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# My Say: New rhythms for meeting climate challenges

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Amid the recent heat wave, flash floods and catastrophic torrents that swept several states at the end of 2021 and early 2022, we experienced the acute impact of climate

change. The Department of Statistics Malaysia put the total amount of losses from floods and landslides at RM6.1 billion during this period alone.

Thousands were stranded for hours. Some lost their lives. In Selangor alone, there were 18 reported landslides. Such disasters take a toll on the nation's socioeconomy.

Mitigating the effects of climate change is a very complex exercise involving many instruments of scientific knowledge and information technology, and yet one must harmonise this with sociological understanding and moral reasons.

Even as we are at the very nascent stages of navigating our way out from the many impacts of the pandemic, the time is also now for Malaysia to nurture solutions to our climate problems with conviction. And fast.

Beyond the planet's sustainability, the World Economic Forum in 2020 suggested that a country's response to megatrends, such as tech breakthroughs and the risks of climate change, can dictate its long-term success. Additionally, one of the most consistent findings of macroeconomics is that innovation drives economies and raises wages.

**The beat of a new drum: An interdisciplinary approach with the best minds**

The terms "multi-stakeholder" and "public-private partnerships" started buzzing in the 2000s. These days, "interdisciplinary collaboration" is humming — denoting how complex public issues are best resolved by bringing together experts from varied disciplines such as ecologists, geologists and slope engineers, from academia, corporate, government and the public spheres. Only this time, we are expected to cadence — faster, better, together. The availability and proliferation of information, larger and more extensive technology networks as well as high-powered super computers processing massive volumes of data in real time make this possible.

One of my interests is in the area of photonics — the branch of technology concerned with the properties and transmission of photons; for example, in fibre optics.

With my research team at Universiti Malaya, we have been studying ways to build optical sensors for landslides. This is to detect the movement of soil, which then forms an early warning system so people can move away in time or respond to mitigate an impending disaster.

But if physicists worked alone, we could not develop this technology. In this landslide detection system, we pulled in civil engineers who understand slopes and geologists

who know how to detect the earliest movement of soil. Then we corralled electrical engineers to design the sensor system and we piped in the physicists to design the optic system.

In this ongoing effort, we worked closely with partners from City University in London, jointly publishing papers and producing what we believe to be a viable product solution. We are awaiting a pilot run of this innovation, birthed through an interdisciplinary collaboration.

In another example, let's consider our dependence on clean water to support our daily lives and for agriculture. It is possible to create an optical sensor to detect effluents in raw water. Air Selangor has had multiple issues with illegal dumping of toxic waste into its water catchment areas. Testing water samples the conventional way is time-consuming. By the time the test results are ready, the toxic effluents may have already entered the water treatment plant, requiring it to be shut down, leading to water disruption.

Optical fibres offer a viable solution as they can detect contaminants at source quickly, before the treatment plants are affected. This technology can monitor all the points along the river. It can also detect hazardous contaminants immediately and even pinpoint which factory committed the misdemeanour. For such a technology to be fully developed and deployed, we would need chemistry experts, optics experts, engineers and river system experts.

When great minds converge, great innovation happens and we can create better and more efficient solutions for our nation's problems.

Many in the pure and applied sciences faculties in local universities are starting to reach out across disciplines to fold in the arts and social sciences to address issues that a classic one-dimensional approach would not. Government agencies such as the Malaysian Research Accelerator for Technology and Innovation (MRANTI) offer a great platform for multi-sectoral and multi-stakeholder collaboration — enabling more products to emerge out of the laboratories into real life.

But for change to happen, more needs to be done.

**The rise of a new tune: An intersection of skills and talent**

Community and informal connections will be the impetus for colossal impact — because as the thinkers conjure plans and strategies, it is the movers and shakers who will move the needle on climate change.

Core to this is a sizeable talent pool who can think and work between disciplines.

Neri Oxman is a Massachusetts Institute of Technology (MIT) lecturer who is the perfect example of being multi-skilled. In her Netflix interview, Abstract: The Art of Design, she explains how she operates at the intersection of technology and biology, architecture and design.

Oxman, who dropped out of medical school to train as an architect, pioneered the field of material ecology. Her team designs objects, products, structures and tools across scales, from large-scale to nanoscale, made of a single part with no seams, combining different materials and varying its properties. Instead of consuming nature, she is showing the world how to design our way out of materials that are destructive to the earth.

Oxman and her team are developing objects from completely biodegradable materials by mimicking nature. They believe nature should be the single client of design and engineering.

While the age of automation, artificial intelligence, robotics and nanotechnology is boosting the demand for such graduates, a surprising result of research by the World Economic Forum shows that demand for social, emotional and higher cognitive skills will also grow.

Scientists and accountants, for instance, will need to embody more emotional intelligence to drive change. Radiologists, for example, will need a better appreciation of risk communication to be able to help communities practically.

Shaping talent with such well-rounded skills will feature heavily especially in the future.

**The call for a new harmony: An intergenerational assignment**

Another important aspect for transformation is to take on a view of how different generations can work smartly with each other.

The concept of “intergenerational justice” was first said to have been deliberated at the Paris Agreement in the United Nations Framework Convention on Climate Change (UNFCCC) in 2016.

Intergenerational justice offers a compelling raison d’être, for purpose-led action. It helps communities, governments and corporations to fast-track climate mitigation strategies and pollution reduction strategies to be implemented in the present to safeguard our planet and future generations.

**It provides a singular moral reason why: We only have one Earth.**

When we combine this heart of the matter with the knowledge of experienced scientists, the skills of engineers and architects and the creative genius of artists, with the bold, ambitious and agile young workforce, we can do things we could not before.

Over the past few years, the Ministry of Education (MoE), together with the Ministry of Science, Technology and Innovation (MOSTI) have upped the ante for both formal and informal learning of science, technology, engineering and mathematics. Many planet-focused themed competitions, exhibitions and conferences have been driving the imagination and competencies of students to problem-solve to save our planet.

Parents, grandparents and teachers all have a role to play in this solution — inculcating love for the environment, leveraging the many programmes and infrastructure available to shape the best minds, bravest hearts and biggest hands to protect our heritage, our future.

It is a very interesting time, when we actually have the necessary confluence of skills and tools to change the way we interact with nature.

Imagine the legacy we would leave for future societies if we rethink our relationship with the planet now, so that both humanity and the biodiversity, which we so depend on, do not just survive but thrive for another million light years. I, for one, love the sound of that.

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