to provide direction to stakeholders to steer the construction industry towards more resource efficient and sustainable means of doing business.

In February 2022, Sri Lankan Cabinet identified the need to develop the road map and strategic plan to achieve the goal of making Sri Lanka carbon net zero, which offers the means for providing climate stability and an accounting system to measure progress towards that goal. Further, it offers the climate risk reduction for stakeholders without abrupt disruption to near-term returns, and reputational benefits for companies that serve customers or businesses that are climate conscious. Sri Lanka launched "Climate Prosperity Plan (CPP)" to power faster economic recovery and achieve net negative carbon emissions at United Nations Climate Change Conference (COP27) held in Egypt in November 2022. The CPP is a roadmap to attract foreign investment to boost economic growth while accelerating climate adaptation and bringing down the country's GHG emissions as it moves towards net negative emissions. The CPP sets a target of increasing Sri Lanka's renewable energy generation from 35% to 70% by 2030.

The electricity produced in Sri Lanka is mostly from coal and oil, followed by major hydro. During 2019 and 2020, coal and oil contributed to more than 60% of the country's electricity generation mix. The country's heavy reliance on fossil fuel based electricity generation has led to an inadequate supply of electricity, creating a major electricity crisis. The current electricity crisis emphasizes the importance of renewable energy sources and prompts immediate actions to promote utilizing renewable energy. Therefore, net zero energy buildings, which rely on energy efficiency and renewable energy, is a very timely and significant development for the building and construction industry of Sri Lanka.

Eng. (Dr.) Ramya Kumanayake
PhD, MBA, BSc Eng. (Hons)
AMIESL, AEng, MSLAAS, MIEPSL
Associate Professional – GBCSL
Senior Lecturer, Department of Civil Engineering,
Faculty of Engineering,
General Sir John Kotelawala Defence University,
ramysk@kdu.ac.lk

Can we be truly climate positive in near future, or may I say, before we cross a certain thresh hold or a point of no return, where we either have to adept extremely quickly or perish and get ourselves added up to our own list of species that are extinct, thanks to our own short sited greed. A world renowned author, environmental economist and a scientist, Robert Pindyck think we already have missed the first ship to salvation, which is to say that we have gone beyond a point that even if we stop our daily consumption of fossil fuel and zero in on our carbon footprint we create with all of our daily activities immediately, we still may have to suffer the consequences of our past activities.

In a sustainable socio-economic environment, there is a natural capacity in the natural world for it to absorb a certain amount of changes to its resources, for a certain amount of time before the changed resource gets revert back in to its original state by making the natural composition of various components to be in an equilibrium, so that it is friendlier for our own living as we have evolved to do so. Therefore, the nature
does not need to take any evasive actions to make it to the usual equilibrium in an event due to a terrestrial or extra-terrestrial incident. Terrestrial activities such as huge volcanic activities, earth quakes and corresponding tsunamis had altered the evolutionary path way of the earthlings several times while the extra-terrestrial meteor bombardments had created havoc in such a short span of time, thereby eliminating hordes of life that could not afford to face the wrath of the nature in response to such events.

But, due to the petro chemical based economic behaviour that human being that had introduced into this environment has created a culture of expanding our greed for so called monetary profits, which the value of a certain currency or the formulas of such valuations has been created as well as adhered by only us, human being, has solely disregarded the environment values in their balance sheets. Over a period of more than 200 years, we have carried on with accumulating various gasses along with very life inhibiting substances and polymers into our own atmosphere, without much of a regard for our own wellbeing. But the natural environment has been absorbing this menace for such a longerperiod of time that it seems that it is compelled to take certain evasive actions in order to keep things in an equilibrium for the good of natural environment. But, unfortunately for the humankind, this may well be disastrous as it may alter or change the way of things as we expect them to be for our existence.

And this where it is so important to stop and ask the question that are we doing enough or have we fully understood the graveness of the situation, when we are at a juncture where it is

not good enough even if we drop every detrimental environmentally unfriendly activity, right now, right here. This is why we should take, such a cataclysmic proclamation of doom and gloom from known environmental skeptical activists, scientists or economists extremely seriously. According to many such scholars, we as the species solely responsible for these unsustainable activities, if we want to retain the environmental equilibrium as we knew it, it is not enough we put a stop to our damaging behavioral patterns but we are required to carry or undergo excessively sacrificial actions to mitigate and compensate the damage already been caused.

First and foremost, we must be able to put a stop to the continuation of profiteering from Petro chemical based businesses and must accelerate the so called smooth transitioning of the destructive Petro economies to other non-destructive as well as non-invasive renewable and much more efficient energy generating resource based economies.And at the same time, there must be a globally cohesive and cooperative effort to put a stop to damaging “urban sprawl” and start building smarter, socially friendly, densely populated cities with mega infrastructures. This will inevitably put a dent on further land clearance requirements by giving them back to nature where they actually belong. Then we must adept the novel methodologies in ecosystem restoration where we have damaged some of the pristine habitats to a point where such localities may not go back to how they were, but we must be able to make them more productive with effective and efficiently mindful greener practices.

Governments along with private businessesmust invest in research and development, not only in better and efficient energy generating methodologies but in efficient and effective energy storing capacities as well. It is imperative to search for ways to introduce distributed energy resource (DER) along with micro grid technologies where large states does not need to rely solely on large scale energy generation from even if the resources are renewable and clean. While large scale resource utilisation could have a negative impact on everything other than the generation of cleaner energy, distributive small scale resource usage has proven to be more efficient as well as having a minimum disruption to its immediate environment.

We must find much better building material that are stronger, lighter and last longer with minimum maintenance. There must be much more efficient propulsion systems that are greener, safer and faster at the same time. Human friendly robotics, AI based computation that are smarter and most importantly, medicines that are smarter and food based where ourown activities take corrective measures of the ailments and the aging process of our bodies.

Last but not the least, educating, motivating and finally in generating an circular economic module that would adhere to the three most basic principles of a greener society and a life, a socio-economical structure based on a foundation pillars of "reduce, re-use and recycle" would sure to seal the fate of this human civilisation for a better existence to the future.

Reference:

https://www.renewableenergyworld.com/podcasts/the-grid-is-fragile-is-distributed-energy-the-answer/?fbclid=IwAR3BmVb-B5qmu-btS0VAr4tM4SkXnJgtsWYBIE_oa0n9RBFvV_RcHvdMxHew

https://mitsloan.mit.edu/ideas-made-to-matter/climate-future-what-to-do-if-reducing-emissions-isnt-enough

Article written by:

Mr. Imaduwa Priyadarshana

SUBSEQUENT DIRECTION OF THE CEYLON TEA IN FAVOR OF CLIMATE CHANGE

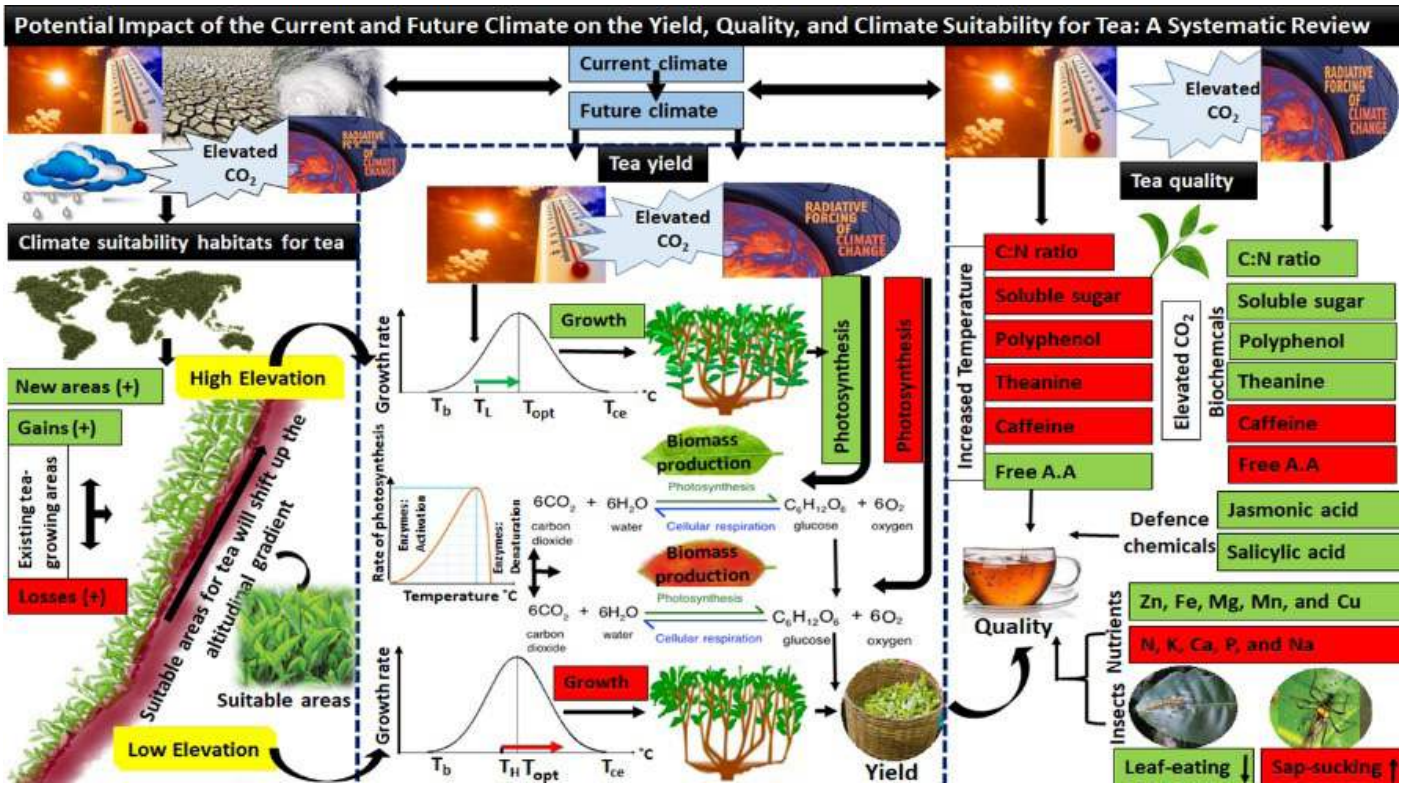
Tea gardens can be found all over the world in various cultures, geographies, and climates. The tea plant's natural limits are between 43° north and 30° south latitudes. Tea requires specific agro-climatic conditions that are only found in tropical and subtropical climates (Dharmadasa et al., 2018). Tea is grown in more than 50 countries, covering more than three million hectares of total tea-growing land and yielding nearly five million tons of tea per year. (Jayasinghe & Kumar, 2021) stated that as under microclimatic factors as Temperature, Rainfall, Solar radiation, Humidity, Wind. Accordingly, the ideal annual rainfall for tea growth is between 2500 and 3000 mm, and the ideal ambient temperature for tea growth is between 18-25°C, with a lower and upper seasonal average of 13°C and 30°C, respectively. Tea prefers an annual average temperature of 13-28°C, with a maximum temperature of 40°C and a mean diurnal difference of 5.0-9.5°C. Tea also prefers high annual precipitation levels of 2000 to 5000 mm. A minimum annual and monthly rainfall of 1200 mm and 50 mm, respectively, is required. On overcast days during the monsoons, solar radiation can be limited at higher elevations. High light intensity, on the other hand, can inhibit photosynthesis, especially when soil N levels are low, potentially lowering productivity. Shoot population density is reduced by soil moisture stress, a high vapour pressure deficit, and a high ambient temperature (Mohotti & Mohotti, 2020).

yielding nearly five million tons of tea per year. (Jayasinghe & Kumar, 2021) stated that as under microclimatic factors as Temperature, Rainfall, Solar radiation, Humidity, Wind. Accordingly, the ideal annual rainfall for tea growth is between 2500 and 3000 mm, and the ideal ambient temperature for tea growth is between 18-25°C, with a lower and upper seasonal average of 13°C and 30°C, respectively. Tea prefers an annual average temperature of 13-28°C, with a maximum temperature of 40°C and a mean diurnal difference of 5.0-9.5°C. Tea also prefers high annual precipitation levels of 2000 to 5000 mm. A minimum annual and monthly rainfall of 1200 mm and 50 mm, respectively, is required. On overcast days during the monsoons, solar radiation can be limited at higher elevations. High light intensity, on the other hand, can inhibit photosynthesis, especially when soil N levels are low, potentially lowering productivity. Shoot population density is reduced by soil moisture stress, a high vapour pressure deficit, and a high ambient temperature (Mohotti & Mohotti, 2020).

Tea in the Sri Lankan scenario is a significant cash crop in Sri Lanka's economy and there are approximately 205,000 hectares of tea planted across 14 administrative districts. Sri Lanka, after India, China, and Kenya, is the world's leading tea producer and thus the world's fourth largest (Jayasinghe et al., 2020). Tea was first planted in Sri Lanka in 1839 at the Royal Botanic Gardens in Peradeniya (Wijeratne, 2016). James Taylor planted the first commercial tea plantation in 1867 on nineteen acres of land on the Loolkandura estate in Hewaheta (Dharmadasa et al., 2018). The tea industry in Sri Lanka has historically used a different classification system (tea elevations), with Low grown tea (Low country), 600 -1200 m as Mid-grown tea (Mid country), and above 1200 m as High-grown tea (Up country) (Wijeratne, 2016). Those zones are known as "Tea Regions" in Sri Lanka. These are the three major geographical zones for tea cultivation in the country, and each cultivation's production has its own unique features. Those are Nuwara Eliya, Udapussellawa, Uva, Dimbula, Kandy, Sbaragamuwa and Ruhuna (Perera, 2014). Uva teas from the Eastern Highlands have distinct seasonal characteristics and are widely used in many high-quality blends, particularly in Germany and Japan. The medium-grown teas produce thick, colourful varieties that are popular in Australia, Europe, Japan, and North America. Teas grown in low-lying areas are primarily popular in Western Asia, the Middle East, and the CIS and BRICS countries (Perera, 2014). If we do not produce tea of this quality by 2050 due to climate change, we will completely lose the market in those countries.

Sri Lanka was named a **"leader in ozone-layer protection"** and received the Montreal Protocol Implementers Award in 2007. All tea grown in Sri Lanka is now completely ozone friendly and all Ceylon Tea has been permitted to display the new 'Ozone Friendly Pure Ceylon Tea' logo. This quality needs to be continually maintained.

Unfortunately, it appears that the unique characteristics of tea are inevitably deteriorating over time due to some changes in the climate or other factors. However, numerous quantitative research has been done on how climatic conditions affect tea production in Sri Lanka, but hardly any qualitative research work has been done on tea production quality, and there is no focus on how it will change in the near future as a consequence of climate change. Further, it is important to note that Sri Lanka's tea production is currently divided into seven major regions, and that each of these seven regions' tea production, their qualitative and quantitative characteristics, and the factors affecting those characteristics, has not been examined separately.



The Objective of this report is to examine the Basic Climate characteristics of tea in Sri Lanka. Specific objectives of this study are to, investigate whether the impact of Tea changes of climate characteristics on tea production in Sri Lanka, and identify the impact of this change on ceyloe tea quality by 2050, as well as the impact on tea exports. If the quality of tea deteriorates by 2050 due to climate change, we will inevitably lose the international market. Because, countries like China, Kenya, and newcomers to tea production such as Japan will inevitably surpass us. Accordingly, there is a need for such research in the tea industry.

Reference:

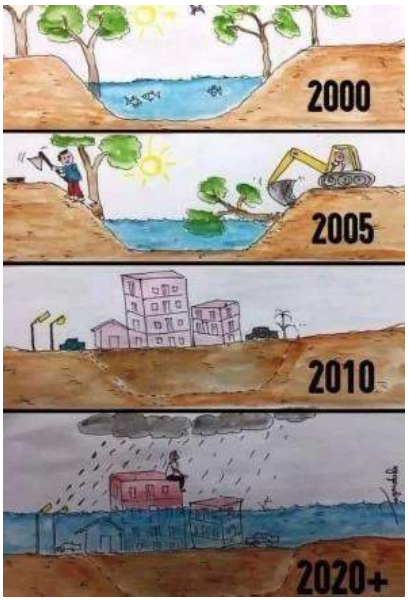
1. *Dharmadasa, M., Zubair, L., Nijamdeen, A., & Najimuddin, N. (2018). Review of Tea Industry in Sri Lanka for Climate Analysis. Tropical Climate, March, 1–21.*
2. *Mohotti, A. J., & Mohotti, K. M. (2020). Tea Industry of Sri Lanka : Are We Ready for the Climate Change Impacts? Adapting to Climate Change: A Sri Lankan Perspective, September 2020, 118–134.*
3. *ayasinghe, S. L., & Kumar, L. (2021). Potential impact of the current and future climate on the yield, quality, and climate suitability for tea [camellia sinensis (L.) O. Kuntze]: A systematic review. Agronomy, 11(4). https://doi.org/10.3390/agronomy11040619.*

J.M.S.S. Jayawardhana
Department of Environmental Management
Faculty of Social Sciences and Humanities
Rajarata University of Sri Lanka

MITIGATING CLIMATE CHANGE THROUGH GREEN BUILDINGS.

As per the Worldometer's elaboration of the latest United Nations data, Sri Lanka's population is now reaching 21.92 million - evidently the most densely populated country in the world. As population increases, deforestation for the construction of buildings is the key issue in the current situation. Environmental pollution and impacts of global climate change. These are the most very strong basic factors that have to bring changes on Sri Lanka's environmental threatening. The major impacts are the four primary natural resources such as the land, water, atmosphere and living resources, and on the living environment. In simple terms and with reference, sustainable growth of the country is the realistically attainable growth that the country's growth without any difficulties especially for future generation. The goal of environmental sustainability is to conserve natural resources and to develop alternate sources of power while reducing pollution and harm to the environment.

In Sri Lanka we have lost an average of 26,800 ha of forest per year in between 1990 to 2000 for the purposes of constructions. Trees play a major role in carbon cycle; absorb carbon dioxide from the atmosphere and releases oxygen to the atmosphere and helps to keep global climate in balance.As well as, Forests are the major carbon dioxide storage center. If trees are cut down, all the stored carbon dioxide will be released back into the atmosphere, carbon dioxide is a greenhouse gas which comparatively has a higher ability to absorbs much heat than other gases in the atmosphere. Cutting down trees is one of the main causes which enhances the greenhouse effect which brings an imbalance among the local and regional climates.



Trees also help to balance the water cycle by regulating the water level in atmosphere. Most of the rivers and streams in Sri Lanka are originated from the central hill. Trees and forest areas play important role in determining local climate and precipitation and maintaining the soil conditions that determine stream-flow and even area evaporation rates. Therefore, water cycle; transference of water between the ground and atmosphere, will be affected very much. Though Sri Lanka is not a significant contributor to global climate change, the country has to face its negative impacts like many other developing countries. The impacts are predicted to be in terms of increase in air temperature. Changes in intensity of the atmosphere and distribution of rainfall, increases frequency and severity of extreme weather events and rise of sea level. While the specific

impacts of these are different across the economic sectors, the cost of climate change is not negligible. Impacts of climate change are particularly to be felt by agriculture, water management, coastal and human settlement sectors, health, biodiversity and etc.

A Constitution is to be instituted in Sri Lanka for "The duty of every person in Sri Lanka to protect nature and conserve its riches". The National Environmental Policy acknowledges this quoted duty and seeks to provide the direction in which steps are taken to conserve and manage Sri Lanka's environment in all its aspects.

As responsible Sri Lankan Citizens, we have the responsibility to hand over the country to our next generation to live healthily because the human-induced changes are much winning in the world's climate, especially the trend towards global warming and impact on ecosystems. To conserve the country from the above issues people should aware about the effect of climate change and pursue remedial measures. In our residential building, we are much attracted to the improved technology, Refrigerators, air condition, fluorescent lamp and etc. We are exorbitant in the use of these domestic equipment therefore basically injuries to the environment generates from houses. Alternatively, we have to think about the natural ventilation and lighting of our residential buildings and solar energy to reduce energy consumption. As well, to minimize these wastes, turning ourselves to recyclable materials will be an indispensable supportive. In the past we have learnt lessons about wastemountain which self-set-fire in our country. As stated above, owing to the urbanization, the buildings come crowded neglecting spaces for the land landscaping. In the world, all living creatures including human are to be protected without postponement. Landscaping of every structure should be a memorized lesson in the mind of every citizen of our country. Houses and buildings are not only for resting but also to maintain our health and, help our neighbors live healthily. How our health is affected and what supports us to live; supports biodiversity, especially if it is indigenous species that are planted. Grasses and shrubs are as effective at converting Carbon dioxide as are trees. As an added advantage of attenuating the movement of groundwater to minimize erosion. The use of natural bio-systems can make us possible to deal with many of the consequences of groundwater management without making it somebody else's problem.

When we start a construction, we replace with recently made items with new items. This intention of modernization is nothing else but dangerous. Valuable lifelong woods are burnt and cheapest but colorful satisfy our intention. When this is understood by every citizen Sri Lanka will be safeguarded for the next healthier generation.

People don't like to use the used materials for their construction because they think it reduces their status, but actually if we move to new for a window, a tree will be cut, due to we have a lot of disadvantages as mentioned earlier, but for a change, if we encourage to reuse the materials, a tree will be saved, a waste will be reduced, can extend our minds through the sustainable growth.

Resources such as land, water, air, produces number of things for us to live happily and healthily. The management our resources should a lesson begun from school. In the school text book protecting nature should be subject started for the tender minds internalize the inborn duty of protecting the nature for positive future.

A.Mohamed Asharudeen
B.Tech, AssP of GBCSL

TOWARD SUSTAINABLE FUTURE: STRATEGIES TO REACH CARBON NEUTRALITY IN THE BUILDINGS

The meaning of the carbon neutrality is having a balance between emission of carbon and absorption of carbon from the atmosphere in carbon sinks. Removing carbon oxides from the atmosphere and then storing it is known as carbon sequestration. Further curtailing greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere is meant by net zero.

In a greenhouse, sunlight enters, and heat is retained. The greenhouse effect describes a similar phenomenon on a planetary scale but, instead of the glass of a greenhouse, certain gases are increasingly raising global temperatures. This temperature increase has long-term, adverse effects on the climate, and affects a myriad of natural systems. Effects include increases in the frequency and intensity of extreme weather events – including flooding, droughts, wildfires and hurricanes – that affect millions of people and cause trillions in economic losses.

The construction industry accounts for a large proportion of greenhouse gas emissions and has a great responsibility, and opportunity, to limit them. Engineers, planners, developers have the aim to create carbon neutral buildings and we know that this is possible by focusing on design, material selection and renewable energy. But we have to work together. There are some strategies which can be used to reach carbon neutrality of the building, such as, implementing a forestry projects, (calculating trees required and hectares required according to the total GHG emissions), replacing polluting coal, gas and oil-fired power with energy from renewable sources, such as wind or solar, buying carbon credit at a price in totally and, voluntary carbon market gold standard, etc,

Further, carbon emission shall be minimized the various stages of the building life cycle such as planning stage, construction stage, operation stage, and demolition stage, especially during operations stage where the carbon emission is quite significance. Achieving Carbon Neutrality is possible and proven by many countries through constructing and operating the “Green Buildings”. The strategies towards achieving Carbon Neutrality in building life cycle are follows;

During planning stage

- Using low Carbon emission materials, using different low emission cement for various need, no need to use same type of cement for concrete, block works masonry work, plastering or paving works.
- Using of low emission ceramic, tiles, imported Toughened Glass, paints, different kind of timbers in order to reduce the embodied carbon.
- Planning for passive ventilation system, day lighting, water recycling & reuse methods
- Designers must take a fully integrated Life Cycle Assessment (LCA) approach to all design decisions

During Construction stage

- Reducing process level carbon generation
- Using of electrical vehicle to transport the materials to the site
- Utilization of locally available raw materials.
- Using the reusable materials.

During Operation Stage

- Improvement of energy efficiency can be done by replacing lights, replacing air conditioners, replacing security lighting, for example changing the sodium vapor lamps and putting LED lights as security
- Carrying out certain operations during night time to reduce electricity consumption which shall resulting to reduce the carbon emission
- Introducing solar assisted air conditions, sky light, CFL lights, different type of AC plants specially adsorption type AC will reduce waste heat, energy consumption will less than 10%, there will be a huge savings in energy consumption. Though the investments cost shall be higher but, it will be cheaper than buying carbon credits further it will save money during operation stage and will reduce carbon emission.
- Carrying out a proper maintenance to minimize the refrigerant leaks
- Using energy efficient HVAC system

During Demolition Stage

- Modifying or rectifying the building fully or partially rather than demolishing it after the life cycle.
- Reusing the possible materials such as timber, door, window, glass.
- Waste segregation and reusing the generated wastes in the future building construction.

"In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty."

Article 4 of the Paris agreement

Eng.M.E.Sutharsan,
BSc.Eng.(Hons), MBA, CEng., MIE(SL), AMSSE(SL), GREEN SL® AccP, MSLAAS
Chief Engineer,
National Water Supply & Drainage Board

Mitigating climate change through Green buildings, Smart cities & Sustainable Infrastructure

A component of the idea of increasing sustainability is green building. The health, comfort, and productivity of employees will all increase as a result of green buildings' more efficient use of vital resources like electricity, water, and land. A component of the idea of increasing sustainability is green building. The health, comfort, and productivity of employees will all increase as a result of green buildings' more efficient use of vital resources like electricity, water, and land.

One of the most important types of benefit green buildings offer is to our climate and the natural environment. Green buildings can not only reduce or eliminate negative impacts on the environment, by using less water, energy, and natural resources, but they can - in many cases - have a positive impact on the environment by generating their energy.

Some of the examples related to green buildings & climate mitigation,

- The building sector has the largest potential for significantly reducing greenhouse gas emissions compared to other major emitting sectors – UNEP, 2009.

- This emissions savings potential is said to be as much as 84 gigatons of CO2 (GtCO2) by 2050, through direct measures in buildings such as energy efficiency, fuel switching, and the use of renewable energy – UNEP, 2016.
- The building sector has the potential to make energy savings of 50% or more in 2050, in support of limiting global temperature rises to 2°C (above pre-industrial levels) – UNEP, 2016.
- Green buildings achieving the Green Star certification in Australia have been shown to produce 62% fewer greenhouse gas emissions than average Australian buildings, and 51% less potable water than if they had been built to meet minimum industry requirements.
- Green buildings certified by the Indian Green Building Council (IGBC) result in energy savings of 40 - 50% and water savings of 20 - 30% compared to conventional buildings in India.
- Green buildings achieving the Green Star certification in South Africa have been shown to save on average between 30 - 40% energy and carbon emissions every year, and between 20 - 30% potable water every year, when compared to the industry norm.
- Green buildings achieving the LEED (Leadership in Energy and Environmental Design) certification in the US and other countries have been shown to consume 25 percent less energy and 11 percent less water, than non-green buildings.

For the green revolution, Sri Lanka is also thinking about green buildings and sustainable infrastructure. Sri Lanka is steadily catching on to the trend of green buildings, with a few LEED-certified structures appearing in the past ten years. Despite the small number of these structures, the nation is home to a few green structures that are pioneers of their kind in the area.

Green buildings in Sri Lanka,

01. Logistics Park, Colombo

As the first fully air-conditioned warehouse in South Asia to receive a LEED Gold Certification Award, Logistics Park also received high marks for energy efficiency from its extensive solar photovoltaic (PV) installation, as well as from its VRV (Variable refrigerant flow) cooling system, highly effective lighting system, and natural light, saving more than 50% of the energy used by a typical building. Additionally, Logistics Park received the maximum number of points for water conservation and renewable energy. Because of its water-saving plumbing, the warehouse has a total water savings of little over 50%.

02. Clearpoint Residencies, Rajagiriya

The complex has foliage growing on all 46 of its floors as a 'green cover, which acts as a natural cooling system, with all apartments having a private garden terrace as well. This eliminates the need for air-conditioning throughout the day, making it an energy-efficient means of living. The apartments receive less heat through sunlight thanks to their green cover, it also eliminates the need for large air conditioners, thus reducing the amount of energy consumed. The entire complex uses solar energy to be energy-efficient and is looking at reducing its electricity usage by 40% shortly. Currently, solar panels have been used for common areas and mechanisms such as lobby and corridor lighting, elevators, and the recycling system. It also uses a drip irrigation system where wastewater used for bathing and washing is recycled and used for other uses of water, like flushing and plant irrigation. Clearpoint also uses rainwater harvesting, and automated drip irrigation maintains the green cover without a sprinkler system, greatly reducing water usage.

03. Cinnamon Bey, Beruwala

The hotel scored for its use of 100% energy-efficient lighting and Energy Star equipment, recycled water mechanism for cistern tanks, vehicle washing and irrigation, rainwater harvesting, and solar hot water and heat pump usage. According to a statement released by Cinnamon Bey to mark the hotel's award by LEED(Leadership in Energy and Environmental Design), it has managed a utility cost savings of 32.2% and uses 65.62% less water than a conventional building. It also states that during construction, it was able to divert 70% of its waste from landfills to relevant recycling plants in the country. Another factor that led to the hotel achieving a perfect score for water efficiency is its ability to reduce its potable water usage by 100%. Cinnamon Bey also uses an Erosion and Sedimentation Control System, which curbs its contamination and pollution of the environment

04. MAS Intimates Thurulie, Thulhiriya

The power and potable water used to run the factory when compared to other factories of the same size and functions are 25% and 50% less, respectively. The plant uses two primary energy sources, photovoltaic and hydroelectric, and claims to be the first building in Sri Lanka to use net metering. The exterior walls of the factory are built using compressed stabilized earth blocks, which are manufactured just 40 kilometers from the site, to reduce the grey energy of the building. In terms of design, the team behind the factory looked at designing a building that uses natural resources and is in harmony with its surroundings to create a peaceful and stimulating environment for the people working there. The factory also strives to generate zero-waste, by recycling its used thread cones, other plastic, paper, and glass and giving away its scrap fabrics to local craftspeople.

05. Brandix Eco Centre, Seeduwa

According to this profile, Brandix invested USD 2.5 million in this project to lessen energy consumption and achieve efficient water and solid waste management, and carbon emissions. With this transformation, the company was able to reduce its carbon footprint by 77%. It was also able to reduce its carbon dioxide emissions by 80%, sulfur dioxide by 71%, nitrogen oxides by 92%, and can save energy by 41%. It has also reduced its potable water usage by 70%. heat-blocking paving to prevent heat flow into the factory and minimize the use of air-conditioning, an intelligent control center that monitors all aspects of output, natural lighting wherever possible, highly efficient LED lighting where required, rainwater harvesting, larger outdoor garden areas (which use 100% organic fertilizers), indoor green patches inside plants, and the electric-powered vehicles for some of the factory's tasks that require transportation.

Although the idea of green building is still relatively new in Sri Lanka's construction industry as a whole, it is currently growing quickly in specific industrial areas. Business owners are looking for more energy-efficient buildings, nevertheless, to cut their exorbitant maintenance and operating costs. There are numerous buildings, including office buildings, hotels, factories, sports facilities, homes, apartment buildings, schools, hospitals, high-rise structures, and archives, among others.

Thuthishan Kanesamoorthy
Faculty of Technology
University of Colombo

CLIMATE-SMART AGRICULTURE FOR SUSTAINABLE FARMING IN SRI LANKA

Agriculture is the mainstay of Sri Lanka which contributes 8.7 percent to GDP of Sri Lanka in 2021. Agriculture land covers approximately 2.6 million hectares, or roughly 42% of the total land area. About 1.65 million of small holder farmers owned the majority of this agricultural lands. The agriculture land area has increased gradually during the past decade with the end of the civil war. Sri Lankan Agriculture comprised of three major components such as food crops, plantation crops and dairy farming. Major food crops are rice, maize, pulses and vegetables. Even agriculture is the backbone of the country taking people away from starving and feeding them nutritious meals, agriculture contributes to enhance greenhouse gas emissions and eventually for the climate change. Agriculture accounts for 25.1% of the total greenhouse gas emissions of the country. It is almost three times less than energy sector (61.5%) but higher than the waste management and industrial sectors. Greenhouse gas emission from croplands accounts for 69.5% of the total emissions while the livestock sector accounts for 30.5%.

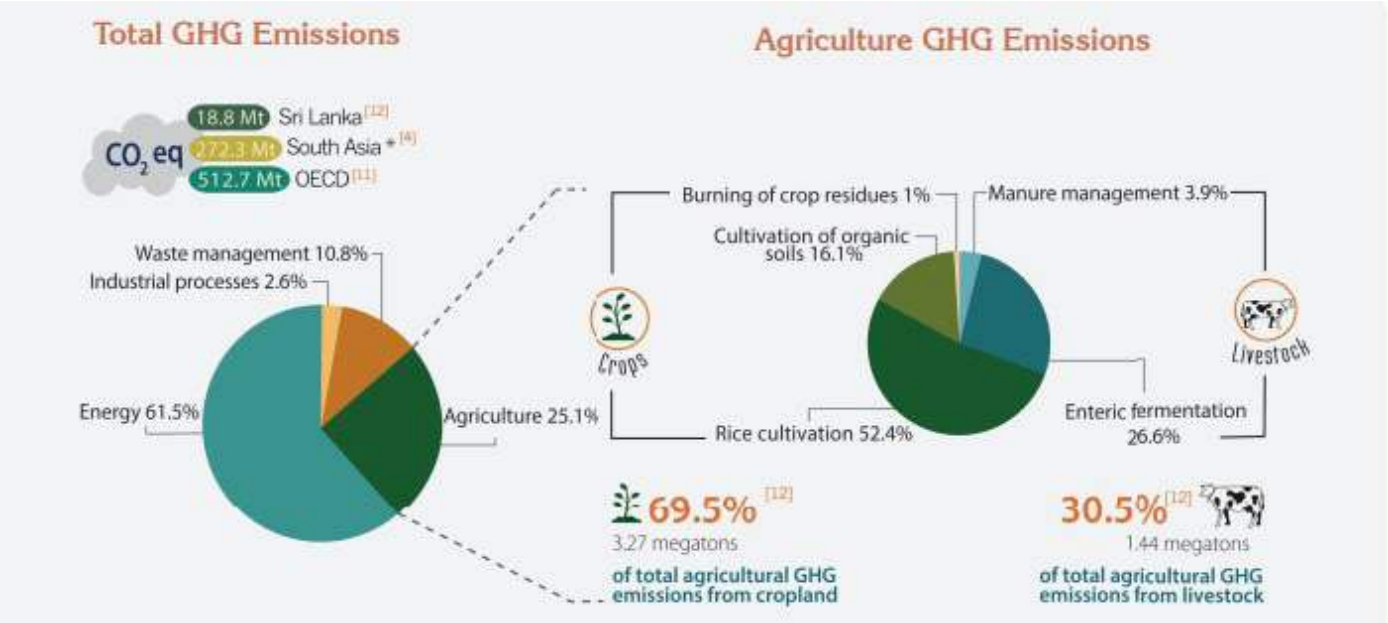


Figure 1. Green House Gas Emissions in the Agricultural Sector and its graphical Comparison with other several sectors

Agriculture is the mainstay of Sri Lanka which contributes 8.7 percent to GDP of Sri Lanka in 2021. Agriculture land covers approximately 2.6 million hectares, or roughly 42% of the total land area. About 1.65 million of small holder farmers owned the majority of this agricultural lands. The agriculture land area has increased gradually during the past decade with the end of the civil war. Sri Lankan Agriculture comprised of three major components such as food crops, plantation crops and dairy farming. Major food crops are rice, maize, pulses and vegetables. Even agriculture is the backbone of the country taking people away from starving and feeding them nutritious meals, agriculture contributes to enhance greenhouse gas emissions and eventually for the climate change. Agriculture accounts for 25.1% of the total greenhouse gas emissions of the country. It is almost three times less than energy sector (61.5%) but higher than the waste management and industrial sectors. Greenhouse gas emission from croplands accounts for 69.5% of the total emissions while the livestock sector accounts for 30.5%.

Climate Smart Agriculture is an integrated approach to managing landscapes, crop lands, livestock, forest and fisheries that addresses the interlinked challenges of food security and accelerating climate change. Climate Smart Agriculture focuses to achieve three outcomes simultaneously, which are increased productivity, enhanced resilience, and reduced emissions. Climate Smart Agriculture differ from sustainable agriculture in several ways. It has mainstream focus on addressing climate change. Secondly it systematically considers the synergies and trade-offs that exist between productivity, adaptation and mitigation. Finally, Climate Smart Agriculture aims to seek new funding opportunities to close the deficit in the environment.

Sri Lankan Agricultural sector has spread among wet zone in the South West region, the dry zone covering the Northern and Eastern part of the country, and the intermediate zone skirting the central hills with greatest variability of rainfall. Dry zone and the Intermediate zones are severely affected due to the changing rainfall patterns and the gradually rising of the ambient temperature. Apart from that all the three climatic zones are threatened from the landslides, soil and coastal erosion, water salinity, hurricanes, floods and extreme droughts. Sri Lankan Agriculture sector can be damaged from climate changes because of the lack of access to irrigation systems, reliance on rain fed systems, undiversified production, and due to the limited access to the technology.

Even without knowing the proper name, Climate Smart Agricultural practices have implemented in Sri Lanka by ancient people. Reservoirs and lakes were built by ancient rulers for collecting rain water in rainy season. But recently strategies are not sufficiently practiced to mitigate climate impacts or adapt to climate changes. Some climate smart agricultural practices, which can be easily commenced in Sri Lanka as well as aid to maintain the agricultural sustainability are mentioned below.

01. Reducing Farm Emissions

Livestock production is the major agricultural components which contributes for the emission of greenhouse gases such as Methane and Nitrous Oxides. Main causes for generating these two gases are over use of synthetic fertilizer and manure decomposition. Using mixture of organic and inorganic fertilizer, sustainable manure management, increase productivity by optimizing the inputs usage, and using local feeds can be practiced to reduce the greenhouse gas emissions.

Figure 2. Optimizing the input usage at cattle farms

02. Low Carbon feed from crop waste

Some food residues can be used as the feed for some farm animals and small ruminants. Crop residues from rice and citrus fruits can be converted into nutritious feed for small ruminants. Hence this aims to reduce the burning of crop residues and simultaneously reduces greenhouse gas emissions.

03. Diversify Farming

Introducing diversity to farming systems is one of a best practice to be climate resilient. Applying crop rotations and crop diversification can help to reduce the risk of climate change impacts. Pest and disease attacks can be vigorously spread when there are excessive rainfalls and extreme drought conditions. Crop rotations and mix cropping reduce the distribution of diseases and pests. Apart from that mixing crops allows farmers to diversify their sources of income and fulfil the wider range of consumer demands. Due to the diversified root systems, Crops diversification improves soil structure. It helps to maximizing the nutrient absorption from the soil, increasing infiltration, reducing leaching, and boost soil organic matter.

04. Agroforestry

Agroforestry is the interaction of agriculture and trees, including the agricultural use of trees. In here agricultural lands encompass with trees which have production. Trees which widely can be planted are cocoa, coffee, rubber and oil palm. Interactions between trees and other crops is important to provide shades, required nutrition to crops and to increase the water retention capacity of the soil. Other than that those trees provide fodder for livestock, fuel, produce adequate supply of nutritious food, timber, and also they ensure the protection of the natural environment. These trees aid to reduce the soil erosion, which happens as a result of the climate changes as well.

05. Planting genetically diversified verities

Enhancing genetic diversity is critical for increase the quality and the quantity of production as well as for the disease tolerance that is intensified with climate change. Scientists can be working to introduce plant breeds with genetic diversity for better adaptation to climate changes. The ultimate goal is to strengthen the plants resistance to diseases and its ability to adapt to changing weather patterns such as warming temperature and droughts. Tea Research Institute of Sri Lanka is currently working to introduce new tea plants with disease tolerance ability.

Figure 3. - Introducing new tea plants with genetic diversity

Nisali Jayawardena,
Project Executive,
Green Building Council of Sri Lanka

Promising Pathway to Protect Humanity from the Climate Crisis of Urban Environments

Sri Lanka was ranked as the second-most disaster-prone nation due to climate change in 2018! Moreover, due to the distinctive land-based characteristics of Sri Lanka's urban environments, people and property in urbanized cities are particularly sensitive to climate change. To that end, it is obviously true that the economic and social issues of cities not only throughout the world but also in our nation are suffering as a result of climate change, including energy shortages, infrastructure damage, rising industrial losses, heat-related disease, and food and water scarcity. Nevertheless, most of the major municipal regions are frequently found close to the water's edge or in low-lying regions at the mouths of significant rivers, like Mahaweli, and Kelani putting both the economy and people at risk from several identified climate-related dangers like floods and sea level rise. The fact is, since these difficulties are connected to each other, economic losses make it harder for especially to Sri Lankans to sustain their way of life, which can worsen social problems like hunger and poverty. Besides, despite the fact that climate change has been a critical topic for several decades, the specific relevance of climatic impacts on urban environments has only lately come to light. In another focus, nowadays urban environments are experiencing a result of climate change, such as sea level rise, more unpredictable and heavy rainfall, frequent floods, and landslides.

Consequently, spreading the knowledge among the general public and taking immediate action to tackle the difference between risk and vulnerability is a crucial aspect in spite of everything. Likewise, in the Sri Lankan context, a lot of urban cities are located in risky places such as along the coastline, where citizens and economic assets are in higher danger of climate-related calamities. The policymakers and other responsible parties must evaluate how these hazards impact social and economic circumstances, which are crucial for urban function, in order to comprehend the consequences for cities. Social & economic impacts of climate change including a direct influence on citizens' physical and mental well-being, such as health effects, food, and water shortages, impacts on livelihoods, and relocation should be handled carefully by the government itself.

However, a topic that has just lately entered the climate change debate is a crucial component of the social dimension of climate change which consul about differential consequences on inhabitants. Literally, it has been revealed that little income or social isolation is also disproportionately affected by climate change. Nevertheless, Sri Lanka can host a few meetings to explore how to come up with doable remedies for the aforementioned impacts of climate change on the urban environment following the guidelines of the UN-Habitat which is, the United Nations' initiative for human settlements and environmentally friendly urban development. In addition, future research and development initiatives of our motherland should also combine a top-down, comprehensive framework with bottom-up, in-depth projects from a variety of locations and industries. These studies will need to be founded on a shared theoretical and methodological approach in order to allow for aggregation across industries, locations, and time to find solutions together to the impact of climate change. As per the records, the UN-Habitat carried out 18 projects between 2014 and 2019 to ensure that Sri Lankans benefited from improved community infrastructure facilities, such as internal roadways, community wells, and stormwater drainage systems. Additionally, landslides, floods, and related disease outbreaks are the most serious effects. It cautions that global greenhouse gas emissions must 'peak before 2025 at the latest, and be cut by 43% by 2030 if we are to limit climate change to 1.5°c and avert catastrophic disaster. Besides, wealthy countries need to act more quickly on the home front and should protect people by immediately phasing out greenhouse gas emissions while assisting affected people in adapting to unavoidable climate change. Another emerging challenge is to improve international cooperation and assistance by protecting the human rights of people who are at risk of stress due to climate change and providing a secure, hygienic, clean, and sustainable urban environment to regulate local-level businesses. According to the UN, over 30,000 households supported rebuilding their conflict-damaged homes in Sri Lanka's north and east upon discussing the urban environmental circumstances. In North and East Sri Lanka, around 4 million individuals benefited from upgraded community infrastructure amenities including internal access roads, community wells, and stormwater drainage systems while eight localities received assistance in creating disaster risk reduction strategies to lessen the effects of natural catastrophes on inhabitants.

I believe that in order to operationalize these pledges, the government and responsible industries should place an excessive amount of reliance on carbon offsets and other removal techniques. In particular, the energy industry must quickly phase out the production and use of fossil fuels, including by reorienting their inventory into renewable energy generated in accordance to get away from this double whammy of rising economic crisis and current foreign debts. Another potential course of action is for financial institutions, including banks, financial firms, and insurance companies, to avoid funding and investing in new ventures, activities, and sectors that promote the increase of fossil fuel use and deforestation. Moreover, companies have a duty to exercise due diligence with regard to human rights and the environment, which includes identifying, preventing, reducing, and accounting for GHG emissions across their global operations and disclosing crucial data regarding their emissions and mitigation efforts, which includes all their joint ventures, associated companies, and supply chains, etc. Since climate change is a serious threat to humanity because of the destruction it has caused and will continue to wreak, the climate crisis must be addressed and ambitious steps should be taken to address climate change, and human rights are essential to do so. Yet, there's still time!

Reference:

1. *Gasper, R., Blohm, A., & Ruth, M. (2011). Social and economic impacts of climate change on the urban environment. Current Opinion in Environmental Sustainability, 3(3), 150-157. DOI 10.1016/j.cosust.2010.12.009*
2. *Amnesty International. COP26 Outcome: 12 Months to Take Climate Action that Delivers on Human Rights. 2021. Available online: https://www.amnesty.org/en/documents/ior40/4989/2021/en/ (accessed on 7 February 2022)*
3. *UN-Habitat Sri Lanka https://unhabitat.org/sri-lanka*

Sadeesha Senanayake
B.Sc. (Hons.) in Agriculture
Wayamba University of Sri Lanka

GREEN^{SL}® CERTIFICATION

FOR

New Buildings, Existing Buildings,
Institutional Sustainability,
Building Materials and Products

GREEN BUILDING COUNCIL OF SRI LANKA

Here is the Opportunity to Enhance the Global Recognition of Your Business

GRAB YOUR CHANCE!

WORLD GREEN BUILDING COUNCIL

GREEN BUILDING COUNCIL OF SRI LANKA

You can join hands
with us to
enhance sustainability
of
your business

More Information:

Eng.Chamodi Panduwawala
Assistant Project Engineer
(+94) 011 267 9130
grs.gbcsl@gmail.com

120/10, "Vidya Manddiraya",
Vidya Mawatha, Colombo 07