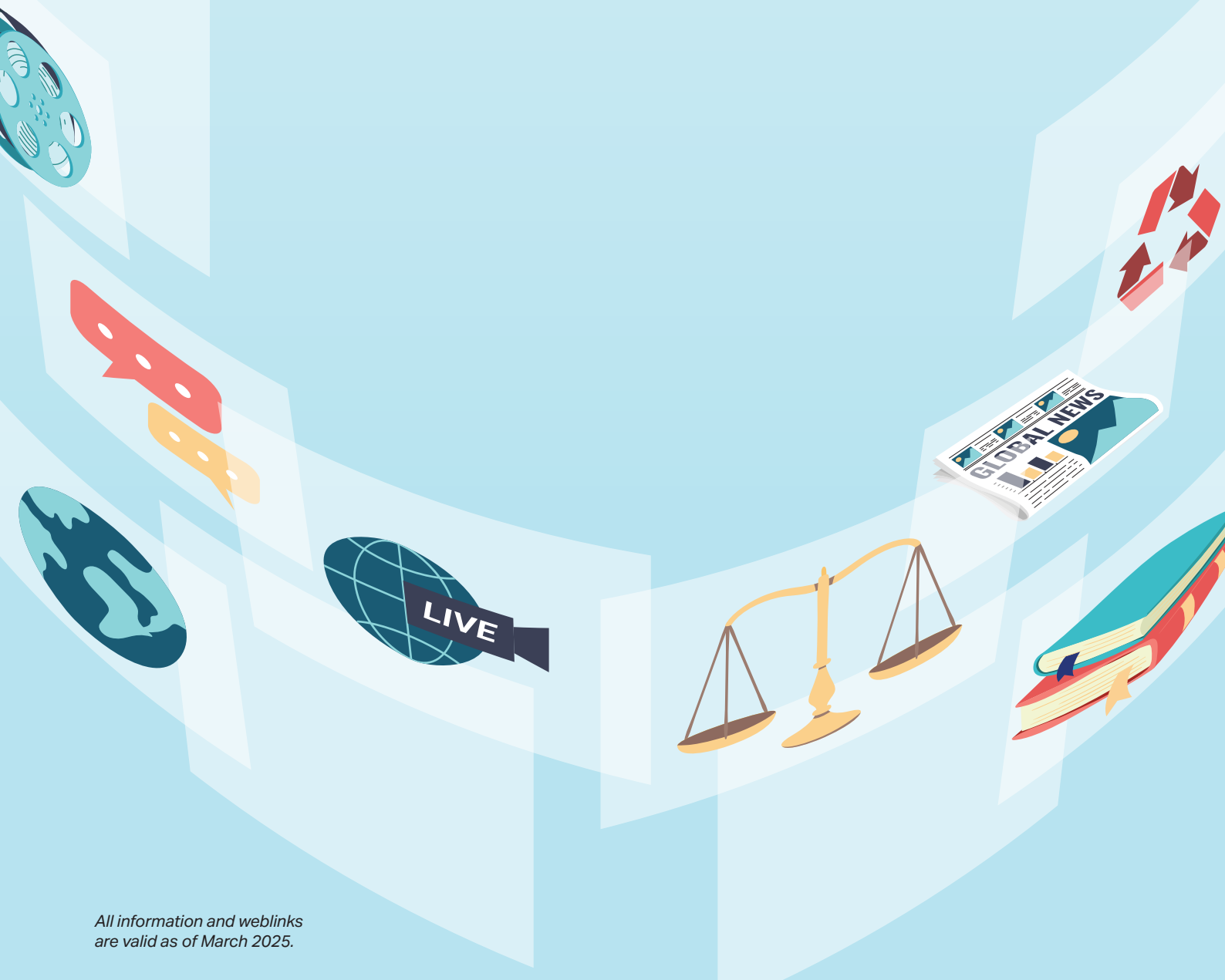
Read to be SURE

Volume 4—2024/25

Issue 2

CLIMATE CHANGE



All information and weblinks are valid as of March 2025.

Climate Change

Singapore's weather has been erratic lately; it can change from intense heat to heavy downpours. The unpredictable weather, along with the pressures of urban living, may soon take a toll on our mental health. Extreme weather changes caused by climate change contribute to rising climate anxiety (also known as eco-anxiety), causing more and more individuals to experience panic, worry, and fear about the consequences and uncertainties associated with it.

One way we can tackle climate change is by minimising or preventing the release of greenhouse gases. This strategy is known as mitigation and we can achieve this by switching to renewable energy, improving energy efficiency, and protecting our forests and ecosystems. In Singapore, our climate mitigation efforts focus on four key thrusts: helping businesses become greener, investing in low-carbon technologies, fostering international collaboration, and adopting low-carbon practices. A carbon tax plays a big part in driving this transition. Individually, we can contribute to mitigation by reducing our carbon footprint through actions such as using the fan instead of air-conditioning, and taking public transport instead of a private vehicle.

Unfortunately, even with rapid decarbonisation, we will not be able to avoid significant climate impacts until 2040. This is due to past and current emissions. Furthermore, mitigation efforts such as carbon offsetting are found to have little effect on the atmosphere, while global carbon sequestration efforts currently remove only a small fraction of annual emissions.

Another strategy we can employ is adaptation. It involves addressing the effects of climate change that are already occurring or expected to happen. To reduce or minimise our vulnerability to these impacts, we need to implement a wide range of measures. Examples include large-scale infrastructure changes, like building defences to protect against sea-level rise and extreme heat. Individually, we can also play our part. Being responsible in our food and water consumption makes Singapore more resilient to climate shocks. Adaptation is particularly important for safeguarding vulnerable groups, such as geographically at-risk and low-income communities, people with disabilities, children, women, and the elderly. Here in Singapore, our adaptation approaches focuses on protecting our coastline, improving drainage, securing water resources and enhancing flood resilience.

Adaptation may help us build resilience against climate change. But, those measures might be inadequate. According to a report by the Intergovernmental Panel on Climate Change (IPCC), many "are not necessarily effective" and cannot entirely prevent losses and damages, which are unevenly distributed globally. The global adaptation response has been slow and fragmented, and usually focused only on specific sectors of the economy.

So, which is more important, mitigation or adaptation? Let's hear what people think:

So, should we mitigate or adapt?

Mitigation tackles the root cause of climate change.

Effective mitigation strategies require concerted international effort.

Every country needs to play its part in addressing climate change. International efforts such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement foster international cooperation to combat climate change and create a sustainable future.

For example, as part of its Paris Agreement commitment, Singapore is lowering its carbon footprint through renewable energy, carbon taxes, and electric vehicles. However, to effectively combat climate change, significant global action is required, especially from major emitters like China, the United States, and India, which collectively account for more than 53% of global emissions in 2023.

Mitigation efforts take time to implement and may overlook immediate risks to communities.

These efforts are often hindered by deep-rooted dependency on fossil fuels and the effects will only be evident in the long term.

The move towards decarbonisation and renewable energy is also increasing the need for rare earth elements like copper, lithium, nickel, cobalt, and rare earth metals. The lengthy timeline for new mining projects to become operational could create supply chain bottlenecks for decarbonisation efforts. Moreover, the extraction of these minerals potentially create supply chain vulnerabilities and geopolitical tensions, lead to environmental degradation, and negatively impact miners' health.

Adaptation deals with the climate change we fail to prevent.

Cities can develop their own adaptation strategies.

By focusing on local vulnerabilities, this approach enables the development and implementation of targeted measures that effectively address the unique needs of each city. These measures may subsequently be implemented by businesses, households, and individuals.

For example, Singapore is building Long Island as part of its coastal protection and has diversified its water resources to include weather-resilient sources like NEWater and desalinated water to ensure water security. Additionally, the Cooling Singapore 2.0 project aims to tackle the country's increasing temperatures, which affect low-income families more.

Adaptation focuses on immediately adjusting current systems and infrastructure to respond to climate threats more swiftly.

For example, cities can reduce local climate impacts by enhancing drainage systems and investing in flood- and storm-resilient buildings. In Netherlands, the Room for the River initiative allows rivers to overflow in designated areas to help prevent urban flooding. Meanwhile, Green Bus Stops in Poland are designed to help combat the Urban Heat Island effect (UHI) by using rainwater.

However, with increased global warming the effectiveness of many adaptation options declines. Cities also need to possess the technical expertise to evaluate hazards, prioritise risks, and measure the expenses and potential for reducing risks.

So, should we mitigate or adapt?

Mitigation tackles the root cause of climate change.

The results of mitigation are global and far-reaching.

Mitigation efforts, such as shifting to renewable energy like solar, wind, and other clean energies, help reduce carbon emissions. This is crucial for keeping the global temperature rise to below 1.5°C. Keeping to this limit will lead to fewer extreme weather events, reduced sea level rise, and fewer food and water shortages worldwide.

Furthermore, effective mitigation can lead to enhanced biodiversity and ecosystem resilience, which are crucial for sustaining human livelihoods and natural resources globally.

Adaptation deals with the climate change we fail to prevent.

Adaptation benefits are local.

As the strategies are tailored to local needs and conditions, they lead to immediate benefits for local populations such as improved infrastructure, public health, and economic opportunities. These local actions not only address urgent climate impacts and enhance community resilience but also provide additional benefits such as improved biodiversity, better air quality, and enhanced food security, which contribute to overall community well-being and sustainability.

Or can we pursue both?

Both approaches contribute to addressing climate change, but no single option is adequate on its own. Mitigation and adaptation are complementary strategies, and a balanced approach is essential for building a resilient and sustainable future.

Mitigation focuses on addressing the fundamental causes of climate change to prevent future risks, while adaptation addresses current and pressing vulnerabilities we face today. Mitigation benefits future generations, whereas adaptation helps vulnerable communities now. When implemented together, they can create synergies that amplify their benefits, leading to more effective climate action.

For instance, investing in renewable energy help reduce greenhouse gas emissions, thereby improving air quality. At the same time, ecosystem-based adaptation initiatives can simultaneously enhance carbon storage and protect biodiversity, thus contributing to both mitigation and adaptation goals. For example, in addition to serving as vital habitats for various species, mangroves in Singapore play an important part in carbon storage and provide coastal protection against rising sea levels. While Singapore's mangrove extent has unfortunately declined by more than 80 per cent between 1958 and 2014, there are ongoing efforts to preserve and restore our mangroves.

Let's hear our guest speakers weigh in on this issue:

Recommended Resources

Explore the resources below to learn more about climate action.

Video

NowThis Earth, "Adaptation vs. Mitigation Climate Change Solutions", YouTube, July 10, 2022, video, 2:44

Podcast

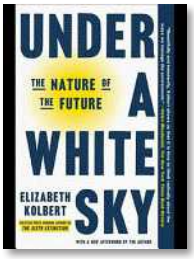
"The Science Behind Climate Adaptation with Battelle". Produced by Jesse Keenan. America Adapts — *The Climate Change Podcast*, August 26, 2024. Podcast, 60:11.

"Climate Podcasters: Adaptation Tech and Finance/ Art and Activism". *The Climate Change Podcast*, September 7, 2024. Podcast, 48:08..

Website

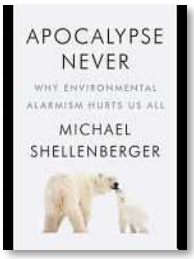
Ravi Chidambaram and Parag Khanna. "It's Time to Invest in Climate Adaptation". *Harvard Business Review*, 1 August 2022.

NLB eBooks



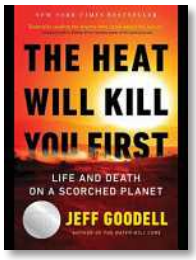
Under a White Sky: The Nature of the Future
Elizabeth Kolbert. *Under a White Sky: The Nature of the Future*. New York: Crown, 2021.

Retrieved from OverDrive. (myLibrary ID is required to access the eBook).



Apocalypse Never: Why Environmental Alarmism Hurts Us All
Michael Shellenberger. *Apocalypse Never: Why Environmental Alarmism Hurts Us All*. New York: HarperCollins, 2020.

Retrieved from OverDrive. (myLibrary ID is required to access the eBook)..



The Heat Will Kill You First: Life and Death on a Scorched Planet
Jeff Goodell. *The Heat Will Kill You First: Life and Death on a Scorched Planet*. New York: Little Brown and Company, 2023.

Retrieved from OverDrive. (myLibrary ID is required to access the eBook).

Read to be SURE (RTBS) is part of NLB's Libraries and Archives Blueprint 2025 (LAB25). RTBS aims to educate and inform the public on trending topics through a combination of curated content and accompanying programmes. By exploring multiple perspectives on these topics, readers and participants will benefit from a balanced and credible knowledge base.