How to promote Sustainability individually
Carbon Footprint

Abstract

Developed countries such as Sweden have succeeded in taxing Carbon Footprints to reduce Carbon emissions. However, there will be challenges in imposing tax laws in developing countries that are concerned about the economic impact. This is because the economy relies on businesses needed for mechanization with transportation.In spite of various challenges, even if a few people are aware of taking action to fight against Climate Change, the neighboring community will follow them. To assist with that change, the role of the Carbon Footprint Calculator becomes important.

Around the world, the concept of carbon footprint become widely known and seriously considered as exposure to climate change is affecting our daily lives. The carbon footprint is the total combination of the greenhouse emissions that happen either for a commodity to be manufactured or for an action to occur. Not only several countries but also Southeast Asia governments including the Myanmar government are commencing carbon emission reduction plans and implementing their schemes into actions(Mulvaney, 2022).

Southeast Asia's energy consumption has surged by over 80% since the year 2000, and it's predicted to double by the year 2040. This increase in energy demand is likely to result in a substantial rise in carbon dioxide emissions, estimated to be around 60% by 2040. This trend poses a significant challenge for the region, requiring the adoption of sustainable energy practices to mitigate the impact on the environment. In 2021, none of the ASEAN countries were able to secure a spot in the top 40 rankings for achieving Sustainable Development Goals. That indicates the region is still largely depending on non-renewable sources for the main energy supply. the people of Southeast Asia have directly experienced the devastating impacts of climate change and environmental degradation, as evidenced by multiple floods that jeopardized their livelihoods in 2021(Hitachi, n.d).

As a result, the amount of heat rises up due to the increasing amount of carbon in the atmosphere which traps the heat from returning back to the outside of the earth's surface. Consequently, there are several incidents and effects of climate change. According to The historian U Thant Myint-U, grandson of former United Nations Secretary-General U Thant, “the impact of climate change on Myanmar will be nothing less than catastrophic.” in one of the developing countries in ASEAN. In 2019, during the monsoon season, more than 100,000 people had to escape from their places and over 70 inhabitants departed from their lives because of a landslide and flooding affected by severe rains in Mon State(*Myanmar at risk from worsening climate crisis - myanmar,* 2019).

If immediate action is not taken in the next ten years, Southeast Asian nations are projected to suffer a substantial economic loss of US$ 22.5 billion as a result of flooding, underscoring the need for urgent measures to mitigate the impact of climate change. All ASEAN nations have acknowledged climate change as a significant threat to the region and have consequently signed the Paris Agreement. To follow up on this commitment, ASEAN has set a target of achieving 23% of the region's primary energy from renewable sources by 2025(Hitachi, n.d).

Myanmar has provided its Nationally Determined Contributions (NDCs) to restrict emissions of carbon footprints for the signing of the Paris agreement in 2017(*Myanmar at risk from worsening climate crisis - myanmar,* 2019). Under the agreement, Myanmar has to reduce emissions, adapt to accommodate the influences of climate change, protect its current forests, and biodiversity, invest in clean low-carbon electricity, and restrict global warming "well below 2 degrees [Celsius] above pre-industrial levels while attempting to limit the increase to 1.5 degrees"(Mike, 2020). However, as a poor and developing country, the Myanmar government has to implement action for environmental commitments in accordance with the national budget

of the country. Hence, it would be better to actually initialize with the help of the international community. However, such contributions will take a substantial amount of time and steps. Thus, alternative methods would be the options.

Among carbon emissions, one-fifth of global carbon dioxide emissions is occupied by the transportation sector. Road travel takes up three-quarters of carbon emissions in transportation. The percentage of the carbon emission from civilian vehicles such as buses is 45.1% and that of trucks carrying goods is 29.4%. Hence, the whole transportation sector is responsible for 21% of net emissions(Ritchie, 2020).

Having a well-functioning transportation system is essential for economic growth and social development. However, in Asia, the growth of the transportation sector is not sustainable. Specifically, road transport in the ASEAN region produces a significant amount of carbon dioxide emissions, which contributes to climate change. In fact, the region generates about 310 megatonnes of CO2 emissions, making it a major contributor to the problem(Giz, 2023).

In Yangon, one of the most polluted cities in Myanmar, the current air quality is 162(Air quality index) or unhealthy(Air pollution level). There are about 7 million people in Yangon which is the most populated place and the center of mechanization. Due to the center of the Myanmar economy, aggregations of industries, automobiles, transportation, vessels, waste, and utilizations of electricity trigger a huge amount of pollution and carbon emission(*Yangon Air Quality Index (AQI) and Myanmar Air Pollution*,n.d).

Malaria is one of the main diseases that frequently occur in Myanmar(*Health in Myanmar*,2022). Research has shown that in every 1000 people in Myanmar, at least one person has malaria. Malaria is a disease that can be caused by infections from female Anopheles mosquitoes(*World malaria statistics - knoema.com,* n.d). Polluting activities are resulting in malaria-transmitting mosquitoes expanding into regions where they previously weren't(Shüné Oliver medical scientist, 2022). Using mosquito repellent wouldn't be a reasonable solution either when considered for the long term, as it has many side effects such as allergic reactions, neurologic & cardiovascular side effects, and can also bring harm to our respiratory system(Khater et al., 2019).

One of the main reasons is vehicle emissions since the whole population employs a considerable number of cars, motorbikes, and vehicles which are mostly used on lower quality fuels and diesel fuel rather than their pristine correspondent resources which are at an internationally recognized level. Such fuels make higher levels of carbon emissions.In addition to that, Trucks and lorries, heavy-weight automobiles in charge of carrying containers, goods, and other business uses are also using diesel. Since constricted places and policies to assess the age of the engines, fuels, and vehicles are less found, old-fashioned applications also become an additional factor in increasing carbon emissions(*Yangon Air Quality Index (AQI) and Myanmar Air Pollution*,n.d).

Fossil fuels such as gasoline, diesel is used for operating transportation. When it comes to producing gasoline and diesel, they have to be by-products of crude oil. According to research from Stanford University, "in 2015, nearly 9,000 oilfields in 90 countries produced greenhouse gases equivalent to 1.7 gigatons of carbon dioxide – roughly 5 percent of all emissions from fuel combustion that year. ".Among the reasons for the higher occurrence of carbon emissions from oil production fields, burning substantial amounts of gas in Algeria, which has the highest carbon intensity in the world is included although the lightest crude oil is produced in the world. If routine flaring is stopped and the amount of methane leaks and venting in the oil industry to the same level as Norway is lessened, the industry's yearly carbon emissions by around 700 megatons, which is about 43% less can be reduced. However, people have to count on hugely upon crude oil in the production from asphalt and plane fuel to fertilizer and medicine. Thus, it will take a large amount of time to tackle the challenges due to the production and utilization of crude oil(University, 2018).

While the world population is rapidly growing by over 8 billion, it's becoming increasingly evident that the waste generated by us is a burgeoning concern. Waste emissions include methane, which is produced through the decomposition of solid waste in landfills, as well as during the biological treatment of solid waste, waste incineration and burning, wastewater treatment and discharge, and other sources. For instance, emissions can arise from flaring methane at a landfill site(jurisdiction=Queensland; sector=government; corporateName=Department of Environment and Science, 2022).

Waste is among the most apparent components of sustainability, and it can account for as much as 15% of an individual's carbon emissions. This highlights the critical role that waste management plays in mitigating the impact of human activities on the environment(Rade & Team, 2023).

The average daily waste production per individual worldwide amounts to 0.74 kilograms. The various items we discard generate numerous byproducts, with methane being one of the most harmful ones. Methane is more potent than carbon dioxide (CO2) and accounts for up to 16% of the world's total greenhouse gas emissions (GHGs). According to the International Energy Agency (IEA), methane is accountable for about 30% of the escalation in global temperatures since the industrial revolution. As per the IEA's report, waste was identified as the fourth primary cause of methane emissions in 2021, producing an overwhelming 73 megatonnes of this greenhouse gas. As per the latest report titled 'Zero Waste to Zero Emissions: How Reducing Waste is a Climate Gamechanger ' from the Global Alliance for Incinerator Alternatives, the waste management sector accounts for 20% of methane emissions worldwide and 3.3% of global greenhouse gas emissions(*This is how cities can reduce emissions with waste-reduction solutions,* n.d).

Southeast Asia is home to five out of the six countries that produce the most plastic pollution globally. It's crucial for the regional bloc to take action and find solutions to minimize the negative effects of this pollution on the world's oceans. Packaging is one of the main contributors to the waste issue in cities across Asia. This problem is further compounded by

inadequate waste management systems, which means that a large amount of packaging waste ends up polluting the environment and causing harm to wildlife. Infrastructure investment becomes a matter in numerous cities in Southeast Asia due to the problem of plastic pollution, which calls for a robust and sustainable infrastructure system that can effectively manage waste and prevent it from ending up in our oceans(Hicks, 2020).

Even though China, Germany, Brazil, and the US are the top countries in the world that produce the most waste, a surprising amount of plastic waste in the ocean actually comes from Southeast Asia. Although China is still the biggest contributor, a significant portion of plastic waste also comes from major rivers in Southeast Asia. Southeast Asia is struggling with managing its waste because the region's infrastructure has not kept up with the rapid economic growth and urbanization that has occurred. If we take into account that over 70 percent of people in ASEAN countries are expected to live in urban areas by 2050, it's likely that this problem will only get worse in the future. Jakarta, the largest city in Southeast Asia with a population of around 10.8 million, is facing significant challenges in managing its waste. Jakarta has only recently started building its first waste incinerator despite being such a large city. As a result, the only waste management solution available in Jakarta is a landfill, and the city's largest landfill site, called Bantar Gebang, receives nearly 7,000 tons of garbage every day. Recycling rates in Southeast Asia are quite low. Even in Singapore, which has made efforts to encourage people to sort their waste, many individuals still struggle to differentiate between recyclable and non-recyclable materials, which has led to low recycling rates. Furthermore, in Singapore, there are only two primary methods of waste management available: landfill and incineration. Recycling rates in Southeast Asia are quite low, and composting and incineration are not widely practiced. Instead, landfills and open dumps are still the most commonly used waste disposal methods, even though they have several drawbacks. Open dumps, for example, are very unsanitary and pose significant environmental hazards, as well as risks to the health of people living nearby. Additionally, both landfills and open dumps are not sustainable in the long run since they eventually run out of space(*Why is Southeast Asia so bad at managing its waste?,* n.d).

The release of carbon dioxide into the atmosphere by power plants is a significant cause of global warming and climate change. Unfortunately, many parts of the world still depend on electricity produced by sources that release harmful pollutants into the environment(Terrapass, 2022).

Burning fossil fuels for producing electricity is responsible for more than 40% of carbon dioxide (CO2) emissions related to energy use. It is worth noting that all methods of electricity generation have some greenhouse gas emissions at different stages of their life cycle (Carbon Dioxide Emissions From Electricity - World Nuclear Association. ,n.d.).

As a matter of fact, a large part of the world's electricity is generated by burning fossil fuels such as coal, oil, and natural gas. Currently, approximately 63.3% of the world's electricity is generated by sources that release greenhouse gases such as carbon dioxide into the environment. Fossil fuels are utilized to fuel turbines or generators, which produce heat that is

then transformed into electrical energy. The combustion of fossil fuels for the generation of electricity is one of the leading human activities responsible for the emission of greenhouse gases. Greenhouse gases such as carbon dioxide, methane, and nitrous oxide in the atmosphere are significant contributors to global warming and climate change. The energy we consume every day carries a social cost related to carbon emissions. The accumulation of carbon dioxide in the atmosphere can have significant public health impacts, result in more frequent and intense weather events, and contribute to the scarcity of food and water resources. The electricity and heat sector produces more carbon dioxide emissions worldwide than any other industry. Specifically, in 2018, these sectors were responsible for emitting a staggering 15.59 billion tonnes of carbon dioxide. To give some context, transportation was the second-largest producer of carbon emissions, but still paled in comparison, releasing only 8.26 billion tonnes in the same year. The majority of carbon dioxide emissions from electricity production can be attributed to the burning of coal on a global scale. Coal is still the primary source of fuel used for generating electricity worldwide. To illustrate, in 2019, a substantial 37% of the world's electricity supply was generated through the combustion of coal. Coal produces significantly more carbon than other fossil fuels that are utilized to produce electricity. Coal-fired power plants emit 2,249 pounds of carbon dioxide per each megawatt hour of electricity generated. In contrast, oil emits 1,672 pounds per megawatt hour, while natural gas emits 1,135 pounds. This comparison shows that coal's carbon emissions are considerably higher than those of other fossil fuels. According to energy think-tank Ember, China is the foremost producer of carbon dioxide from coal combustion, surpassing other countries by a substantial margin. In 2020, China accounted for 53% of the total global coal burned for electricity generation. Among the top 10 countries that burned coal for power in 2020, our Southeast Asia countries are Indonesia for 168 TWh and 60% of total energy from coal, and Vietnam for 141 TWh and 53% of total energy from coal are also included(Terrapass, 2022).

Our electricity consumption has an impact on the environment since a significant portion of the electricity we use is generated by burning fossil fuels. The burning of fossil fuels emits greenhouse gases such as carbon dioxide, which contribute to global warming and climate change. The carbon dioxide emissions resulting from electricity production have harmful effects on human populations across the globe. This includes the erosion of coastlines and the loss of soil fertility, leading to a decrease in agricultural lands. Additionally, there are those who have limited access to clean water and face negative health impacts due to air pollution related to climate change. Thus, it is essential to be mindful of our electricity consumption, especially considering that we still rely on fossil fuels to generate power. By lowering the amount of electricity we consume in our homes and businesses, we can decrease our carbon footprint, thereby contributing to a more positive impact on the environment. Electricity consumption is a necessity, and as a result, it is inevitable that we will contribute to the carbon dioxide emissions associated with electricity production. Nonetheless, we can take part in reducing carbon emissions individually to fight climate change(Terrapass, 2022).

There are alternative options to reduce carbon emissions such as Carbon Footprint Tax for Transportation, recycling waste into new reusable energy, and Nuclear energy to replace burning fossil fuels.

Among them, carbon taxes also known as carbon pricing is popularly acknowledged as the most worthwhile method to decrease carbon emissions. A number of countries that implement carbon pricing and taxes include enlarging their current ones. For example, Sweden is one of the first leading countries to implement carbon pricing schemes successfully. Further, the Swedish carbon tax is the highest throughout much of the world with a price of US 123 dollars per tonne of fossil carbon dioxide produced. In the Swedish energy taxation system, there are a carbon tax and an energy tax. The carbon tax was begun in 1991. The tax reform significantly reduced the marginal income taxes on both capital and labor, while at the same time expanding the base of the value-added tax, among other changes. many people and business organizations can accommodate the tax system due to the exchange system. The revenues from increasing the carbon tax offer contributions to the people alternatively by reducing general taxes in other sectors in order to also be gratified for lower-income civilians(Schiebe, 2019).

All in all, the Swedish instance indicates that it is feasible to eliminate decreasing carbon emissions whilst the economic growth is sustainable. Between 1990 and 2017, local carbon emissions lessened by 26 percent. Meanwhile, the Swedish Growth Domestic Product developed by 78 percent. On top of that, Sweden became the 8th country on the Global Competitive Index. in 2019. In fact, the 26 percent emissions lessening is predominantly affiliated with the enlargement of fossil-free electricity manufacturing such as nuclear energy, hydropower, and bioenergy. Conversely, the considerable enlargement of the district heating system, which is essentially powered by household waste and diverse wood leftovers, has almost completely eradicated the applications of fossil fuels for heating reasons in Sweden(Schiebe, 2019).

The exemplification of the action of Sweden would be the best example for ASEAN countries to learn how to encounter similar challenges. Nevertheless, such helpful applications are challenging for Myanmar as an example where a significant amount of financial resources are required to tackle carbon footprint problems. This is because the additional tax on Transportation increases the price of commodities, transportation, and other financial challenges. That might decrease the Growth Domestic Product(GDP) of the country. Additionally, advanced technology and resources from international scientists and engineers will be expensive. Moreover, even developed and affluent countries have to invest billions of dollars to build nuclear plants for producing electricity. Thus, it is hugely challenging to apply nuclear energy in Myanmar. Besides, the utilization of nuclear energy affects terribly the environment due to radioactive waste.

Since the government finds it difficult to administer and implement carbon footprint taxation and other energy tax schemes, the individual civilians' actions become matter. At present, information flows swiftly from continent to continent, and from person to person. In Myanmar, "Myanmar now has at least 33 million active mobile subscriptions in a country with an official population of 53 million. Smartphone usage rate is reported at 80%(Digitalinasia,

2018).” To acquire the awareness of taking action to fight against climate change, sharing the impacts of climate change and how to solve the problems can be widely spread. However, many people will think that solving climate change would be challenging individually. Thus, the software development field comes to a throne in drawing the attention of such higher internet users. They can comprehend the disadvantages of climate change and how to encounter the issues with using only their mobiles by utilizing online tools such as a carbon footprint calculator. On their phones, they can know that they are responsible for how many amounts of carbon are released. Afterward, they save the use of transportation by replacing riding bicycles, walking, recycling waste as much as they can, and turning off electricity when unnecessary.

Moreover, when it comes to the consequences of reducing carbon emissions from Transportation, Waste, and Electricity, the carbon footprint calculator is also useful for healthcare facilities. This can help healthcare workers and facility managers track their energy consumption, waste generation, and transportation emissions. By identifying areas of high carbon footprint, they can implement targeted measures to reduce emissions, such as switching to renewable energy sources or improving waste management practices(*Carbon footprint modelling of National Health ... - wiley online library,* n.d).

In Sustainable procurement, the app can include information on sustainable procurement practices for healthcare facilities, such as buying products made from environmentally friendly materials or reducing packaging waste(*Carbon footprint modelling of National Health ... - wiley online library,* n.d).

In Patient education, the app can provide patients with information on sustainable living practices that can improve their health and well-being, such as reducing air pollution exposure or increasing physical activity(*Carbon footprint modelling of National Health ... - wiley online library,* n.d).

In Transportation options, the app can provide information on sustainable transportation options for healthcare workers and patients, such as public transit or bike-sharing programs(*Carbon footprint modelling of National Health ... - wiley online library,* n.d).

In Collaboration and networking , the app can provide a platform for healthcare workers and sustainability professionals to connect, share best practices, and collaborate on sustainability initiatives(*Carbon footprint modelling of National Health ... - wiley online library,* n.d).

Healthcare challenges can be related to environmental factors in several ways. Environmental factors such as air pollution, water pollution, and exposure to hazardous chemicals can cause or exacerbate a range of health conditions, including respiratory and cardiovascular diseases, cancer, and neurological disorders. Healthcare workers and patients may be particularly vulnerable to these environmental hazards, especially if they are working or living in areas with poor air quality or contaminated water sources(*Introduction to environmental public health tracking*,2019).

Additionally, the environmental impact of healthcare facilities and operations can contribute to climate change and other environmental challenges. For example, healthcare facilities are responsible for a significant portion of greenhouse gas emissions and generate large

amounts of waste, much of which is hazardous and requires special handling and disposal(*Introduction to environmental public health tracking,* 2019).

Addressing these environmental factors and reducing their impact on healthcare workers and patients can help improve health outcomes and reduce healthcare costs. This can be achieved through measures such as improving indoor air quality, reducing energy use and emissions from healthcare facilities, and promoting sustainable practices throughout the healthcare system(*Introduction to environmental public health tracking*,2019).

Developing an effective system to address environmental health in Myanmar requires a multi-faceted approach, incorporating awareness, practice, and public teaching. Here are some potential steps to consider(*Introduction to environmental public health tracking*,2019).

1. Awareness: Increase awareness and understanding of environmental health issues among the general public through education and outreach campaigns. This could include working with local schools to integrate environmental health education into the curriculum and engaging with community leaders and NGOs to raise awareness through public events and media campaigns.

2. Practice: Encourage good environmental practices, such as proper waste management and responsible use of natural resources. This could include providing communities with access to waste management services, promoting sustainable agriculture and forestry practices, and encouraging the use of renewable energy sources.

3. Public Teaching: Empower healthcare professionals to provide guidance and education on environmental health issues to their patients. This could include developing training programs for healthcare providers to increase their knowledge of environmental health issues and equipping them with the tools to communicate this information to their patients.

4. Collaboration: Foster partnerships and collaborations between different stakeholders working on environmental health in Myanmar, including government agencies, NGOs, universities, and the private sector. This could help bring together expertise, resources, and funding to develop and implement effective strategies for addressing environmental health in the country.

Overall, developing an effective system for delivering environmental health to the people in Myanmar requires a coordinated effort between different stakeholders and a focus on raising awareness, encouraging good practices, and empowering healthcare professionals to provide education and guidance to their patients. More importantly, we can promote Sustainability by ourselves using the carbon footprint calculator to reduce carbon emissions from Transportation, Waste, and Electricity sectors for the purpose of being accessible to clean air and reducing waste environment including healthcare improvements. Consequently, several people become cognizant of the impact of their actions on the environment and will certainly advocate and take action to reduce the extraction of natural resources and the production of waste. As a real estate investor, looking for opportunities to support these initiatives can be a meaningful way to contribute to the overall health and sustainability of the communities in which you invest.

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