

Why is climate change an issue in Malaysia? What climate change mitigation and adaptation measures would you suggest to the government? Discuss.

The Mayans stood tall in their jungle fortresses, an ancient civilisation with developments in art, architecture, literature among others that made them the prime of their time. Then, some 1000 years ago – specifically, 900 AD – the civilisation of the Classic Maya fell. ^[1] Thanks to technology such as remote sensing, this downfall of an entire civilisation, so proud and tall once, could be linked to climate change. ^[2] Droughts and severe environmental degradation were contributing factors. Similar effects of climate change that have caused the demise of other ancient civilisations such as the ancient city of Angkor. What does this have to do with climate change?

Harvard archaeologist Dr. Jason Ur mentions that as excavations on remains of past civilisations are done, they “rarely find any evidence that they made any attempts to adapt in the face of a changing climate.” ^[2] This incompetence caused great impacts, as entire civilisations fell into demise when drought ruins crops, stunting economic growth and forcing a low supply of food. As Earth’s temperature climbs to record highs (the last decade being the highest on record) ^[3], it seems history may repeat again. Without proper focus on climate change, along with driving efforts on mitigation and adaptation measures to curb climate change, the consequences will emerge as catastrophic as ever. As Dr. Jason Ur puts it, “I view this inflexibility as the real reason for collapse.” As the climate changes, we as a country must adapt with it.

Malaysia’s “perpetual summer” is seen as a norm to its citizens, with occasional hazes, seasonal floods, tropical heat waves and dry season being usual phenomena. This clouds the reality of the impact of climate change on Malaysia, where its mean temperature has been steadily increasing by 0.15°C to 0.24°C every 10 years between 1969 and 2014. ^[4] And this trend doesn’t seem to be stopping soon. Climate change, which can be defined as long-term shifts in temperatures and weather patterns ^[5], is expected to have considerable impact on Malaysia with increase in heat waves, more frequent drought and floods in the area as variations in precipitation increase, and rising sea levels. These impacts will bring about numerous environmental and socioeconomic effects, some of which include damage in infrastructure, loss of biodiversity, and more tragically, loss of human lives. ^[6] According to a recent study by Centre for Research on Energy and Clean Air (CREA) and Greenpeace Malaysia, in 2019 alone, Malaysia lost almost RM303 billion due to ambient air pollution, mostly from power plants and industrial activities. ^[7]

Climate change brings real and worrying impacts, and the clock is ticking. It is reported by the Intergovernmental Panel on Climate Change (IPCC) that unless there are rapid and large-scale reductions in greenhouse gas emissions—gases such as carbon dioxide, methane, and nitrous oxide among others – limiting warming to close to 1.5°C or even 2°C from global temperatures will be beyond reach. ^[8] An increase of more than 2°C would be disastrous; we will be exposed to severe heats, something even more prominent in tropical Malaysia, thus inciting an increase of heat-related deaths and problems. ^[9] Furthermore, Malaysia’s rich biodiversity will be strongly affected as habitats for various flora and fauna such as warm water coral reefs and rainforests get destroyed.

If the impacts are as clear as they seem, why does climate change remain an issue in Malaysia? Well the answer may lie in misguided views and indifference among our citizens. A lack of understanding and awareness in the public of the importance of data regarding climate change paints a false perception that we have time to lose, and consequences of delaying efforts is not great. Malaysians brush off the effects as normal ways of Mother Nature, this indifference limiting commitments to address climate change. Most only have surface-level knowledge on the matter, perceiving the threat of climate change as a faraway impending doom, thus making minimal efforts to fix the Earth since they do not fear the consequences. When we are unable to grasp the true

importance of a subject, we are less inclined to act on it even if it is for the greater good. This logic, unfortunately, resonates with many.

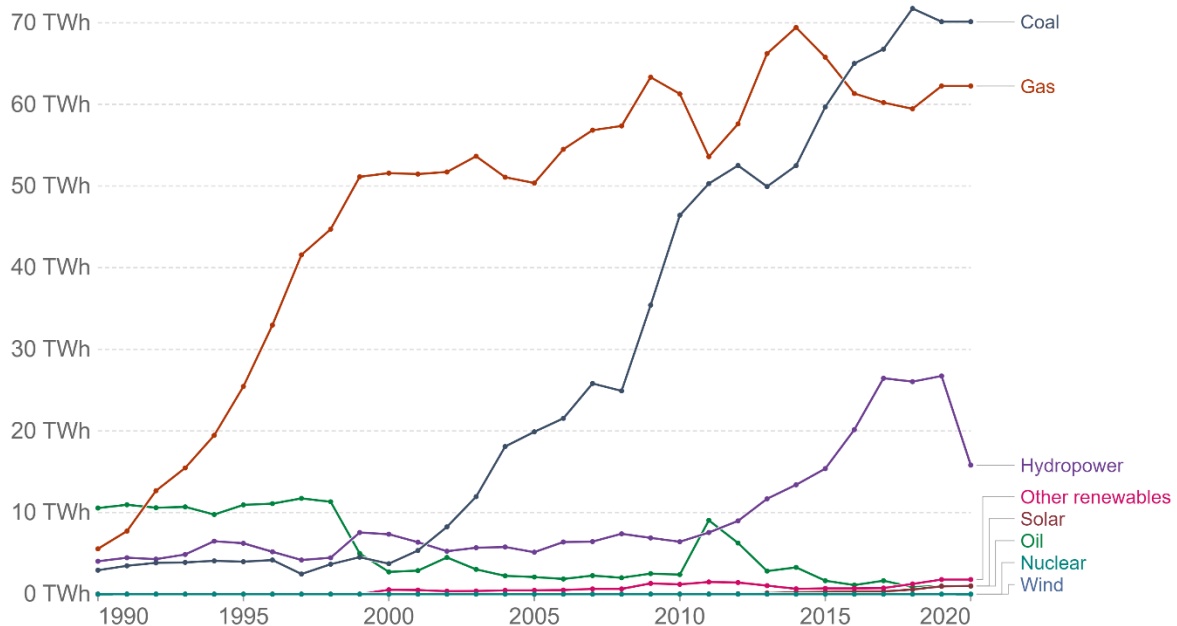
The government has also played a part in tackling this issue, with Malaysia ratifying the United Nations Framework Convention on Climate Change in 1994, and the Kyoto Protocol in 2002, along with the Paris Agreement in 2016, ^[6] where Malaysia and 195 other signatories agreed to meet the target of limiting global warming to 1.5°C. Policies such as these legally bind Malaysia to work in favour of addressing climate change, encouraging more useful adaptation and mitigation measures to be introduced. One of the goals in the Paris Agreement, for example, is to reduce emissions as soon as possible and reach net-zero carbon emissions (or carbon neutrality) by the middle of the 21st century. ^[10] Hence, to meet the goal of carbon neutrality by 2050, the government must work on a plan with emphasis on both adaptation and mitigation measures. ^[11]

Mitigation measures are actions that are taken to reduce and curb greenhouse gas emissions and attends to the causes of climate change. ^[12] Various measures have been taken by the government, a few major ones being the 12th Malaysia Plan (12MP) which includes mitigation measures such as no longer building new coal power plants and implementing carbon pricing and carbon tax. These measures will encourage polluters to reduce the combustion of fossil fuels, thus reducing emissions. ^[13]

However, I suggest that they should not stop there. Measures such as large-scale reforestation and afforestation can also help mitigate climate change. Reforestation, which is the process of replanting an area with trees, and afforestation, which means establishing a forest, especially on land not previously forested, are both very green and effective ways of mitigation. The increase of trees in the ecosystem removes carbon dioxide from the atmosphere and are carbon sinks; cycling damaging carbon out of the atmosphere and transforming it into biomass through photosynthesis. ^[14] Furthermore, it is a countermeasure to deforestation, an issue that remains unsolved in our country. Between 1990 and 2010, Malaysia lost 8.6% of its forest cover due to deforestation, ^[15] a staggering amount that results in loss of biodiversity, forests and becomes a contributor to climate change. Though considerable financial gain will be earned from logging and land clearing for palm oil reserves, this comes at the cost of increase in carbon emissions through production and an onslaught of natural disasters (such as runoffs and floods) due to the lack of roots to stabilise the ground. Through efforts of reforestation and afforestation, these issues can be countered.

Malaysia's location in the equatorial zone makes the production of energy from renewable sources, especially through solar and the existing hydroelectric energy, an inviting prospect. Renewable energy is collected from renewable resources that are naturally replenished on a human timescale. This allows the supply to be virtually inexhaustible, and reduces carbon emissions through reduction in fossil fuels energy production. Steps towards renewable energy have already been taken, with the government announcing a target of 20% renewable energy by 2025. However, most renewable energy in Malaysia comes from hydropower which has increased from 5% in 2010 to 17% in 2017. ^[6] As Malaysia continues along this road, we should not lose focus on other renewables such as solar and biomass energy as well. As of 2021, Malaysia is one of the major producers of solar panels in the world, but ironically it has yet to fully capitalize for uses domestically. ^[16] Malaysia's electrical generation primarily comes from fossil fuels, with over 44% of electricity was produced from burning coal and 38% from natural gas in 2017. ^[6] Thus by replacing fossil fuels and switching to renewables, Malaysia will reduce greenhouse gas emissions from the energy sector significantly.

Electricity production by source, Malaysia



Source: Our World in Data based on BP Statistical Review of World Energy, Ember Global Electricity Review (2022) & Ember European Electricity Review (2022)
 Note: 'Other renewables' includes biomass, waste, geothermal and wave and tidal energy.
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The graph above shows the electricity production by source in Malaysia, with coal and gas leading the chart as the top 2 highest electricity sources. Hydropower and other renewables lag behind, each producing 30 TWh or lower. Fossil fuels such as coal and gas remain the main sources of energy in Malaysia.

In the past, adaptation plans take a backseat to mitigation plans as most countries focus their resources on fixing the problem once and for all, not leaving much thought for the consequences of the problem as it happens. Adaptation measures are based on reducing vulnerability to the effects of climate change, thus addressing its impacts. ^[12] This is vital to avoid the loss of lives, infrastructure, biodiversity, history and our identity. Most of the effects of mitigation will only be seen in the long-term, and we must first survive the ride before we reach the light at the end of the tunnel. Thus, adaptation measures must coexist with the carrying out of mitigation measures.

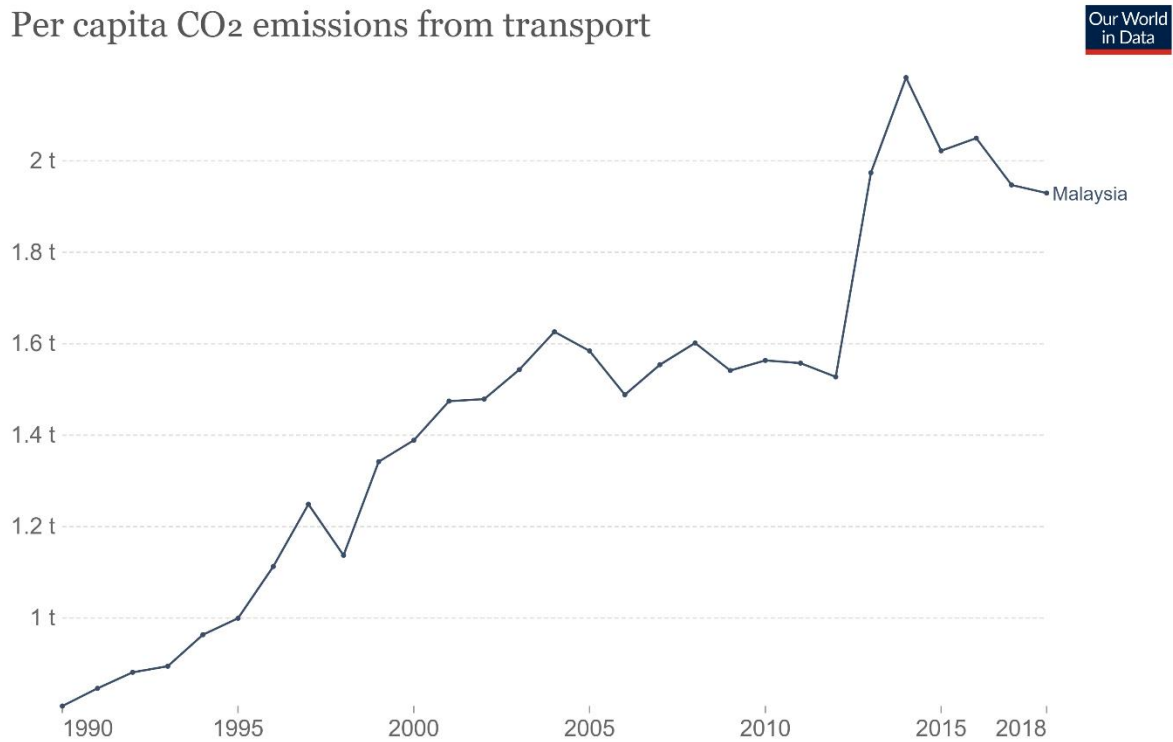
Malaysia is among the countries with the highest urban populations living in low-elevation coastal zones, thus the risks that come with sea levels rising and coastline erosion is high. These effects will inevitably cause a huge loss of value in land and infrastructure with waters inundating coastal towns, economic activities with the drop in fishing and other maritime economic activities done by locals, as well as the need for massive population relocation as homes become flooded. ^[4] Consequences of this can already be seen, when a massive flood in the coastal states of Terengganu, Pahang, Kelantan and Perak affected thousands of homes in 2014, with 60,000 people evacuating their homes for safe shelter. This caused major economic and health impacts, with damage estimated at a staggering RM 1 billion. ^[4]

Thus, the government should invest in coastal adaptation measures, particularly to adapt to the impacts of climate change such as coastal erosion and sea level rise. One relevant category of approaches available for the government to help coastal communities adapt to the impacts of climate change is protection of people, property, and infrastructure. This can be further divided into two measures, "hard" measures such as building seawalls, sea dikes and other measures to protect critical infrastructure. This will reduce the impact of rising sea levels on buildings, lessening property damage and protecting its inhabitants. "Soft" measures are also increasingly favoured, achieved by enhancing coastal vegetation and other coastal management programs to reduce erosion and

enhance the coast as a barrier to storm surges. This is green and efficient way to adapt to climate change by enhancing existing features to help the cause. When measures such as these are introduced and carried out at a local level (with national support), job opportunities for locals will increase. This will help boost the area’s economy, providing income and strengthen the bond of the community.

Another effective adaptation measure is for the government to improve upon the facility locations and infrastructure, making it more secure, robust and durable towards climate change. Some efforts have already started, with the building of the SMART Tunnel in Kuala Lumpur, intended to withstand a surplus of water during heavy rain, and rain catchment areas in Zoo Negara, Ampang. ^[18] These adaptations help handle an excess amount of water during flooding and unpredictable heavy rain, both effects of climate change. However there is always room for more improvement. The government should invest in maintaining safe and usable bicycle lanes, pavements, and roads to encourage citizens to walk instead of defaulting to driving, which emits carbon. In fact, carbon dioxide emissions from transport has increased in recent years, nearing 2 tonnes per capita in the past couple years (refer to graph). This can also be resolved with increasing public transportation services such as opening more train lines and planning more efficient bus routes to reduce carbon emissions.

Per capita CO₂ emissions from transport



Source: CO₂ emissions by sector (CAIT)
 Note: International aviation and shipping emissions are not included.

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Climate change is a global problem, with local effects, where both mitigation and adaptation plans are equally important to tackle climate change. Joint efforts from everyone, citizens, governments, opposing countries, is needed to lessen the impacts and achieve the goal set by the Paris Agreement. After all, this is the only home we have.

(2000 words)

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