

One of the defining challenges of the 21st century, climate change has impacted the health of nations and civilisations globally. With rapid industrialisation and skyrocketing greenhouse gas (GHG) emission rates, the climate is deteriorating; sea levels are rising at 1.8mm/year, food security is diminishing and insect-borne diseases are spreading. Singapore faces a similar climatic issue too. Despite the government's active stance towards mitigating climate change and ensuring a thriving environment, the environment's sustainability is being undermined. To combat climate change, Singapore can implement solutions both locally and nationally; through raising public awareness, investing in energy-efficient buildings, exploring renewable energy sources and striving towards a car-lite society.

Firstly, increasing awareness about climate change is paramount to convince and incentivise Singaporeans to play a part in conserving the environment, and should be coupled with education from young. Environmental conservation should be incorporated in the school curriculum through various means; such as assembly programmes, a school 'Environment Club' and learning journeys to places with fragile environments. Such initiatives teach students about the importance of managing precious resources; motivating the young to actively contribute to environmental sustainability. Schools can also organise activities for students on occasions such as the 'Youth for the Environment Day' to enhance their understanding of climate change through play; with different initiatives for primary, secondary schools and junior colleges. Cumulatively, these initiatives would raise significant awareness about climate change; encouraging citizens to participate in activities to individually reduce their carbon footprint. Local community clubs provide several avenues for citizens from all walks of life to participate in eco-friendly projects. Workshops and activities such as tree planting, learning trails to nature reserves, creating handicraft items from recycled materials (such as reusable bags) to sell and collecting funds for environmental conservation can be carried out. Posters can be put up around residential estates and common spaces and house-to-house visits can be carried out to encourage locals to conserve energy, reducing net GHG emissions and contributing to environmental sustainability.

On a national scale, investment into energy-efficient, green buildings may yield success in reducing Singapore's carbon footprint. Through deliberate designs and installations, green buildings optimise resource usage and consume energy sustainably. Current energy-efficient buildings use both passive designs which tap on nature, such as vertical gardens and solar energy, and active building solutions, including sensor and motion-based LED lights, water cooling systems and light shelves to utilise natural light than artificial lighting. These green buildings are extremely effective in reducing Singapore's carbon emissions. According to a 2016 report by the United Nations Environment Programme, the

emissions savings potential of green buildings is as much as 84 giga tonnes of carbon dioxide (GtCO₂) by 2050. However, Singapore has insufficient green buildings to reach the Inter-Ministerial Committee on Sustainable Development's (IMCSD) 2030 target of 80% Green Mark Certification for all buildings. Investment into green buildings by the government would not only encourage building owners to strive for high Green Mark Standards to reach IMCSD's target but also potentially develop newer, green technologies. As such, investment into green buildings would enable Singapore to meet its target and greatly assist in reducing carbon footprints, promoting sustainable development and environment conservation.

Furthermore, Singapore should utilise alternative sources of renewable energy to generate electricity. To meet its energy demands, Singapore primarily relies on fossil fuel burning which releases up to 44.4 million tonnes of CO₂, according to 2015 data from the International Energy Agency (IEA), into the atmosphere which traps longwave radiation and increases temperatures. Being a finite resource, fossil fuels will eventually deplete as well. To ensure sustainable energy production and conserve the environment, Singapore can tap on naturally replenishable energy, coupled with its smart nation initiative. One source is solar power, which converts light energy into electrical energy, as implemented in Punggol New Town. Located 1°N of the equator in the tropics, Singapore receives abundant light all-year round, making solar energy a sustainable energy source. Furthermore, solar panels do not require additional land area and can form 'energy islands' on the sea; advantageous considering Singapore's limited land area and surrounding straits. Although the production of solar panels is costly, the government can offer subsidies to building owners for such major energy-efficient installations; similar to the 'Building Retrofit Energy Efficiency Financing' (BREEF) scheme which encourages building owners with limited finances to go green with additional financing. Installing solar panels in residential estates, commercial hubs and recreational spaces would significantly reduce Singapore's GHG emissions and carbon footprint, conserving the environment.

Last but not least, Singapore should strive towards a 'car-lite' society by making public transport a more attractive option. According to 2014 data from the National Environment Agency (NEA), transport accounted for 15.8% of Singapore's energy (from oil) consumption – a significant percentage – with private transport contributing a major percentage. Moreover, gases released from vehicular exhaust in vast quantities, such as carbon monoxide and nitrogen oxides, trap heat and contribute to high temperatures. To reduce the atmospheric concentration of such GHGs and burn less oil, a shift from private to public transport is needed through increasing the latter's convenience and accessibility. Increasing the capacity and frequency of buses and trains as well as expanding rail networks through schemes and long-

term plans would improve the reliability and efficiency of public transport; increasing its quality and possibly encouraging locals to opt for public than private transport. As buses and trains are able to transport greater passengers than individual cars per unit CO₂ emission, striving for a car-lite nation would reduce the country's carbon footprint and promote environmental sustainability.

In summary, to mitigate climate change, Singapore should raise public awareness, invest in green building technologies, explore renewable energy sources and aim towards being car-lite. Climate change is a global issue and requires the concerted effort of all nations globally. Ultimately, our collective action will determine the future of our planet, our children and humanity. The most massive tsunami, disastrous epidemic and perfect storm is bearing down upon us, with an increasingly grim reality. The day that man is unable to control climate change is the day we unleash the terrors of Pandora's Box.