

# Charting an ambitious path

**Natural Resources and Environmental Sustainability Minister Nik Nazmi Ahmad says Malaysia is creating a structure and accountable framework to achieve net-zero emissions by 2050.**

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## **Farming with less harm**

The company blends science, digital tools, and education to drive environmentally responsible farming.

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## **Setting bold climate goals**

Malaysia stands ready to lead by example, championing a future defined by inclusivity, innovation, and net-zero ambition. **p10**

## **Highway through the heart**

How Avenida Liberdade endangers the Amazon. **p14**





# Lessons from Japan

The concept of a “maintenance culture” encompasses not only routine repairs but also proactive measures.

**I**N January 2025, we visited Japan for work. One of our most striking observations was Japan’s approach to preserving its historic trains - some of which continue to operate in their original form. In contrast, others have been restored, upgraded, or modernised with newer components.

This thoughtful approach enables passengers to experience the timeless aesthetic of classic railway vehicles while benefiting from modern advancements in safety, efficiency, and environmental sustainability.

Japan’s meticulous maintenance culture stood out to us, prompting a closer look at the philosophies and practices that have kept these trains running smoothly for decades. What we discovered was more than just an effective system of upkeep - it reflected a deeply ingrained mindset that emphasises sustainability, resourcefulness, and long-term planning.

This philosophy provides valuable insights for railway management and broader infrastructure maintenance, particularly in countries like Malaysia, where ongoing maintenance issues continue to challenge public services.

## PILLAR OF GREEN MOVEMENT

In Japan, the concept of a “maintenance culture” encompasses not only routine repairs but also proactive measures. It is a societal value rooted in proactive care, precision, and respect for resources. This mindset is particularly evident in Japan’s railway system, where maintenance extends beyond fixing problems to emphasise preservation, efficiency, and lifespan extension.

Preventive maintenance, regular inspections, and strategic upgrades ensure these trains remain functional and safe despite their age.

Japan’s success in railway preservation and modernisation does not rely solely on maintaining vintage trains in their original state. While some older models are carefully preserved for historical and tourism purposes, many undergo strategic upgrades to ensure continued operational functionality. These enhancements often include



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the integration of more efficient engines, the modernisation of electrical systems for improved performance, and interior refurbishments to enhance passenger comfort and accessibility (Mindur et al., 2024).

By striking a balance between heritage preservation and technological advancements, Japan ensures that classic trains remain a vital part of its modern railway network.

## MOTTAINAI

A key principle driving Japan’s maintenance culture is mottainai, a Japanese term that expresses re-

gret over waste and promotes the careful use of resources. This principle encourages reducing waste, reusing materials, and maximising the value of existing resources. Mottainai aligns closely with Islamic principles of stewardship (amanah) and responsibility. The Quran reminds believers to avoid wastefulness:

“... and do not go about spreading corruption in the land.” (Quran, Al-Baqarah, 2:60)

While mottainai emphasises resource efficiency, amanah expands this to include accountability and ethical responsibility in managing what we are entrusted with. By extending the life cycle of their trains, Japan demonstrates a practical sustainability model that resonates with these values.

## WIN-WIN MODEL

Japan’s donation of 17 decommissioned train cars to Thailand in 2022 reflects both environmental awareness and strategic asset management. While presented as an act of generosity, it also allowed Japan to avoid the costly and environmentally harmful process of scrapping.

For Thailand, the donation was a valuable gain. These well-maintained trains boosted service capacity and have since been used for tourism, attracting visitors and benefiting local economies (Wancharoen, 2022).

This win-win approach shows how sustainable practices can create value while reducing waste - a model that offers valuable insights into Malaysia’s infrastructure management.

## PRESERVATION VS. RENEWAL

While Japan’s dedication to preserving trains reflects a strong commitment to sustainability, its approach to residential housing presents a different perspective. Homes in Japan are often demolished and rebuilt after approximately 30 years, a practice influenced by evolving building codes, earthquake safety concerns, and a cultural preference for modern design (Berg, 2017).

This approach has sparked debate. While some view it as waste-

ful, others argue that it reflects Japan’s focus on safety, resilience, and adaptability in a country prone to natural disasters. Rather than being purely a matter of convenience or preference, this cycle of renewal is often seen as a proactive strategy to ensure structures meet current safety standards.

Ultimately, Japan’s contrasting approaches to trains and housing highlight that sustainability is not a one-size-fits-all concept. The key lies in assessing long-term value, safety, and functionality when deciding what to maintain and what to replace - a lesson that Malaysia can apply by preserving valuable assets while strategically upgrading those that require renewal.

## A WAKE-UP CALL

A strong maintenance culture is particularly relevant in Malaysia, where concerns over transportation infrastructure continue to grow. Issues such as malfunctioning air-conditioning units, broken toilets, and frequent delays have drawn criticism from the public and disrupted daily commutes.

Rather than addressing problems only when they arise, Malaysia could benefit from Japan’s proactive approach - one that emphasises regular inspections, preventive maintenance, and strategic long-term planning. Improving maintenance practices could significantly enhance the reliability and lifespan of Malaysia’s rail systems.

Malaysia’s maintenance challenges extend beyond the railway sector. Public infrastructure, parks, and cultural landmarks often suffer from neglect and inadequate upkeep.

For instance, Taman Tasik Titiwangsa, a central public park redeveloped as part of the KL River of Life project, has faced issues with unlicensed traders, cleanliness concerns, and poor waste management - raising concerns about its long-term sustainability. Similarly, Istana Budaya, Malaysia’s premier performing arts venue, has faced recurring maintenance challenges, including roof damage and delayed repairs.

This pattern reflects a standard “tak apa” (“it’s okay”) attitude,

where minor issues are overlooked until they escalate into larger problems (Frank, 2021). Adopting a more proactive, preservation-focused mindset - one that values sustainability and long-term asset care - could help break this cycle.

### AGEING NATION, AGEING INFRASTRUCTURE

Japan's commitment to maintenance is especially significant given its ageing population and infrastructure. Many of Japan's roads, bridges, and railway systems were built during its post-war economic boom and have now aged in tandem with its population. Instead of allowing these structures to deteriorate, Japan has prioritised careful maintenance and strategic upgrades to ensure they remain safe and efficient.

A notable example is the Shinkansen (bullet train) system, first introduced in 1964. While the

original 0 Series trains have since been retired, the Shinkansen network has remained a global model of reliability through continuous modernisation and the implementation of predictive maintenance strategies.

This ability to adapt while preserving core infrastructure has allowed Japan's transportation networks to thrive despite their age. This approach demonstrates that sustainability is not only about adopting new technologies - it's equally about maximising the value and lifespan of existing resources.

### MAINTENANCE ETHOS

Japan's strong maintenance culture is nurtured from an early age. Schools integrate cleaning duties into daily routines, encouraging students to develop responsibility and respect for their surroundings. Public campaigns such as the "Wasteful Ghost" (もったいない

お化け) initiative, launched in the 1980s, have also helped reinforce this mindset.

By using a ghost character to symbolise wasted resources, the campaign effectively taught children and adults the importance of minimising waste. Incorporating similar practices into Malaysia's education system could foster greater public awareness about the importance of maintenance and sustainability. Instilling these values early can help nurture a generation that takes pride in maintaining public assets.

### LEARNING FROM JAPAN

Japan's proactive maintenance culture holds significant relevance for Malaysia, particularly because Japan has already experienced what Malaysia is poised to face as its infrastructure matures.

Much of Japan's core infrastructure was constructed during its

post-war economic boom, similar to Malaysia's rapid development in recent decades. As Malaysia's infrastructure ages, the country will face increasing maintenance demands that are identical to those in Japan.

By adopting a proactive, long-term maintenance mindset, Malaysia can improve the reliability and sustainability of its public infrastructure. Preventive care, strategic planning, and public engagement can help ensure investments are preserved for future generations.

This shift requires collaboration between government authorities, public institutions, and everyday citizens. A strong maintenance culture is not just about preserving what we have today - it is about fulfilling our duty as stewards of resources, ensuring they remain valuable and functional for future generations.

# SUSTAINABILITY MINDSET

## *Lessons in Train Maintenance from Japan*



Transition from reactive repairs to preventive care and planning (**proactive maintenance**)

**Preserve cultural and historical value** while modernizing infrastructure.

**Repurpose outdated assets** for tourism, education, or community benefits

Address the "tak apa (it is fine) attitude by promoting **accountability and proactive care** to break the cycle of neglect.

Adopt resource efficiency, waste reduction, and **sustainable mindset and practices**.

Foster a sustainable mindset through **school programs and public campaigns**.