



SUNWAY
INSTITUTE *for*
GLOBAL STRATEGY &
COMPETITIVENESS



Redefining Competitiveness

**A FIVE-YEAR JOURNEY:
2021-2025**

Sunway Institute for Global Strategy
and Competitiveness

Sunway University

TABLE OF CONTENTS



The Argument

The Competitiveness Illusion	4
The Three Pillars & IGSC's DNA	13
IGSC's Role	19

Who We Are

IGSC at a Glance	39
IGSC's 5-Year Journey	49

Our Projects

Social Pillar	55
Environmental Pillar	63
Economic Pillar	67
IGSC Project Details	71

Publications

Books & Book Chapters	91
Journal Articles	97
Working & Position Papers	116
Conference Papers	119

Engagement & Events

Capacity Building

Staff & Students	138
PhD Students	145

Media Mentions

Way Forward: 2026 and Beyond

153

THE ARGUMENT

*Why Competitiveness Needs
Rethinking - and What We Are
Doing About It*



THE COMPETITIVENESS ILLUSION

An Evolved Model for a World That Has Changed

Let us start with something that might seem obvious but is worth saying plainly: competition is not the problem.

Human beings compete. Firms compete. Nations compete. They compete for customers, for talent, for markets, for resources, for influence. This is not a character flaw to be corrected or a tendency to be overcome. It is one of the most consistent and, in many respects, productive features of human behaviour. The competitive instinct has driven technological breakthroughs, lifted living standards, and produced innovations that would have seemed like science fiction to previous generations.

Any serious proposal for rethinking competitiveness has to begin by acknowledging this honestly, because if it does not, it deserves to be dismissed.

This is not an argument against competition. It is an argument that the world has been running the wrong mode of competition for too long, that the natural and social systems under this mode of competition are beginning to show signs of strain. Yet the mechanisms keeping us locked in that mode are structural rather than accidental, and they can be changed.





Extractive and Regenerative: Two Modes of Competing

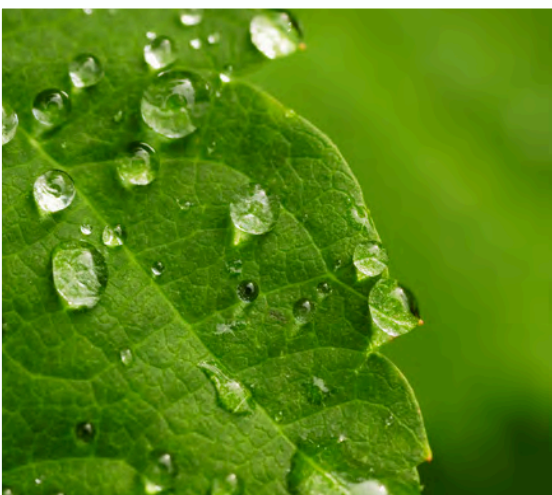
Every economic act draws on something. Resources, ecosystems, labour, knowledge, institutional trust, social cohesion — these are the substrate of competitive activity. The question that most competitive frameworks have never seriously asked is what your relationship is to the substrate you are drawing from.

Extractive

Regenerative

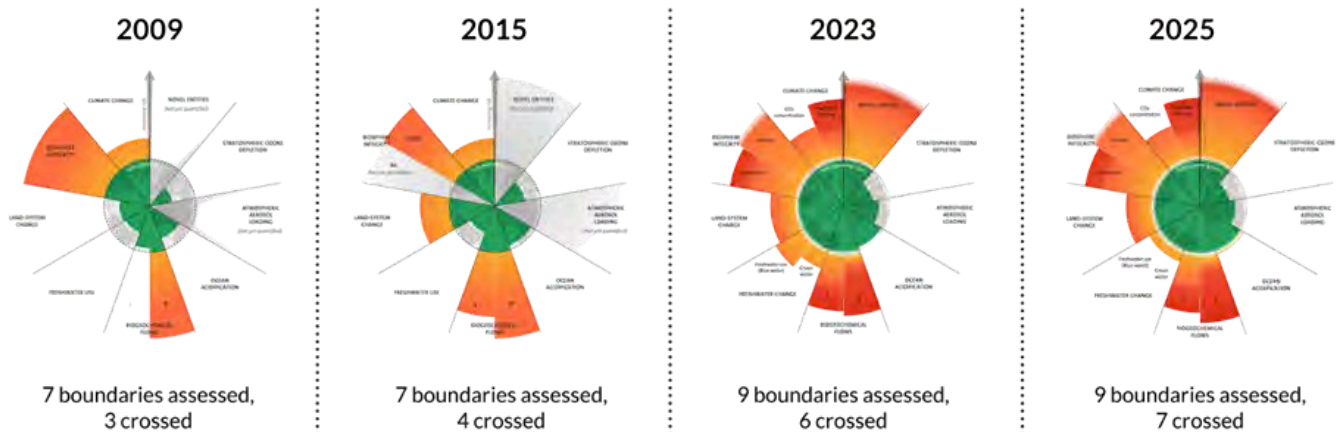
There are two fundamentally different answers, and they define two fundamentally different modes of competition.

Extractive competition draws from the substrate faster than it can regenerate. It treats natural systems, social infrastructure, and institutional quality as a stock to be consumed rather than a base to be maintained. It wins in the short term by exhausting what took generations to accumulate. The gains are real and often spectacular. The costs are real too, but they tend to be pushed outside the frame of what the competitive model counts, and onto timeframes longer than any current decision-maker will be held to account for.



Regenerative competition maintains or enhances the conditions from which future competitive activity is possible. Rather than simply taking from the substrate, it returns to it, invests in it, and manages it as the productive base on which continued competitive capacity depends. This is not altruism dressed up as strategy. It is strategy, plainly understood. A farmer who manages soil health, rotates crops, and protects water sources is not being kind to the earth. They are being rational about their long-term productive base. The farmer who extracts without replenishment produces more in the short term and nothing at all eventually.

The analogy extends further than agriculture. Every competitive system — a firm, an industry, a national economy — is farming something: a talent pool, a consumer base, a regulatory environment, an ecological system, a reservoir of social trust. The extractive competitor treats those things as a mine. The regenerative competitor treats them as a farm. Both are competing fiercely. Only one of them is competing without harming the future.



The evolution of the planetary boundaries framework. Licenced under CC BY-NC-ND 3.0 (Credit: Azote for Stockholm Resilience Centre, Stockholm University. Based on Sakschewski and Caesar et al. 2025, Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009).

The Substrate is Showing Cracks

The world has been running in extractive mode at industrial scale for the better part of a century, and the natural, social, and institutional systems that sustain competitive activity are beginning to register the accumulated cost.

The atmospheric systems that regulate climate and make agricultural production predictable have been absorbing carbon emissions well beyond their regenerative capacity. This is not a distant environmental problem. It is an accelerating economic risk, already repricing insurance, disrupting supply chains, and degrading the agricultural systems that feed a global workforce. The ecological systems underpinning food security, freshwater supply, and raw material availability are under measurable and accelerating strain. Southeast Asia alone has lost significant proportions of its forest cover, mangrove systems, and coral reef integrity, each of which underwrites economic activity that no balance sheet has ever properly valued.

The social systems of trust, cohesion, and institutional legitimacy that make markets and contracts possible have been eroding across most economies, producing political instability, regulatory unpredictability, and the kind of social fracture that makes sustained long-term investment increasingly difficult to justify.

None of this is surprising to anyone paying attention. What is surprising is how little it has changed the operating assumptions of competitive strategy. The costs are still largely outside the frame. The horizon is still short. The mode is still extractive.

Understanding why requires looking at the mechanisms rather than the intentions.



Why We Are Stuck

The persistence of extractive competition is not primarily a failure of character or awareness. It is the predictable output of a system designed — through accounting standards, capital market structures, political incentive cycles, and trade rules — to reward two specific things: a narrow frame and a short horizon. Change those two parameters, and the mode can change. Leave them intact, and no amount of commitment, reporting, or voluntary good intention will shift the structural outcome.

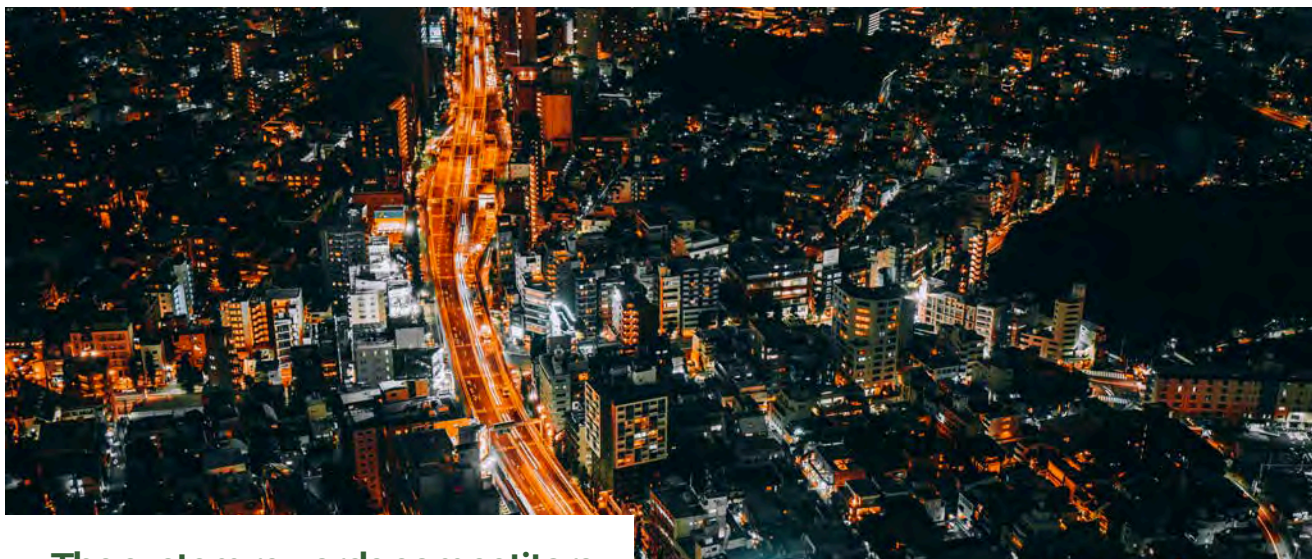
The frame is too narrow. ↗

The current competitive model draws its frame around the firm, the quarter, and the jurisdiction. Everything outside that frame — the carbon emitted into a shared atmosphere, the aquifer drawn down beyond its regenerative capacity, the social infrastructure eroded by decades of wage suppression, the institutional trust corroded by repeated corporate misconduct — is treated as someone else's problem.



The technical term is "externality," but that word makes these costs sound peripheral and incidental. They are neither.

The costs do not disappear because they sit outside the frame. They accumulate in the atmosphere, in depleted ecosystems, in the deteriorating health of communities, in the weary citizens who no longer believe that markets serve them. They are, in the most literal sense, a form of social and natural debt: obligations quietly accruing on behalf of future generations, future communities, and future ecosystems, without their knowledge or consent. And like any compounding debt, they look manageable for a long time before they do not.



The system rewards competitors who keep their frame narrow because a narrow frame produces cleaner numbers and lower reported costs.

A business that fully accounts for its environmental and social footprint will, in most current markets, show worse financial performance than a competitor that does not — not because it is performing worse in any complete sense, but because the complete accounting is not what is being measured. This is not corruption, merely a design outcome. And it will persist until the frame is formally expanded through the mechanisms that govern competitive behaviour.

The horizon is too short.

Every institution that shapes competitive behaviour — the publicly listed corporation, the democratically elected government, the investment fund — is accountable to a constituency operating on a timescale shorter than the consequences it produces.

The CEO who authorises a decade of resource-intensive growth will be retired before the climate consequences arrive. The politician who approves a coal plant will be out of office before the flood. The fund manager who builds a portfolio on extractive assets will have moved to a different fund before those assets are stranded. This structural misalignment between the horizon of accountability and the horizon of consequence is the precise mechanism by which extractive competition perpetuates itself across generations of otherwise rational decision-makers.

The short horizon and the narrow frame reinforce each other in a way that makes the whole more durable than either part alone. A narrow frame makes the deferred costs invisible. A short horizon means those costs arrive after the decision-maker has moved on. Together, they constitute the structural foundation of extractive competition. Neither is an accident. Both are features of a system designed for a different era — one in which the natural substrate seemed inexhaustible, the social contract seemed stable, and the consequences of competitive decisions seemed to fall within a manageable radius of the people who made them.

None of those conditions hold today.

Why Good Intentions Have Not Been Enough

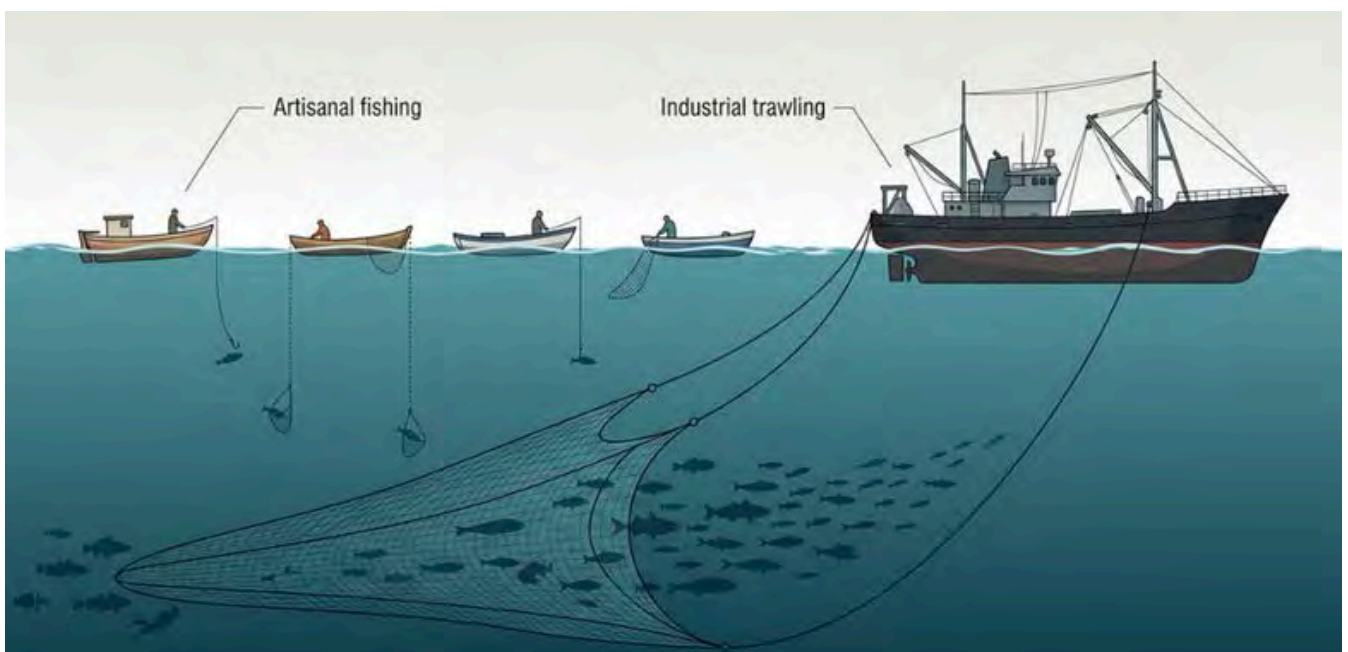
This analysis explains something that has genuinely puzzled observers of the sustainability movement for thirty years: why the gap between stated intention and actual systemic change has remained so persistent, despite the evident sincerity of many of the people involved.

We have had the Kyoto Protocol since 1997, the Sustainable Development Goals since 2015, the Paris Agreement since 2016. Thousands of corporate net-zero commitments have been made. Hundreds of ESG frameworks, sustainability ratings, and impact measurement tools have been developed. Boards have appointed Chief Sustainability Officers. Governments have set targets. And yet the underlying trends — atmospheric carbon, biodiversity loss, social inequality, institutional erosion — have continued in roughly the same direction at roughly the same pace throughout.

A cynic's response would be hypocrisy, that these commitments are not genuine. Sometimes that is true. But it is not the whole story, and it is not the most useful one, because it implies that replacing the hypocrites with sincere believers would solve the problem. It would not.

CEOs who authentically believe in climate action but whose compensation is tied to three-year total shareholder return, whose investors will sell if they miss a quarter, and whose competitors are not bearing the same costs, is not in a position to unilaterally shift modes. The system is holding them in extractive mode as surely as any deliberate choice. The frame and the horizon are structural, and structural problems require structural solutions. Individual virtue is necessary, but that alone is insufficient.

The Realist's Question: What About Bad Actors?



Anyone with experience of actual markets will raise a harder problem here. Even if well-intentioned firms and governments adopt better frames and longer horizons, there will always be actors who do not. The competitor in a lower-regulation jurisdiction. The state-backed enterprise operating without commercial constraints. The private equity fund structured to capture returns without bearing consequences. How does a regenerative model of competitiveness handle these realities?

If we are completely honest, it does not make them disappear. Competitive pressure is real. Malaysia operates in a region where major powers are competing for strategic influence in ways that have nothing to do with any framework for regenerative competitiveness, and pretending otherwise would not be credible.

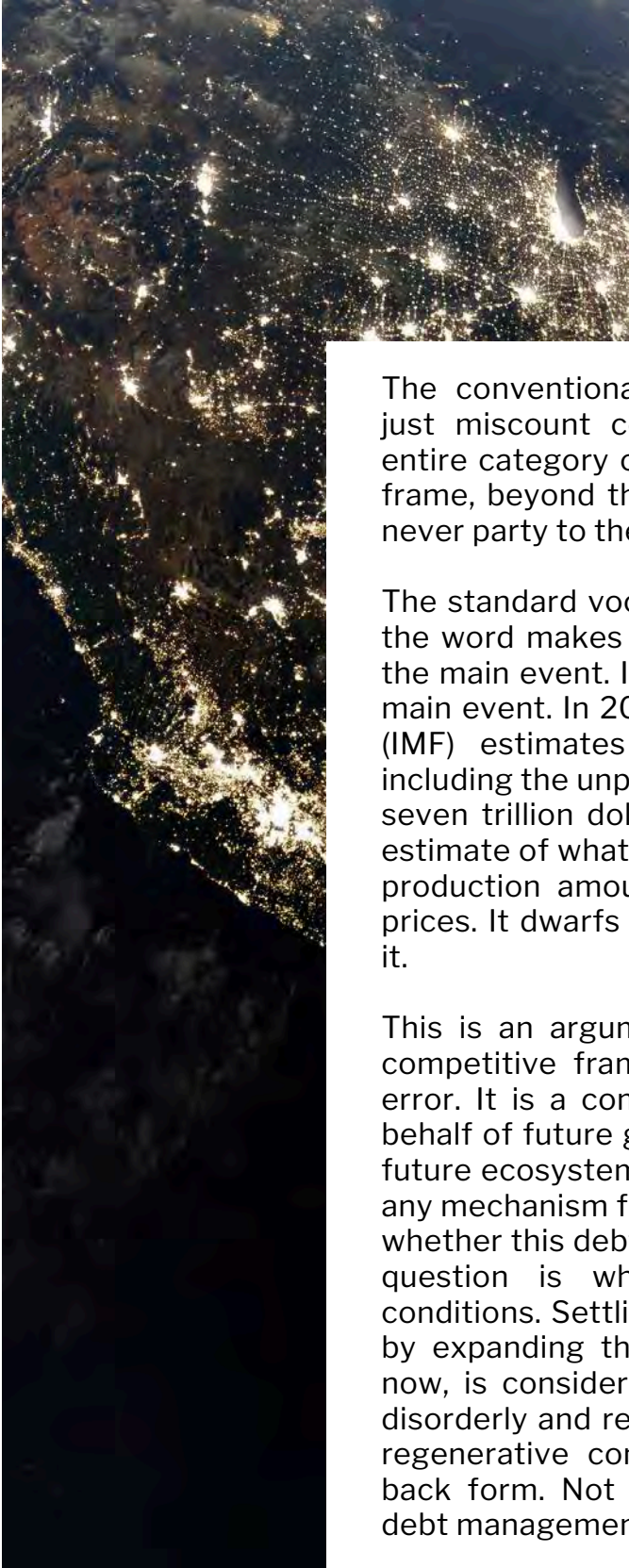
But the bad actor problem is frequently overstated as a reason for inaction, and three things are worth noting clearly.

First, the regulatory environment is starting to change the bad actor calculus. Extended Producer Responsibility schemes, carbon border adjustments, and deforestation regulations aren't voluntary frameworks — they establish legal precedent that firms are responsible for environmental and social outcomes across their supply chains, not just aware of them. This erodes the competitive advantage that non-compliance has historically provided: when carbon-intensive imports face border costs, when deforestation exposure blocks market access, when labour violations trigger legal liability, the cost advantage of externalisation narrows. These obligations cascade through procurement contracts and audit frameworks, turning MNC reporting requirements into supplier capability thresholds.

And the field is beginning to reward early movers: preferential financing for verified sustainable supply chains, procurement advantages for demonstrated credentials, trade agreements with sustainability chapters creating market access benefits. Responsibility for externalities is shifting from a cost to a precondition for market participation — and in some cases, a source of advantage.

Second, beyond regulation, the firms that sustain their position across decades are rarely those that extracted the most value in the shortest time. They tend to be those that invested in the conditions for continued competitive capability: the capabilities of their people, the trust of their customers, the quality of their institutional relationships, and the social licence that allows them to operate without constant political disruption. These are regenerative investments. They do not show up cleanly in a quarterly report. They show up in resilience, in brand equity, in the ability to attract and retain exceptional talent, and in the capacity to navigate crises without catastrophic reputational damage.

Finally, in genuinely zero-sum geopolitical competition — the kind that does not dissolve into softer framing — the countries that sustain their strategic position across generations tend to be those that invest in the substrate of their own competitive capability. Singapore's strategic indispensability in a contested region is not built on military power or natural resources. It is built on institutional quality, rule of law, and the depth of human capital that took decades to develop. South Korea's ability to compete in advanced semiconductors against vastly better-resourced state-backed rivals rests on a generation of investment in technical education and government-industry collaboration. Depleting your substrate to win the current round is not the best competitive approach. This conventional way of framing competitive advantage makes the next round unwinnable.



A More Complete Picture of Costs

The conventional competitive framework does not just miscount costs. It systematically excludes an entire category of them — those that fall outside the frame, beyond the horizon, or onto parties who were never party to the original decision.

The standard vocabulary calls these externalities, but the word makes them sound incidental, peripheral to the main event. In aggregate, they are larger than the main event. In 2023, the International Monetary Fund (IMF) estimates that global fossil fuel subsidies, including the unpriced cost of climate damage, exceed seven trillion dollars annually. That is the IMF's best estimate of what the social and natural debt of energy production amounts to, in a single year, at current prices. It dwarfs the profits of the industry producing it.

This is an argument about scale. What the current competitive frame is leaving out is not a rounding error. It is a compounding obligation — accruing on behalf of future generations, future communities, and future ecosystems, without their consent and without any mechanism for them to object. The question is not whether this debt will eventually be settled. It will. The question is who pays, when, and under what conditions. Settling it in an orderly and managed way, by expanding the frame and extending the horizon now, is considerably less costly than settling it in a disorderly and reactive way later. That is the case for regenerative competitiveness in its most stripped-back form. Not moral. Not idealistic. A question of debt management.

What Regenerative Competitiveness Actually Looks Like

The Sunway Institute for Global Strategy and Competitiveness (IGSC) was founded on a structurally specific proposition: that the extractive mode of competition is not inevitable, but it is the predictable output of a system with a frame that is too narrow and a horizon that is too short. Shifting from extractive to regenerative requires, above all, changing those two design parameters — expanding what counts and extending how far ahead we plan.

Regenerative competition can be fierce, innovative, and enormously productive.



In the long run, arguably more productive than its extractive counterpart, because it is competing for things that last and maintaining the conditions under which continued competitive activity remains possible. It does not shrink ambition. It redirects it toward the creation of conditions in which new value can continuously emerge, rather than toward the consumption of value that previous generations accumulated.

We are also honest about the limits of any single framework. There are domains where extractive dynamics apply in ways that a framework alone does not transform — certain commodity markets, aspects of geopolitical competition, short-duration financial markets.

We are not claiming to dissolve all competitive tensions. We are claiming something more modest and more consequential: that we can help expand the frame and extend the horizon for the majority of competitive decisions that shape the economies and societies we are trying to build.

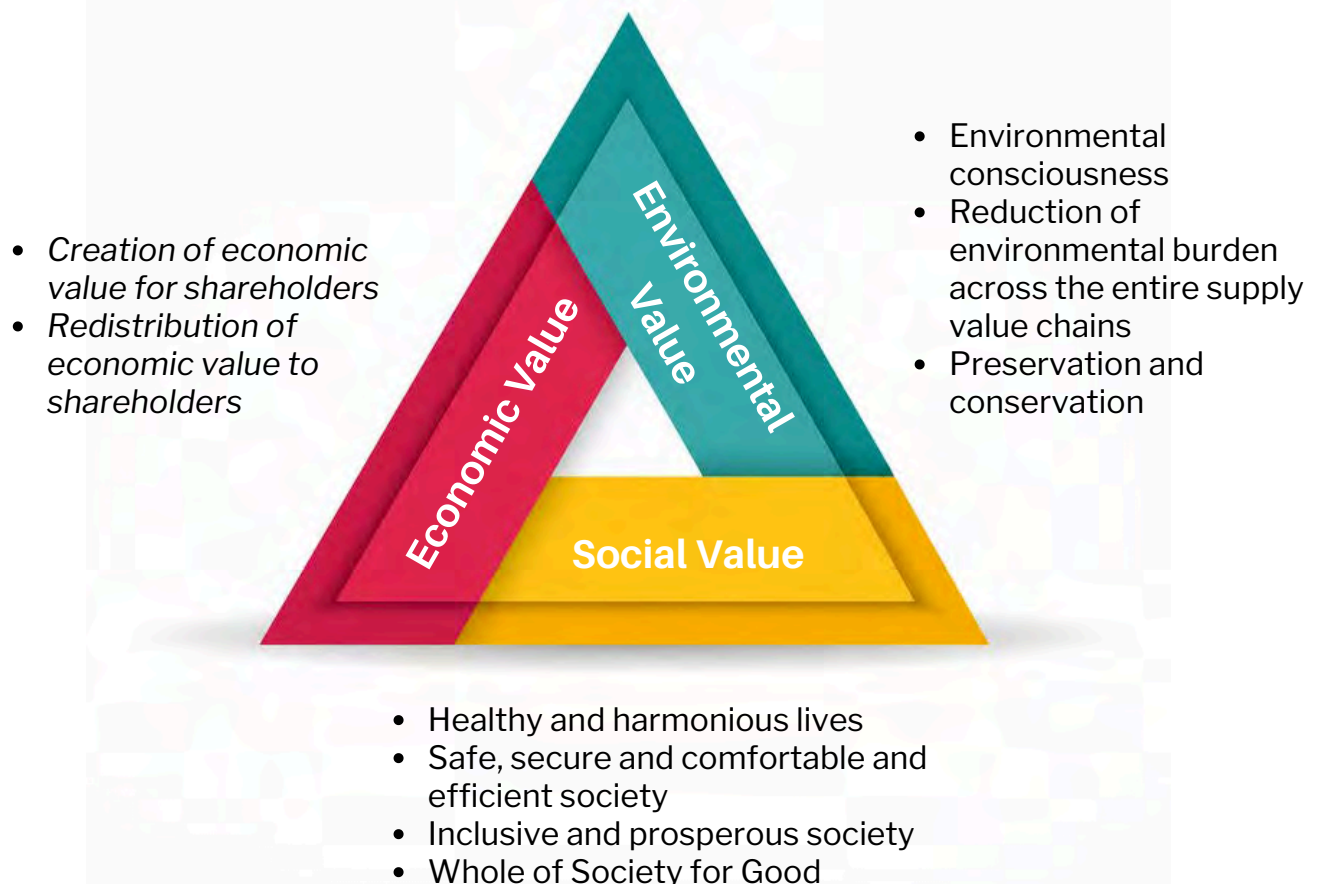
The following pages are the evidence that this is not a theoretical aspiration. It is a programme of work.

THE THREE PILLARS & IGSC'S DNA

A 3x3 Logic for Genuine Competitiveness

IGSC's intellectual foundation is built around what we think of as our DNA: a 3x3 logic that defines both what we are trying to achieve and how we work to achieve it. Three balanced outcomes. Three strategic orientations. Together, they form an integrated approach to competitiveness that is simultaneously more demanding and more honest than the one it seeks to evolve beyond.

Three Outcomes: Health and Well-Being Across All Three Systems



The three pillars of IGSC's model are not separate performance targets to be optimised independently. They are interdependent dimensions of a single system, and what holds them together is the concept of health and well-being, applied consistently across all three domains.



Economic Health and Well-Being is the capacity of an economy to generate wealth, employment, and opportunity in ways that are genuinely distributional, durable, and resilient to disruption. This is not the same as GDP growth. An economy can grow its headline output while concentrating the gains in ways that erode the consumer base sustaining it, degrading the workforce health underlying its productivity, and depleting the natural systems on which its agricultural and industrial production depends. Economic health, properly understood, requires asking not merely whether output is rising but whether the conditions for continued productive activity are being maintained or consumed.



Environmental Health and Well-Being is the integrity and regenerative capacity of the natural systems on which all economic and social activity depends: stable climate systems, productive soils and fisheries, clean water and air, functioning biodiversity, and the vast web of ecological services that human activity draws from and has, in many cases, treated as free. Environmental health is not a constraint on economic ambition. It is the substrate on which economic ambition operates. The geological reality is relevant here: economic performance rests on social equity, and social equity rests on environmental integrity. The layers cannot be reordered, and the bottom layer cannot be indefinitely depleted.



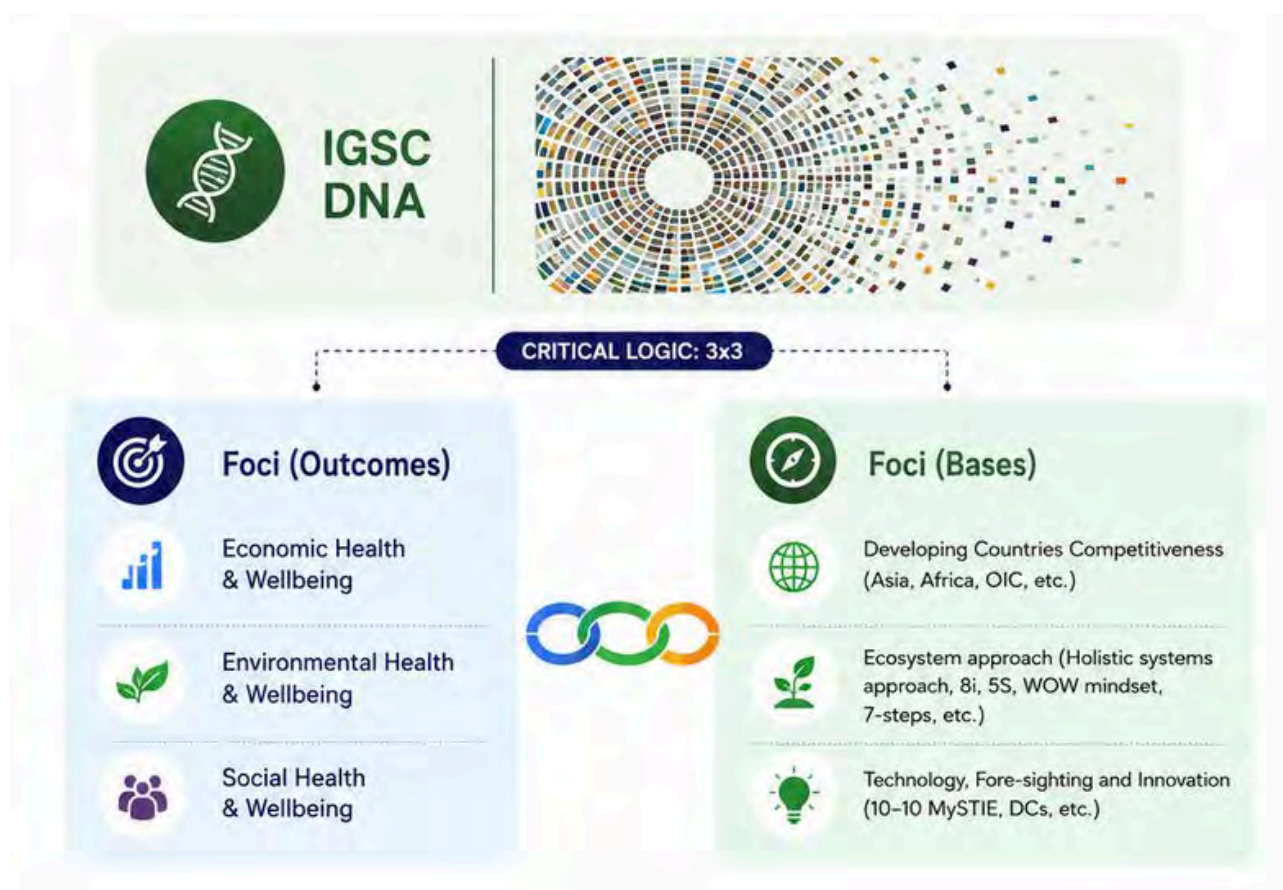
Social Health and Well-Being is the quality of the human systems — education, healthcare, institutional trust, civic engagement, social cohesion, and the conditions of inclusion and dignity that allow people to participate meaningfully in the economy and the political life of their communities. Social health is both an end in itself and an input to everything else. Economies with high social cohesion tend to be more innovative, more resilient to external shocks, more capable of the collective action that long-horizon challenges demand, and more attractive to the talent and investment that drive competitive advantage. The erosion of social well-being is not a soft externality. It is a hard competitive liability.

The discipline the three-pillar framework imposes is that it does not allow trade-offs to be hidden. A strategy that produces strong economic numbers by depleting environmental capital is not a balanced strategy — it is an extractive one that has found a way to keep its environmental costs outside the frame.

A policy that raises GDP while widening inequality is not achieving social well-being. The three-pillar lens forces the full picture into view, including the parts of it that more convenient accounting would prefer to leave in shadow.

Three Orientations: How IGSC Works

The three outcomes tell us what we are aiming for. The three strategic orientations tell us how IGSC works toward them, and what distinguishes our approach from other research and policy institutes working in adjacent spaces.



Developing Economies as the Primary Context. IGSC's work is grounded in the specific realities of developing and emerging economies across Asia, Africa, and South America, rather than in the conditions of advanced industrialised nations from which most global competitive frameworks have historically been derived. This is not merely a geographic preference. It is an intellectual and strategic commitment.

The dominant frameworks for national competitiveness were largely developed from the experience and data of wealthy, institutionally mature economies.

Applied to developing economies, they often produce prescriptions that are structurally inappropriate: governance reforms designed for conditions that do not yet exist, market mechanisms that require institutional infrastructure that has not been built, and efficiency targets that make sense in the absence of capacity constraints that remain very much present.

IGSC's frameworks are designed from the ground up for contexts where the institutional environment is still being formed, where the growth imperative is real and legitimate, where the urgency of poverty reduction creates genuine tensions with the long time-horizons of environmental management, and where the capacity for sophisticated regulatory implementation may be limited. These are not deficiencies on the way to becoming like advanced economies. They are the actual conditions within which competitive strategy must be designed. Building frameworks that are honest about those conditions, rather than frameworks derived elsewhere and applied awkwardly, is one of IGSC's most important intellectual commitments.

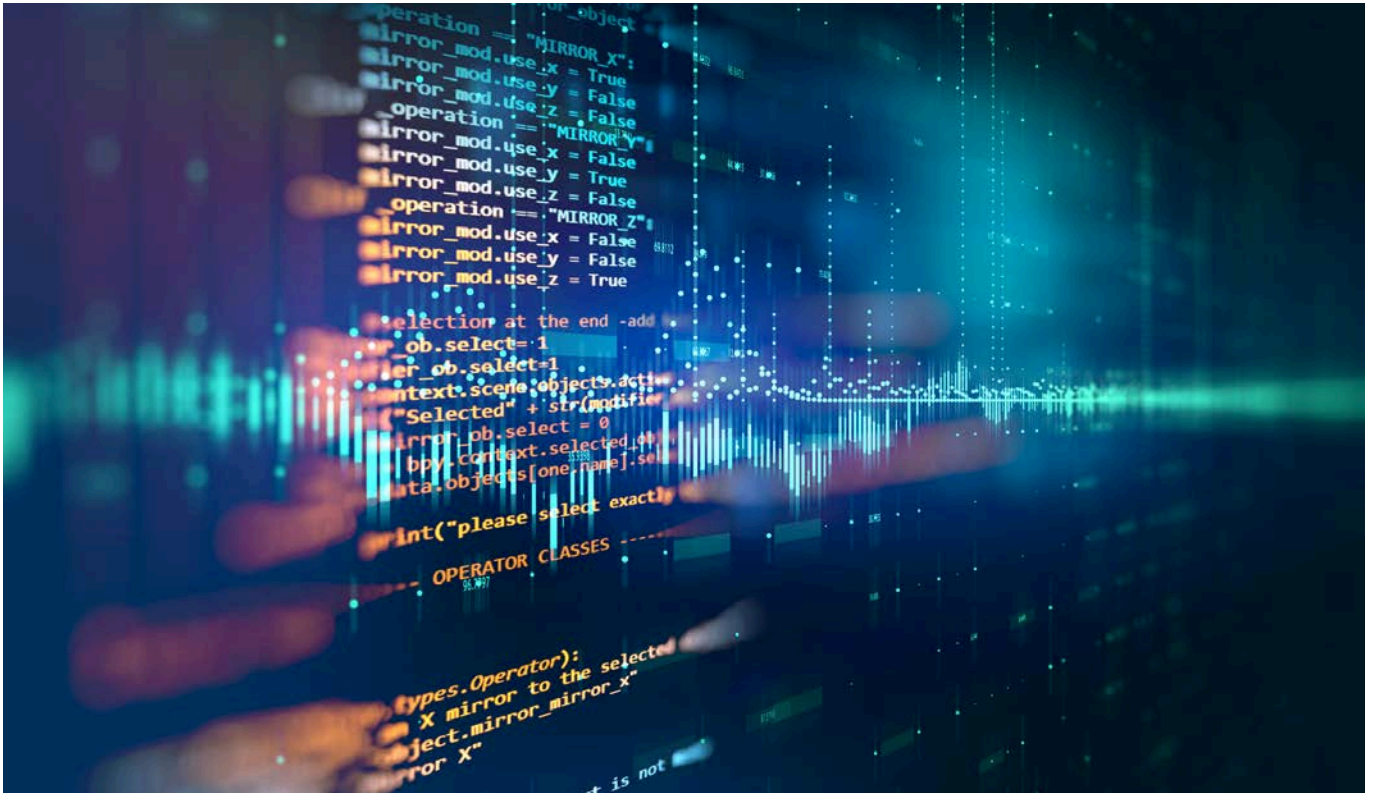


An Ecosystem Approach.

IGSC's analytical methodology rests on the understanding that competitiveness — at the level of a firm, an industry, or a national economy — cannot be understood by looking at any single actor in isolation. It emerges from the quality and configuration of the entire ecosystem within which actors operate: the institutions, the infrastructure, the incentive structures, the knowledge networks, the regulatory environment, and the cultural and social conditions that shape how all of these interact.

This ecosystem orientation takes concrete analytical form through IGSC's signature frameworks. The 8i Ecosystem Framework diagnoses competitive capability across eight interconnected dimensions — Institutions, Interaction, Integrity, Infrastructure, Infostructure, Intellectual Capital, Incentives, and Internationalisation — providing a structured methodology for identifying where an ecosystem is strong, where it is weak, and what interventions are most likely to produce systemic improvement. The Return on Values Framework extends this ecosystem logic to the assessment of investment and policy decisions, measuring returns not only in financial terms but across the full spectrum of economic, social, environmental, and political value that a decision produces and destroys.

The ecosystem approach matters because it resists the temptation to explain competitive outcomes through single-factor theories. Competitiveness is a systems-based property. Changing one element while leaving the rest of the system unchanged rarely produces the outcomes anticipated. IGSC's frameworks are designed to map the system, understand its dynamics, and identify the interventions most likely to shift it as a whole.



Technology and Innovation for Foresighting. The third orientation reflects IGSC's conviction that the most valuable contribution a research institute can make in a period of rapid and disorienting change is not to analyse the present but to illuminate the future that is already being built. Technology and innovation are the primary engines of that future, not in the narrow sense of digital technology alone but in the broadest sense of all the ways human ingenuity is currently reshaping the economic, social, and ecological landscape.

IGSC's foresighting work draws on and contributes to frameworks designed to help governments, organisations, and communities anticipate rather than merely react to the transitions already underway. The 4F Foresight Framework — Forensics, Forecasting, Future-Sighting, and Future-Proofing — provides a structured methodology for moving from evidence-based diagnosis to actionable anticipation.

The Triple-10 Framework, developed in preparation for Malaysia's 13th National Plan and ASEAN Ahead Foresight, maps ten global transformative forces against their implications for national science, technology, and innovation strategy, covering everything from artificial intelligence to demographic transition, from geopolitical realignment to planetary health.

Foresighting is not prediction. It is the disciplined cultivation of strategic readiness: the capacity to understand the range of futures being made possible by current trajectories, to identify where decisions taken today will have the most leverage over which of those futures arrives, and to build the institutional and analytical capacity to act before the window for strategic choice has closed.

IGSC's Role

Translating the Argument into Change, at Every Level Where Change Happens

Stating the argument clearly is not sufficient. The history of the past thirty years is full of clearly stated arguments for a different mode of competition that have been absorbed by the system without producing structural change.

IGSC was founded on the understanding that bridging the gap between intellectual clarity and actual change requires something more than well-designed frameworks and well-written reports. It requires sustained, deliberate engagement with the actors and institutions that make decisions, at every level where those decisions are made.



Two Levels of Change

IGSC's work operates across two distinct but interdependent levels, because the problem of extractive competitiveness exists at both and cannot be resolved at only one.



The first is the policy and systems level — national governments, regional bodies, international institutions, and the frameworks, regulations, and incentive structures that shape the conditions within which all competitive decisions are made. This is where the frame can be formally expanded: through accounting reform, through carbon pricing, through disclosure requirements, through trade rules that internalise social and environmental costs. It is also where the horizon can be formally extended: through long-term planning mandates, through institutional redesign, through governance frameworks that give future interests a voice in current decisions. Change at this level is slow, politically contested, and dependent on a sustained supply of rigorous evidence and analytically credible frameworks that policymakers can actually use. Producing that supply is one of IGSC's primary functions.

The second is the organisational and community level — firms, civil society organisations, local governments, communities, and the individual decision-makers within them who translate systemic conditions into specific choices. Systemic change does not reach the ground automatically. A carbon price creates an incentive, but understanding how to respond to that incentive — how to redesign a business model, how to restructure a supply chain, how to build the internal capabilities that regenerative competition requires — is a different and equally demanding challenge. IGSC works at this level through direct engagement with industry partners, through capacity-building programmes that develop the analytical capabilities organisations need to navigate the transition, and through research grounded in the specific operational realities of firms and communities rather than derived from abstract economic models.

The relationship between these two levels is not a simple top-down chain. Change at the organisational and community level generates evidence of what is possible, challenges assumptions embedded in systemic frameworks, and creates the political and market constituencies that systemic-level reform requires. Change at the policy level creates the conditions — the incentives, the requirements, the legitimacy — that allow organisational-level actors to make different choices without being competitively penalised for doing so. IGSC's position, deliberately spanning both, reflects the conviction that neither is sufficient alone.

Three Commitments That Define How We Work

The first is to build frameworks, not just arguments. The gap between a persuasive critique of the status quo and an actual change in how governments set policy or how businesses make decisions is, historically, enormous. Arguments are necessary but not sufficient. What tends to close the gap is analytical infrastructure: structured frameworks that give decision-makers a concrete methodology for thinking and acting differently, that can be applied consistently across different contexts, and that produce results specific enough to be actionable. The 8i Framework, the Return on Values (ROV) methodology, the Triple-10 architecture, the 4F foresight approach — these are not descriptions of what good competitiveness looks like. They are tools for producing it.

The second is to engage where decisions are made. Research that terminates at publication has completed only part of its task. IGSC's engagement model extends beyond the journal article to workshops with ministries, the co-production of national reports, policy modelling sessions with industry delegations, and participation in international forums where frameworks are being negotiated. This is not a compromise of intellectual rigour. It is the application of intellectual rigour to the actual conditions under which policy and strategy decisions are made, which are invariably messier, more politically constrained, and more dependent on relational trust than academic models typically acknowledge.

Within these two levels, IGSC's operating model is built around three commitments that distinguish its approach from that of a conventional academic research centre.

The third is to measure success by uptake rather than output. Most research institutions count publications, citations, and grant income. These are not unimportant, but they are measures of research production, not research impact. IGSC's standard is different. Did the framework get used? Did the policy change? Did the conversation shift? Did the investment decision look different because of the evidence we generated? This is a harder standard. It is also the only one that honestly reflects what we are trying to achieve.

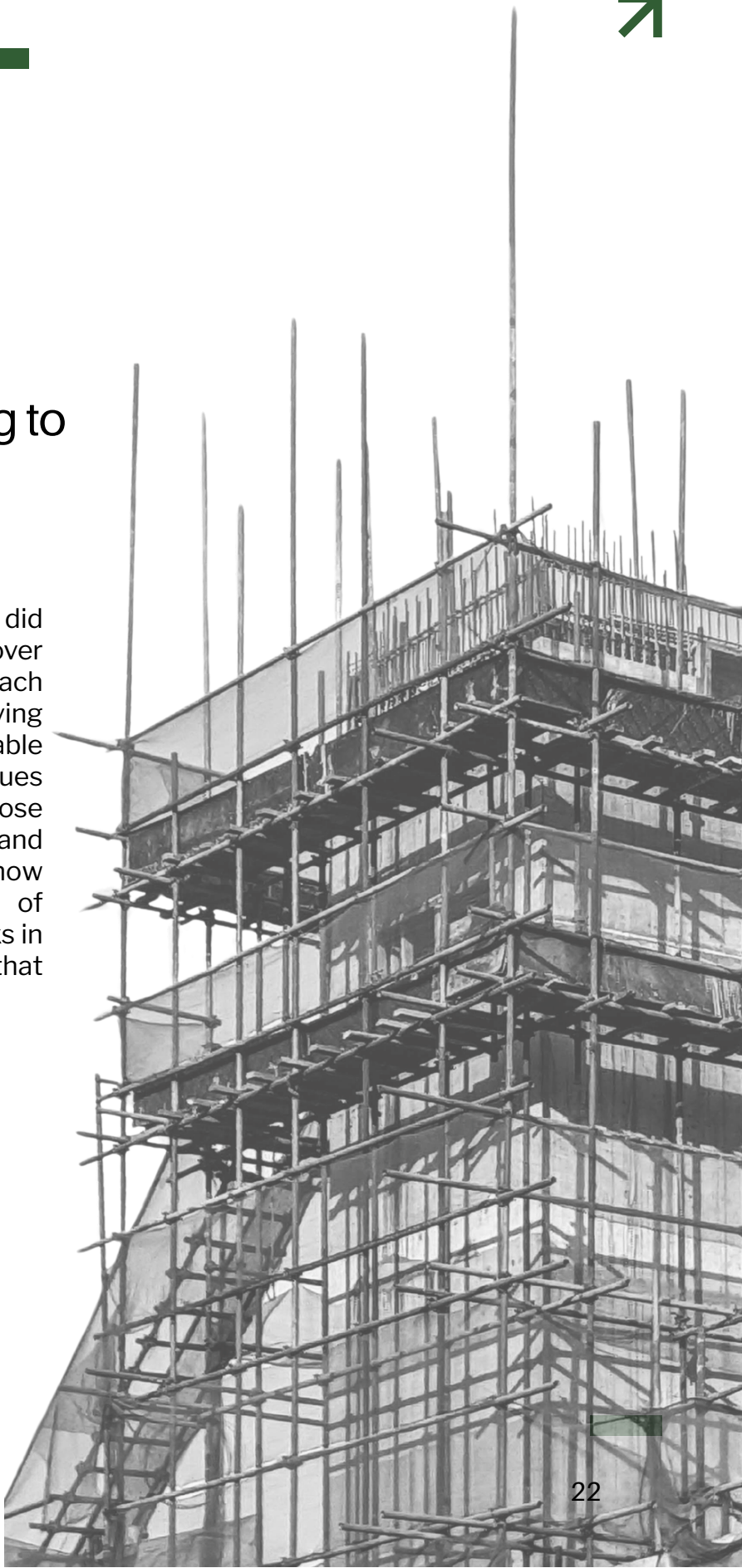
None of what follows in this report is offered as proof that the problem of extractive competition has been solved, or that IGSC has discovered a formula that resolves the tensions this section has tried to describe honestly. The structural pressures are real, the vested interests are significant, and the timescales involved are longer than any single institute's programme of work. What we can offer is something more modest and, we think, more useful: a body of frameworks, research, and policy engagement that has consistently tried to expand the frame, extend the horizon, and give the institutions we work with better tools for competing in ways that do not consume the conditions for their own continuation. That is the work.



The IGSC Framework Architecture:

From Ecosystem Thinking to Regenerative Competitiveness

IGSC's approach to competitiveness did not emerge fully formed. It developed over successive iterations of research, each building on what came before — moving from mapping the conditions that enable economic dynamism, to asking what values should guide it, to proposing how those values can be measured and institutionalised, and finally to asking how change actually happens at the level of individual organisations. The frameworks in the following pages capture aspects of that intellectual journey.



The 8i Ecosystem Framework ↗

Framework

The starting point was a deceptively simple observation: that competitiveness is not a property of individual firms or industries in isolation, but of the ecosystems they inhabit. A firm operating in a weak ecosystem — one with poor infrastructure, fragmented institutions, or limited access to talent — will consistently underperform relative to its potential, regardless of its internal capabilities. Conversely, a well-functioning ecosystem creates the conditions in which even ordinarily capable organisations can achieve extraordinary outcomes.



The 8i Ecosystem Framework was developed to characterise what a well-functioning ecosystem actually looks like. It identifies eight interdependent enablers: Infrastructure (the quality of physical and natural systems), Infostructure (digital connectivity and data systems), Intellectual Capital (the talent and knowledge base of an economy), Integrity (the governance and regulatory architecture), Incentives (fiscal and non-fiscal instruments that shape behaviour), Institutions (the leadership and stewardship capacity of key organisations), Interaction (the depth and quality of collaboration among stakeholders), and Internationalisation (the extent to which local players are connected to global knowledge networks and supply chains).



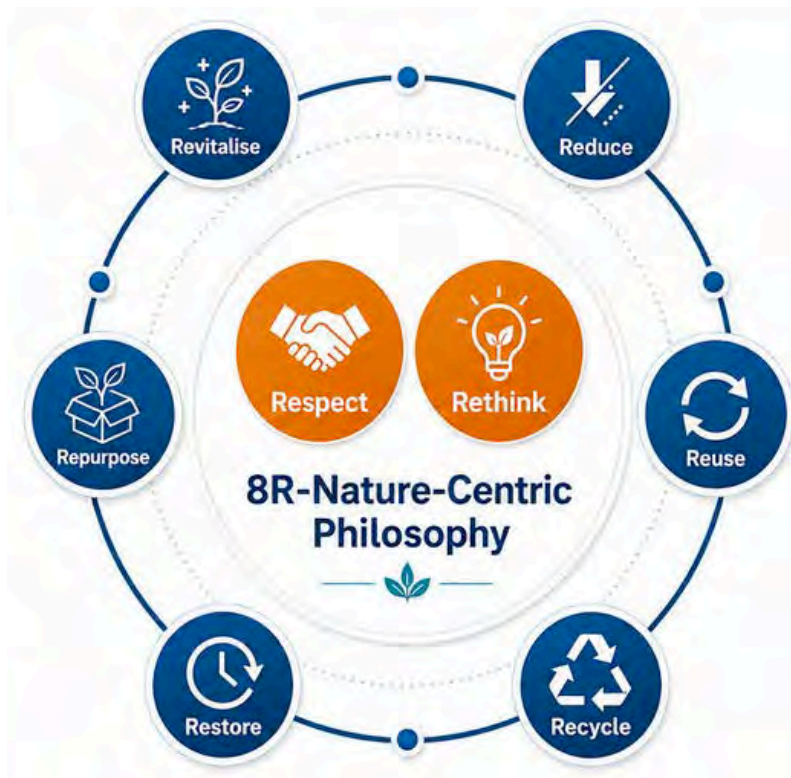
The framework made the case that weaknesses in any one of these dimensions ripple through the others — a strong talent base is squandered without the governance to deploy it well; world-class infrastructure delivers little if institutions are unable to coordinate its use. Competitiveness, in this framing, is a systems problem, and improving it requires attending to the system as a whole.

Crucially, the 8i framework also describes how ecosystems evolve through recognisable stages of development — from laggard systems with low absorptive capacity, through imitator and adapter stages, to mature ecosystems capable of generating indigenous innovation, and finally to pace-setter ecosystems that shape global knowledge networks and supply chains.

Countries and organisations that invest deliberately in their ecosystem enablers can accelerate through these stages, and in some cases leap-frog them entirely — a finding of particular relevance to economies in the Global South seeking to move up the value chain without replicating the environmental costs of earlier industrialisation.

The 8R Philosophy

The 8i Framework answered the question of how ecosystems function. A second question followed: towards what ends should they be directed? The conventional answer — economic growth measured by output and investment returns — was increasingly difficult to defend as the costs of that growth accumulated in the form of environmental degradation, widening inequality, and biodiversity loss. IGSC's position was that the development model itself needed to be questioned, not merely optimised.



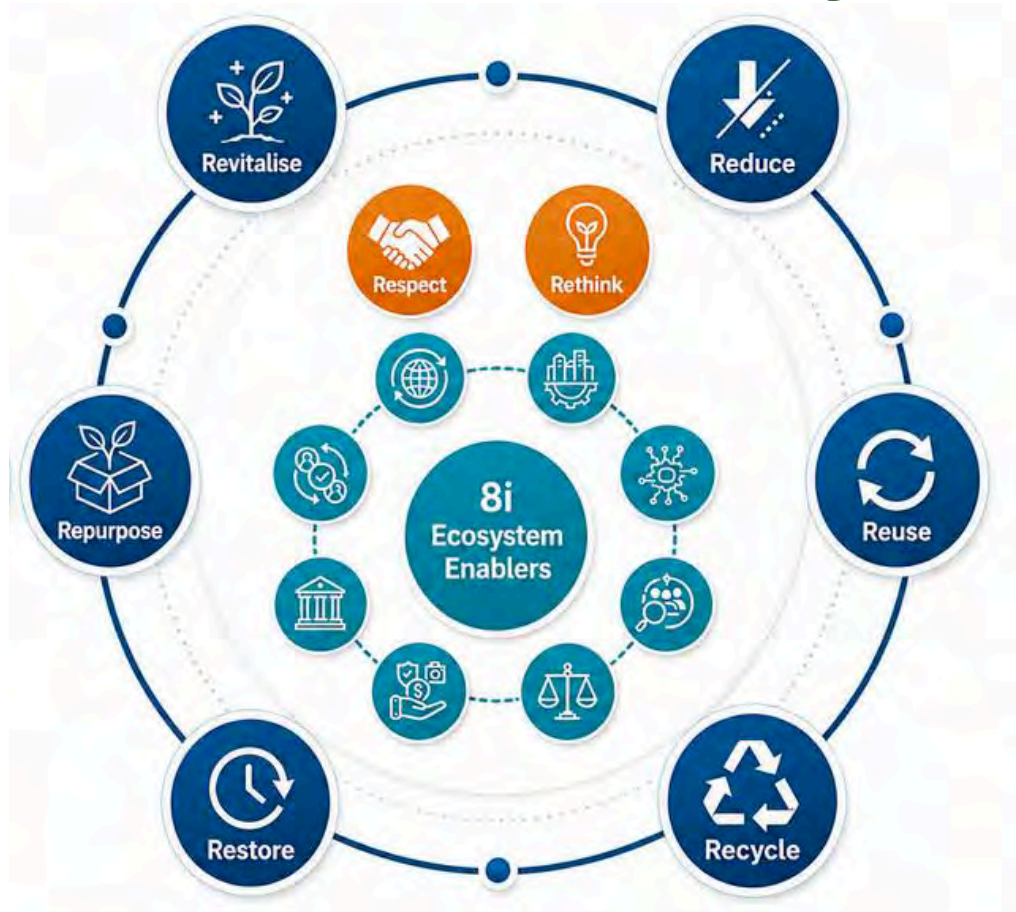
The 8R Philosophy represents that questioning in its most direct form. It is a set of eight core values intended to reorient development away from extraction and towards stewardship: Respect (for natural systems and the rights of all species), Rethink (moving from profit maximisation to purpose maximisation), Reduce (minimising human encroachment on natural habitats and carbon footprint), Reuse (extending the life of materials to reduce resource demand), Recycle (supporting circular economic models that eliminate waste), Restore (actively repair degraded ecosystems and return them to vibrant and healthy ecosystems.), Repurpose (creating new economic value from existing natural assets), and Revitalise (reintegrate nature into human and corporate spaces, enhancing biodiversity and co-existence).

Taken together, the 8Rs represent a philosophy of sufficiency and responsibility rather than accumulation. They were developed in dialogue with the UN Sustainable Development Goals and draw on a striking breadth of convergence across major religious and philosophical traditions — from the Islamic concept of stewardship (khalifa) to the Buddhist principle of non-harm (ahimsa) to Indigenous animist frameworks that regard the Earth itself as a living relation. The breadth is deliberate. IGSC was arguing that the case for values-led development is not culturally specific or ideologically sectarian. It is, in some meaningful sense, universal — a shared inheritance that cuts across civilisations and one that the dominant development model has, for the most part, systematically ignored.

The 8R Philosophy does not position environmental stewardship as a constraint on growth. It positions it as a precondition for the kind of growth that can actually be sustained — and in doing so, lays the ethical foundation for everything that follows.



Values-Based Development 7 and the 8R-8i STIE Ecosystem



With the 8i Framework characterising what ecosystems need, and the 8R Philosophy articulating what they should stand for, the natural next step was to bring them together. The result was the 8R-8i STIE (Science, Technology, Innovation and Economy) Ecosystem — an integrated framework for what IGSC terms values-based development.

The merger matters because neither framework is sufficient alone. An ecosystem with strong enablers but no guiding values will optimise efficiently towards the wrong ends. A set of values without the institutional and infrastructural conditions to act on them remains aspirational rather than operational. The 8R-8i framework holds both together: the 8Rs set the direction, and the 8i enablers determine whether an ecosystem has the capacity to move in that direction.

What the integration also makes visible is the relationship between STI strategy and economic development — specifically, the argument that for developing economies, the failure to align science and technology priorities with actual socioeconomic needs is one of the primary reasons that STI investment so often fails to translate into improved quality of life. A carefully curated 8R-8i STIE ecosystem, by contrast, creates the conditions for technology and human development to reinforce each other rather than proceed in parallel.

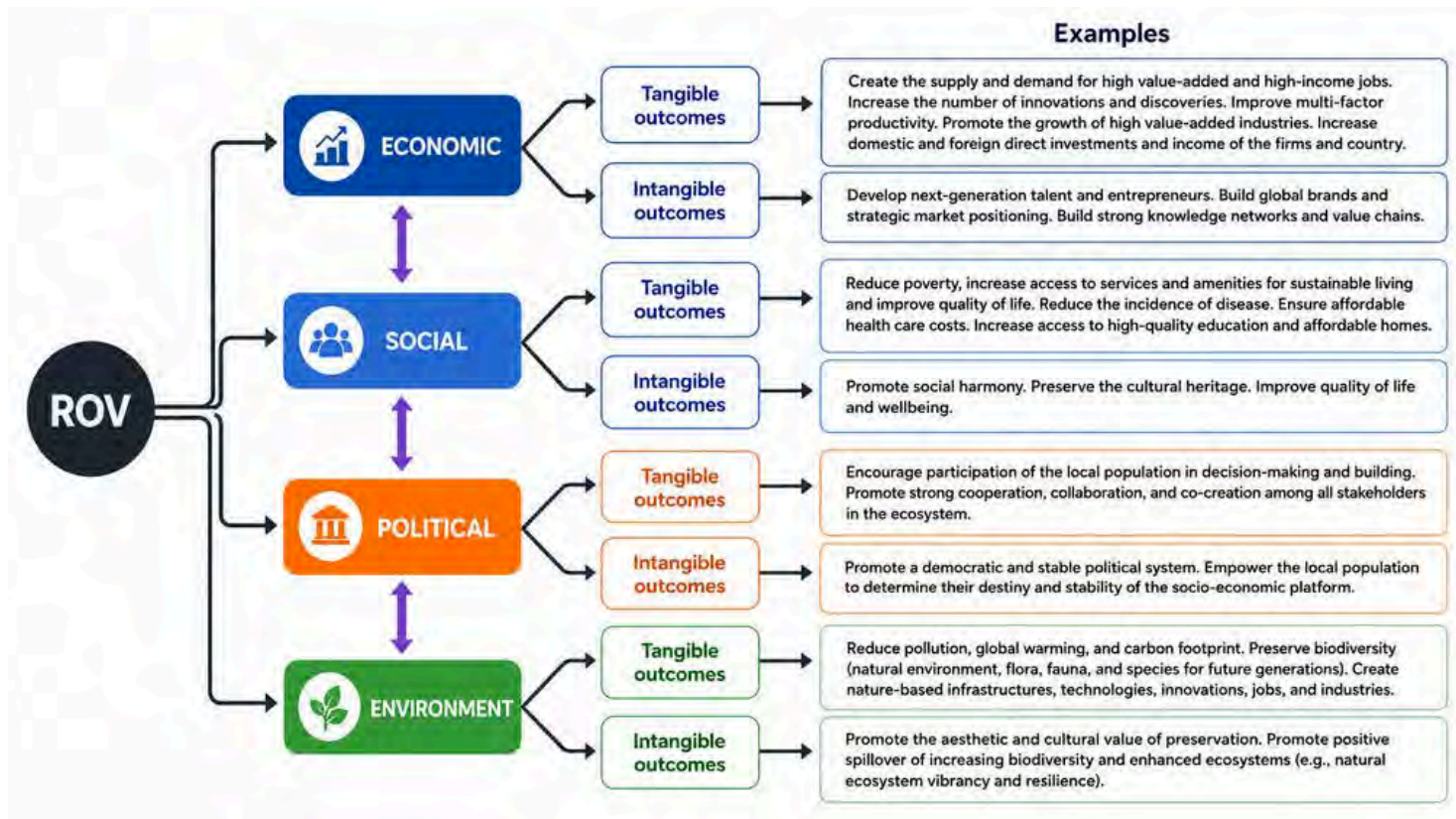
The framework further demonstrates how knowledge and innovation do not stay contained within the sectors that generate them. A breakthrough in one node of the ecosystem — a new biodiversity monitoring technology, for instance, or an advance in halal supply chain traceability — produces spill-over effects that raise the capabilities of adjacent sectors, deepening the ecosystem as a whole.

These network effects are not automatic; they depend on the quality of the 8i enablers, and particularly on the depth of interaction and collaboration among players. But when those conditions are in place, values-based development generates compounding returns — economic, social, environmental, and political — rather than the trade-offs that conventional models treat as inevitable.



Values-based development, in this framing, is not a constraint on competitiveness. It is the condition for sustaining it — which is precisely what IGSC means by regenerative competitiveness.

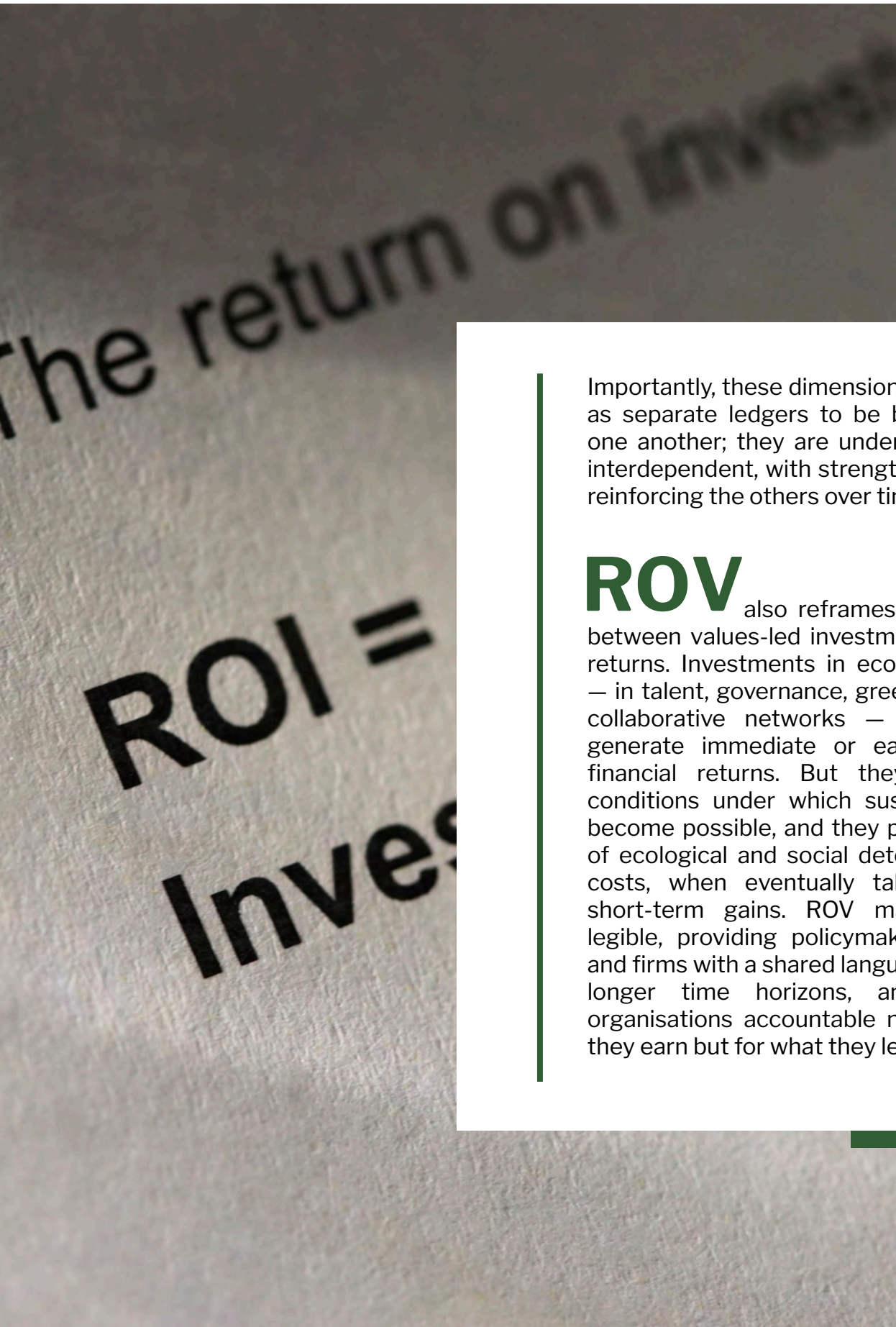
Return on Values (ROV)



Running through all of the above is a measurement problem. If the goal of development is no longer simply growth in output or return on investment, then the dominant metrics of economic performance become inadequate — or worse, actively misleading. A project that generates strong financial returns while degrading an ecosystem or displacing a community will score well by conventional measures and poorly by any reasonable assessment of whether it actually made things better.

Without a different way of keeping score, the frameworks described above risk remaining normative arguments rather than operational tools.

These network effects are not automatic; they depend on the quality of the 8i enablers, and particularly on the depth of interaction and collaboration among players. But when those conditions are in place, values-based development generates compounding returns — economic, social, environmental, and political — rather than the trade-offs that conventional models treat as inevitable.



Importantly, these dimensions are not treated as separate ledgers to be balanced against one another; they are understood as deeply interdependent, with strength in one typically reinforcing the others over time.

ROV also reframes the relationship between values-led investment and financial returns. Investments in ecosystem enablers — in talent, governance, green infrastructure, collaborative networks — do not always generate immediate or easily quantifiable financial returns. But they generate the conditions under which sustainable returns become possible, and they prevent the kinds of ecological and social deterioration whose costs, when eventually tallied, dwarf any short-term gains. ROV makes that case legible, providing policymakers, institutions, and firms with a shared language for justifying longer time horizons, and for holding organisations accountable not just for what they earn but for what they leave behind.

The Planetary Health Ecosystem:

An Application of the 8R-8i Framework

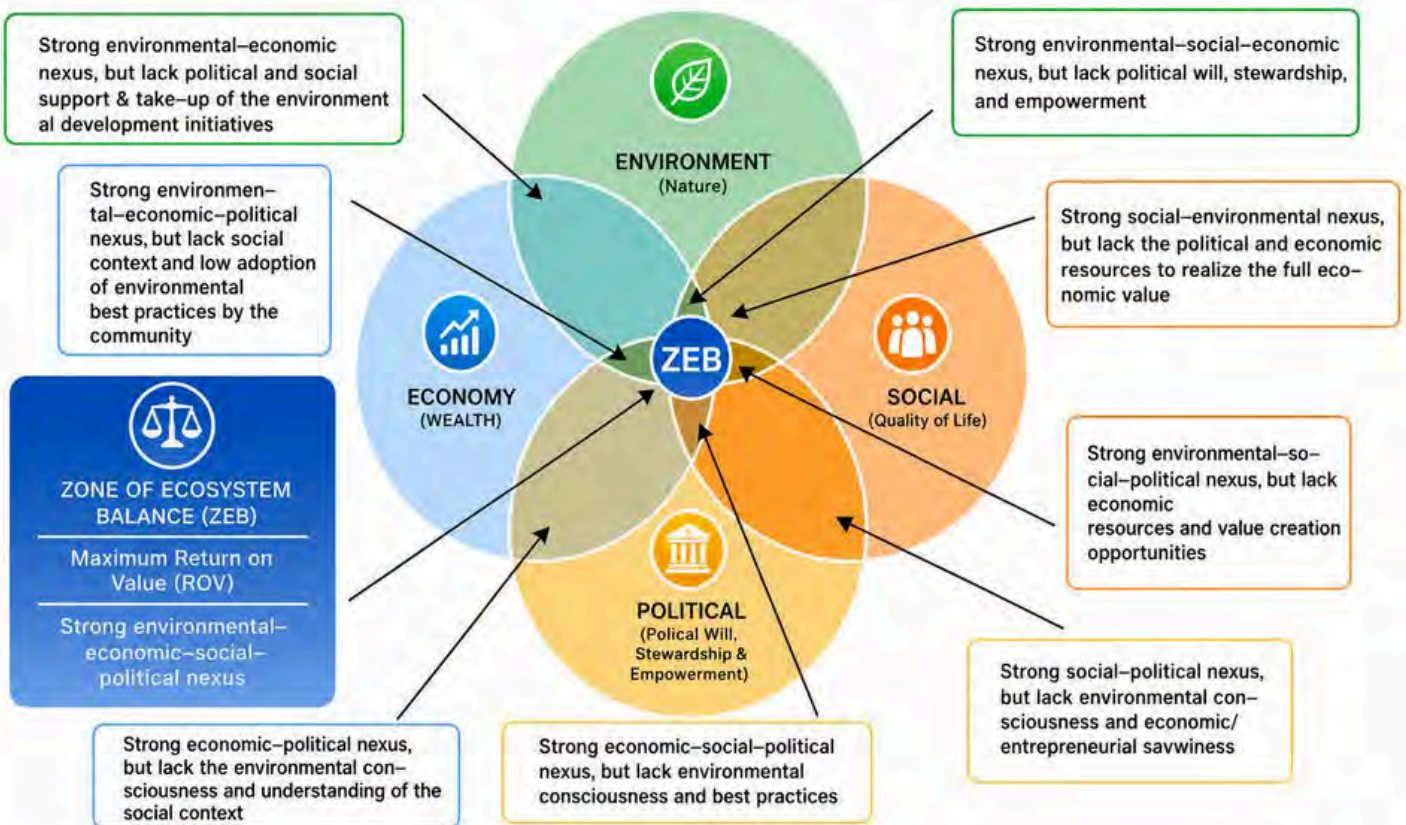
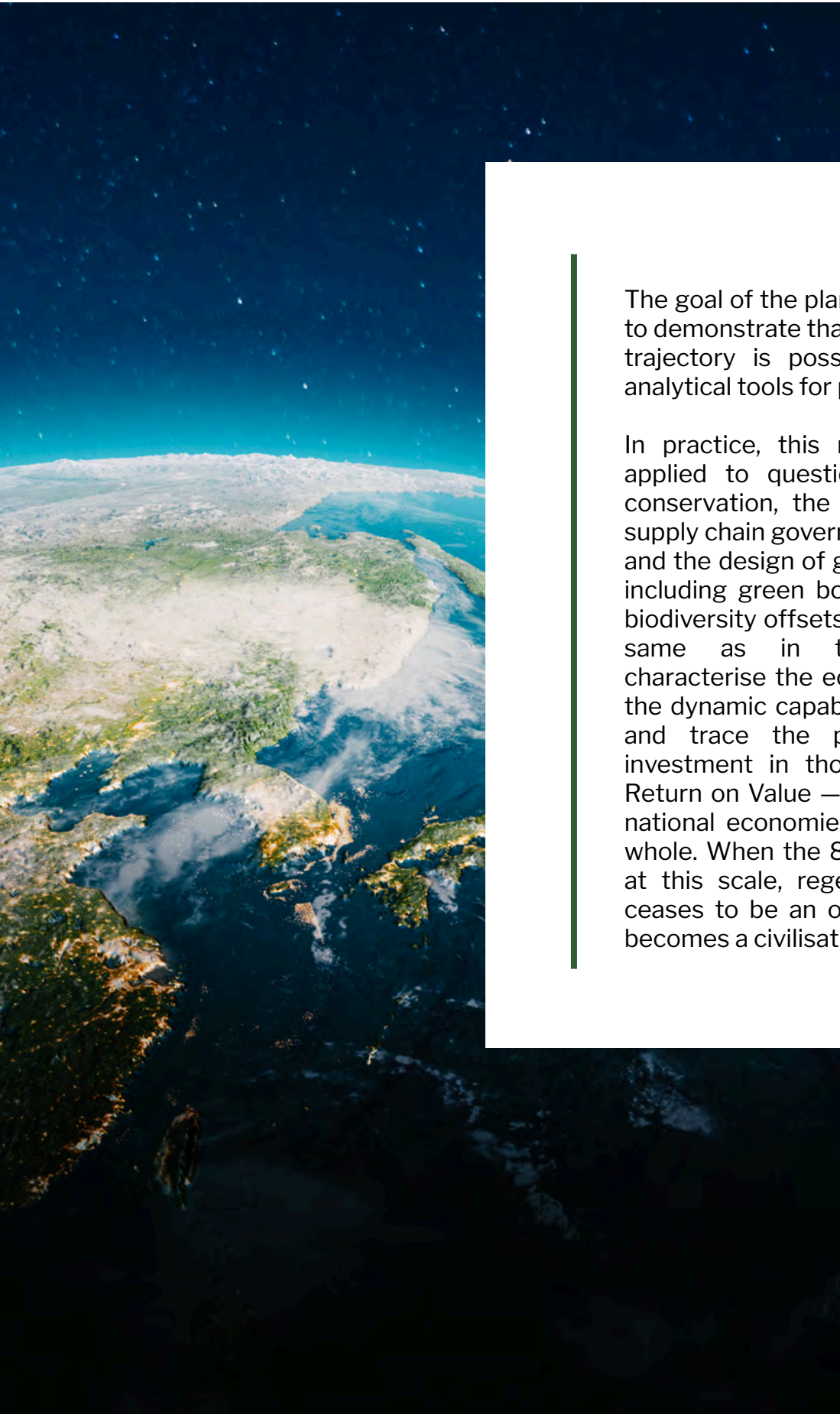


Figure 10: Nature Centric Development Framework - Strong environment, economic, social and political nexus

The most developed application of the integrated 8R-8i framework to date is IGSC's work on planetary health — the relationship between economic development and the health of Earth's natural systems. This is not a separate framework so much as the 8R-8i model put to work on the most consequential challenge of our time. The planetary health ecosystem analysis extends the 8i enablers into the domain of biodiversity and ecological sustainability, and uses the 8R philosophy as its guiding orientation for how economies should relate to the natural systems they depend upon.

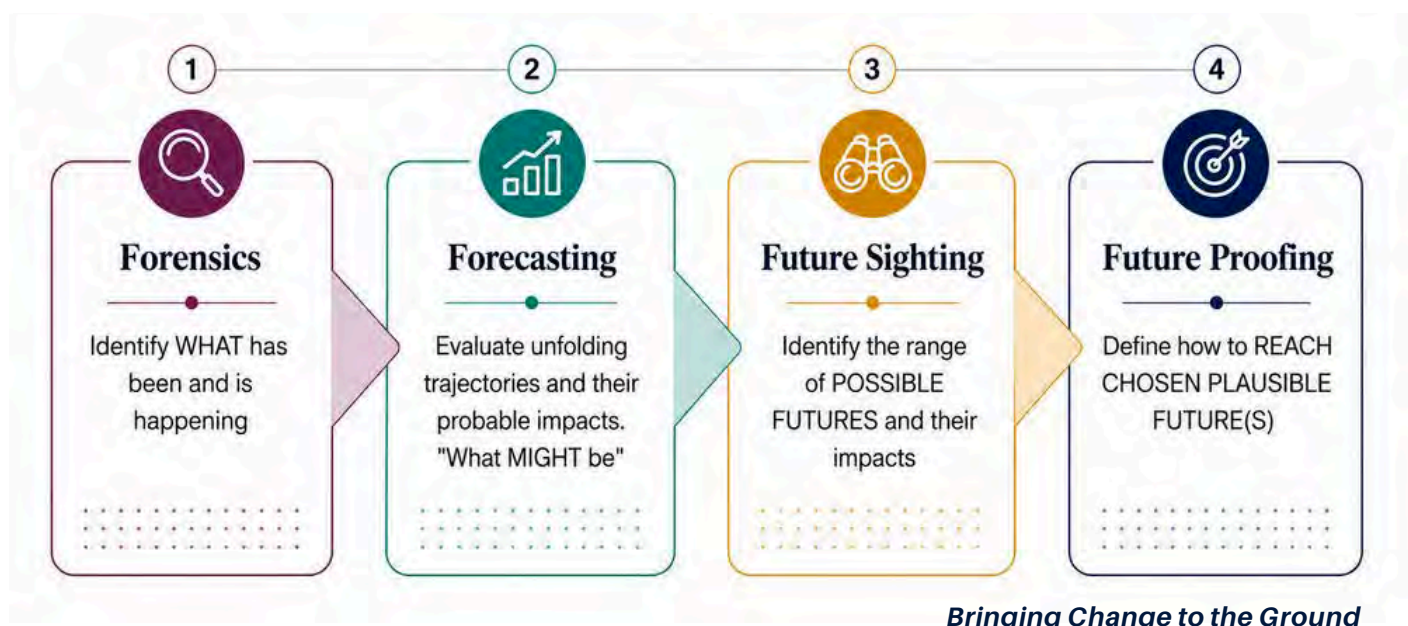
It draws on the planetary boundaries literature and empirical evidence across 140 countries to frame the core problem: that the prevailing development model is a zero-sum trajectory, in which improvements in social conditions are consistently purchased at the cost of ecological overshoot. By 2019, the welfare cost of environmentally related premature deaths alone stood at USD 27.2 trillion — roughly 32% of world GDP, and growing at 2% per year.

A large satellite image of Earth from space, showing the Eastern Hemisphere. The top half of the image is a dark blue space filled with stars. The bottom half shows the Earth's surface, with the Indian Ocean, Africa, and parts of Asia and Australia visible. The image is partially obscured by a white rectangular box on the right side, which contains text.

The goal of the planetary health framework is to demonstrate that a fundamentally different trajectory is possible, and to provide the analytical tools for pursuing it.

In practice, this means the framework is applied to questions such as biodiversity conservation, the blue economy, rare-earth supply chain governance, sustainable forestry, and the design of green financial instruments including green bonds, carbon markets, and biodiversity offsets. The analytical logic is the same as in the parent framework: characterise the ecosystem enablers, assess the dynamic capabilities of key stakeholders, and trace the pathways through which investment in those capabilities generates Return on Value — for local communities, for national economies, and for the planet as a whole. When the 8R-8i framework is applied at this scale, regenerative competitiveness ceases to be an organisational concept and becomes a civilisational one.

The Four F Framework Elements for Foresight



The 4F Foresight Framework and the Transformative Corporate Compass

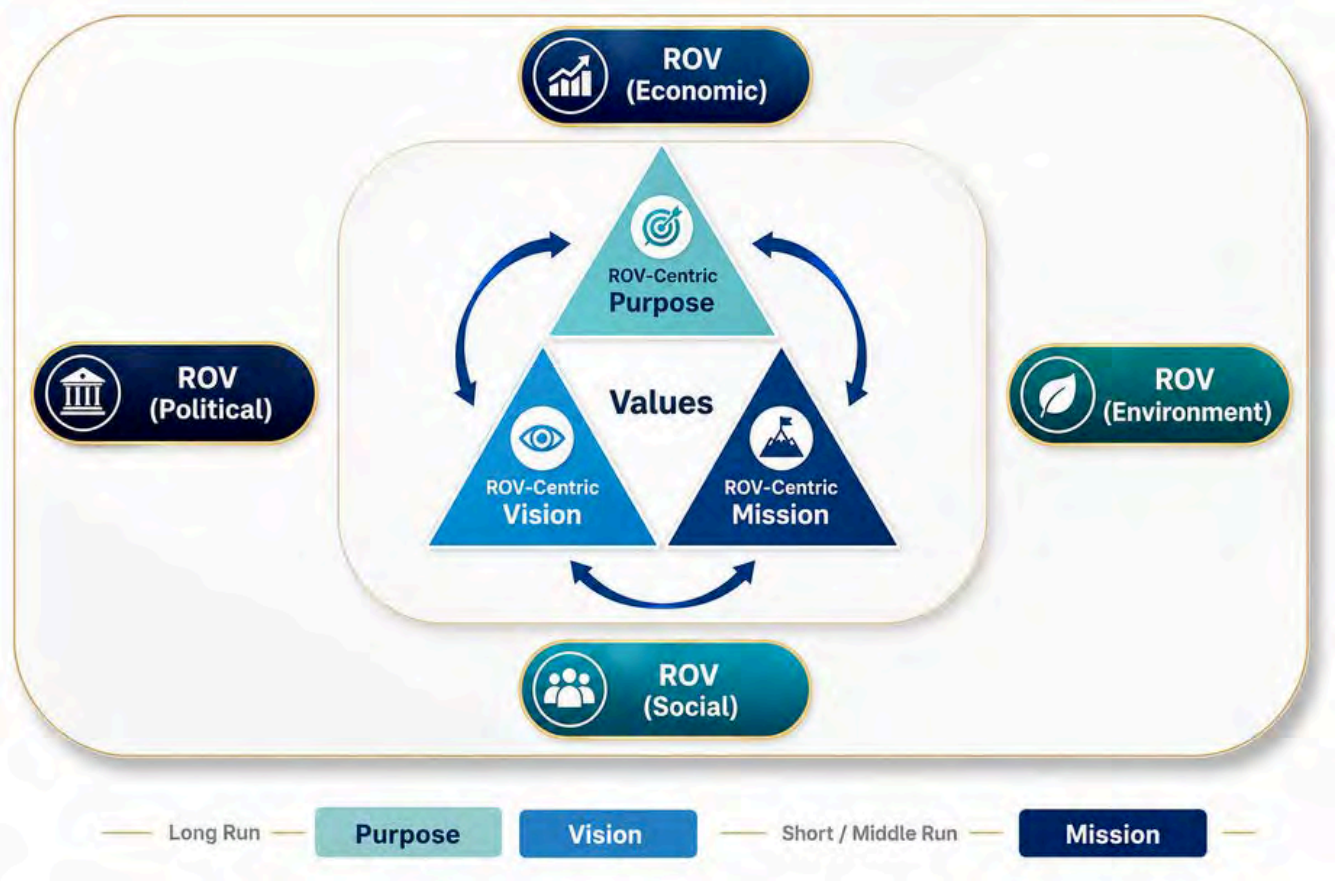
Everything described so far operates primarily at the level of ecosystems, nations, and policy. That is necessary, but not sufficient. History offers no shortage of well-designed frameworks that never moved beyond the report that contained them — not because the ideas were wrong, but because the organisations expected to act on them lacked either the foresight to see why change was necessary or the internal architecture to pursue it with coherence. IGSC's two firm-level frameworks address precisely these gaps.

The 4F Foresight Framework is IGSC's structured approach to forward-looking planning for organisations navigating complex and rapidly shifting environments. Built around four iterative stages — Forensics, Forecasting, Future-Sighting, and Future-Proofing — the framework begins with a disciplined examination of the present, drawing on horizon scanning across ten forces of change to identify weak signals of disruption that conventional planning typically ignores.

The background of the page is an abstract composition of flowing, wavy lines in shades of red, orange, and blue, creating a sense of motion and energy. These lines are set against a dark background, with some lines appearing as bright, glowing streaks.

From there, it constructs multiple plausible futures over a 20 to 30 year horizon, not as predictions, but as distinct and internally coherent scenarios that force decision-makers to reckon with uncertainty rather than paper over it. The final stage translates these scenarios into concrete strategies, policies, and resource allocations, linking imagination to action.

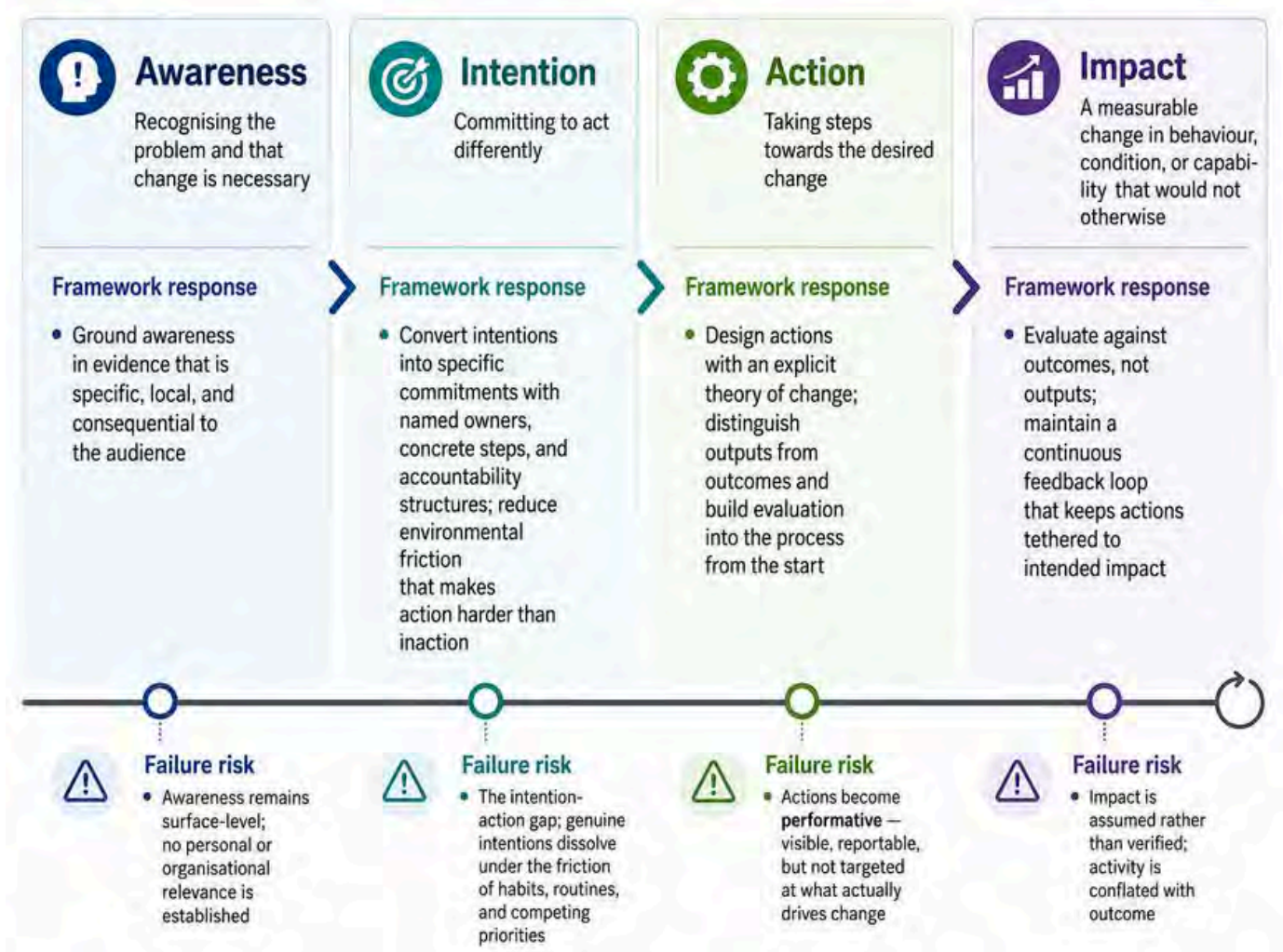
What distinguishes the 4F approach from conventional strategic planning is precisely this orientation towards uncertainty. Most organisations plan for the future they expect. The 4F framework insists on planning for the futures they do not expect as well — because the forces reshaping what it means to be competitive are already in motion, and organisations that remain anchored to past trajectories risk being overtaken by changes they were not looking for. For firms seeking to position themselves within a regenerative economy, foresight is not a strategic luxury. It is a prerequisite for relevance.



The Transformative Corporate Compass then gives organisations the internal orientation to act on what foresight reveals. At its core is a straightforward but consequential proposition: that the purpose, vision, and mission of a firm should be grounded in values, and that those values should extend far beyond the narrow logic of financial return. The framework is structured around two interlocking dials. The internal dial aligns Purpose (why the firm exists), Vision (what it aspires to become), and Mission (what it is doing now to get there) around a shared foundation of values — not decorative values, but ones that are operationalised into guiding principles, behavioural anchors, and the everyday decisions of the organisation.

The external dial then situates this internal compass within the broader context of the firm's impact on the world, introducing Return on Value as the measure of what the firm actually produces for all its stakeholders.

Together, the two frameworks represent IGSC's answer to a problem that policy alone cannot solve. Ecosystem-level change requires firms that are capable of seeing where the world is heading and willing to align themselves accordingly — organisations for which regenerative competitiveness is not a compliance obligation but a genuine strategic orientation. The 4F Foresight Framework and the Transformative Corporate Compass are designed to help firms become exactly that.



The AIAI Framework: Awareness, Intention, Action, Impact

There is a pattern that runs through the history of failed transformation initiatives. People understand the problem. They express genuine commitment to addressing it. And then very little actually changes. Without a clear account of how change actually propagates through individuals, organisations, and societies, even the most well-designed strategic architecture risks becoming what it set out to displace: a set of good intentions that stops short of the outcomes it promises.

The AIAI Framework — Awareness, Intention, Action, Impact — is IGSC's response to that risk. Designed for any change initiative, whether directed at a firm, a government ministry, or the general public, its premise is simple: meaningful change follows a sequence, and understanding where that sequence breaks down is as important as understanding where it should lead.

Awareness creates the possibility of change, but not change itself. Decades of environmental communication have produced populations broadly aware of climate change and broadly failing to change the behaviours that drive it.

Intention is where awareness crystallises into commitment — but research consistently finds that the gap between what people say they will do and what they subsequently do is wide, and stubbornly persistent. Existing habits, institutional routines, and structural barriers routinely outlast even genuine intentions.



THE ARGUMENT

Bridging that gap is where the framework does its most practical work. It does so by insisting that intentions be made concrete — translated into specific commitments, assigned to named owners, broken into manageable steps, and embedded within accountability structures that make follow-through visible and inaction costly. Vague intentions dissipate; specific ones create obligation. The framework also attends to the environment in which behaviour happens, recognising that even well-formed intentions fail when the surrounding conditions make them hard to act on. Reducing friction — whether that means simplifying processes, adjusting incentives, or redesigning the default choices that people and organisations face — is often more effective than exhorting people to try harder.

Action is where most transformation frameworks stop, assuming that the right actions will produce the right outcomes. But action without intentional design is not reliably generative of impact. Organisations can publish reports, launch programmes, and commission audits while producing no meaningful change in underlying conditions. The tendency to adjust surface presentation rather than core operations — satisfying the demand for change without bearing its costs — is one of the most consistent features of institutional life.

Impact, therefore, is not automatic. It requires actions purposefully targeted at the levers most likely to shift underlying conditions, and evaluated honestly against outcomes rather than outputs. A training programme delivered is an output. A measurable change in behaviour that would not have occurred otherwise is an impact. Conflating the two is one of the most consequential errors in policy and corporate practice alike. The AIAI Framework closes that gap by building evaluation into the change process itself — not as a retrospective audit, but as a continuous discipline that keeps actions tethered to the impacts they were designed to produce.



WHO WE ARE

IGSC at a Glance

We are dedicated to extending its research focus beyond the traditional economic boundary of competitiveness and draws into its coverage social and environmental considerations as explicit factors of competitiveness.

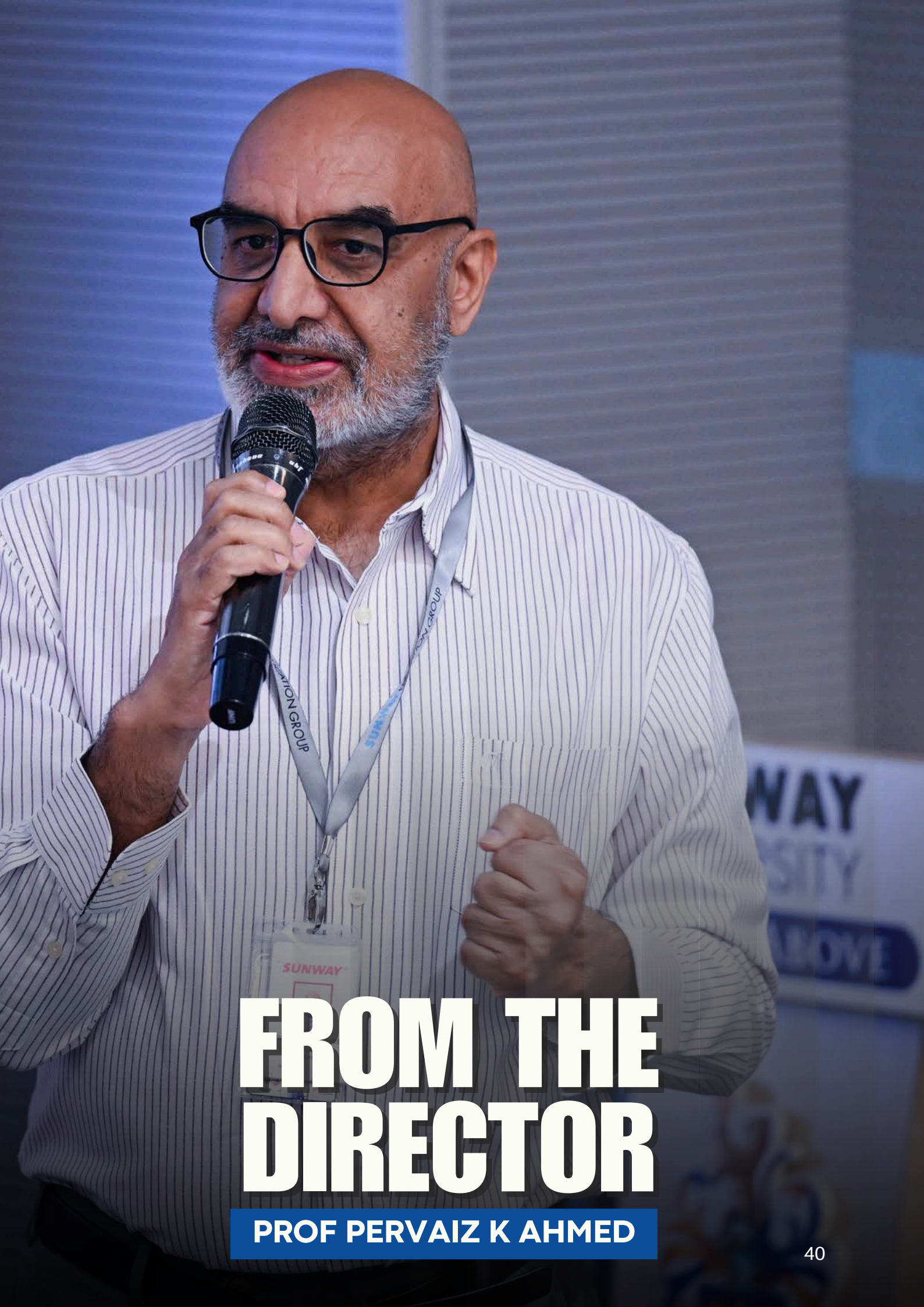


Vision

Growth of vibrant ecosystems at the local, regional, and global levels through strategies for competitiveness that purposely ensure equity, inclusiveness, and health and well-being across communities and society whilst mitigating environmental damage and preserving it for future generations.

Mission

The Institute for Global Strategy and Competitiveness (IGSC) will conduct meaningful fundamental and translational research exploring global strategy and competitiveness to contribute to the strategic transformation and competitiveness of governments, industries, and society (towards nation-building) in the context of rapidly changing global dynamics.



FROM THE DIRECTOR

PROF PERVAIZ K AHMED

When I reflect on the past five years, what strikes me most is not the volume of work we have produced, though that has been considerable. It is how much our understanding of the problem has deepened and our conviction that the kind of research we are doing genuinely matters.

IGSC was founded on a particular kind of dissatisfaction. Not with competition as a principle, but with the distorted way it had come to be understood — stripped of its relationship to the social and natural systems it depends on, measured by indicators that capture only a fraction of what development actually produces, and optimised for timeframes too short to reveal its full consequences. There was a geographic dimension to that dissatisfaction as well. The dominant frameworks for competitiveness were largely built from the experience of wealthy, institutionally mature economies — and then applied, often awkwardly, to contexts with fundamentally different conditions, pressures, and possibilities.

“

The question was never whether to compete. It was whether we had been competing for the right things, over the right timeframe, and counting the right costs. That mode of competition is not inevitable. It is a design outcome — and design outcomes can be changed



For developing economies across Asia, Africa, and South America, the growth imperative is real and legitimate, the urgency of poverty reduction creates genuine tensions with long-horizon planning, and the institutional environment is still being formed. Frameworks that do not begin from those realities tend not to serve them well. The Institute's founding proposition was that it was both possible and necessary to build differently — from the ground up, for the contexts that need it most, and with the ambition that better frameworks and more honest measurement could make regenerative competitiveness a practical reality rather than a wealthy nation's aspiration.

What has changed over five years is the scope of what we can demonstrate. We began as an institute with an argument. We are now an institute with evidence — evidence that these frameworks can be applied at scale, that they hold up under the scrutiny of policymakers and practitioners, and that the distance between research and real-world impact, while never trivial, is genuinely closeable.

That has been our work. And I am proud of what this team has built.

Five years ago, much of what is now the IGSC framework architecture existed only in outline. The intellectual threads were there: the understanding that competitiveness is an ecosystem property; that values and strategy are not in tension; that the horizon of accountability and the horizon of consequence had drifted dangerously apart. What our Institute has done in the intervening years is translate those threads into tools that policymakers, industry leaders, and researchers can actually use. That translation is rarely glamorous work. It requires the patience to stay in conversation with institutions that move slowly, the discipline to build frameworks rigorous enough to withstand scrutiny from scientists and ministers alike, and the willingness to measure success not only by what we publish but by its use.



Part of what has made that possible is growth. IGSC began with a founding team of five. We are now close to twenty — researchers, analysts, and practitioners whose collective expertise spans economics, ecology, governance, and social development.

That breadth is not incidental. The kind of work we take on increasingly demands it: multi-country engagements, projects that cut across disciplinary boundaries, and commissions from governments and institutions that require both analytical depth and practical credibility. The external recognition the Institute has attracted over this period — from funders, ministries, regional and international partners — reflects, I think, a growing acknowledgement that research of this kind fills a genuine gap, and that IGSC has developed the capacity to fill it well. That said, capacity is not the same as completion.

“

IGSC began with a founding team of five. We are now close to twenty — and the work we are being asked to do has grown with us.

The structural pressures that sustain the status quo are real, and the timescales involved are longer than any five-year report can fully capture. What I can say with confidence is that we have moved the needle in specific, demonstrable ways — in national policy, in regional governance, in the communities where our research has taken root — and that the frameworks we have developed are now doing work in the world by changing the ecosystem one step at a time.

None of this would have been possible without the institutional home that Sunway University has provided. Research of this kind — applied, policy-facing, willing to challenge comfortable assumptions — requires an institution that genuinely believes in its value, not only as a reputational asset but as a serious intellectual endeavour. We have had that, and it has made an enormous difference.

It has also required people willing to commit to an unconventional idea at an early stage.



The research team whose work follows in these pages has, across five years, developed and tested frameworks in real policy environments, built relationships with communities and governments, and produced scholarship that is simultaneously rigorous and useful — which is a harder combination to achieve than it sounds. I am grateful to each of them for bringing both qualities to this work.

What I hope readers take from this report is not simply a record of what IGSC has done. It is a sense of what this kind of research is for — why expanding the frame and extending the horizon of competitive thinking is one of the more consequential things a policy research institute can contribute to right now, and why the work is nowhere near finished. The argument in the pages that precede this statement is our best current account of where we stand and why it matters. The work that follows is the evidence.

We are five years in. I believe the more important years are ahead of us.

Professor Pervaiz K Ahmed

Director, Sunway Institute for Global Strategy and Competitiveness (IGSC), Sunway University



FROM THE DEPUTY DIRECTOR

PROF SANTHA VAITHILINGAM

In an era defined by rapid disruption and environmental volatility, I find myself reflecting on what it truly means for a nation to succeed. At IGSC, we have come to realise that the traditional metrics we once relied upon are no longer enough. A truly competitive nation is not merely one that achieves high growth, but one that is fundamentally meaningful.

This is why our strategic focus has made a deliberate transition from the traditional Return on Investment to a much more profound framework — Return on Value (ROV). By prioritising ROV, we are ensuring that our research and policy recommendations generate long-term value that transcends balance sheets, fostering a society rooted in resilience, deep inclusiveness, and a genuine readiness for the future.

“

The most carefully designed framework means little without the relationships to carry it forward. At IGSC, building that trust — slowly, consistently, and on the community's own terms — has always been as important as the research itself.

Central to our philosophy is the adoption of a nature-centric approach to development. Our economic and social systems do not exist in a vacuum; they depend entirely on the health of the natural ecosystems beneath them. A nation that operates in isolation from its natural foundations risks its long-term stability. We are therefore institutionalising a model of progress where planetary health is not an afterthought,



but a prerequisite for sustainable competitiveness — one where innovation and growth are pursued in ways that restore and respect the environment that sustains us.

But frameworks, however well-designed, do not travel on their own. They travel through people — through the trust that researchers build with communities over time, through the willingness to show up consistently and without a fixed agenda, through the discipline of listening before proposing. The gap between research and impact is not merely a communication problem. It is a relationship problem. And closing it requires a kind of work that rarely appears prominently in impact reports: the slow accumulation of presence and reciprocity that eventually makes genuine inquiry possible.

The institute stands at the intersection of high-level policy and grassroots impact. Our research is a living process — one that moves between national policy rooms and underserved communities, between data analysis and direct fieldwork. By mentoring the next generation of scholars and working alongside a wide range of collaborators, we convert complex evidence into strategies that reach the people who need them most. Every pillar of our work is unified by a single driving purpose: to create a balanced ecosystem of growth that is inclusive and serves our most vulnerable and marginalised communities.

“

The real measure of this work is not found in datasets or publications. It is found in whether the communities we work with are more visible, more understood, and better represented in the decisions that affect them.



The Global South context in which we operate makes that purpose not just important but urgent. The communities we engage with — urban, rural, economically marginalised, and largely invisible to data systems — are not research subjects in any passive sense. They are the reason the research exists. And the test of whether we have done our job well is not whether we have produced a credible dataset, though that matters.

Professor Santha Vaithilingam

Deputy Director, Sunway Institute for Global Strategy and Competitiveness (IGSC), Sunway University

It is whether the people whose lives the data represents are more visible, more understood, and better represented in the decisions that affect them. As we reflect on this five-year journey, my commitment remains unwavering. We will continue to champion a purpose-driven model of competitiveness that values human dignity as much as market share. By harmonising our economic ambitions with our natural and social responsibilities, we are building a legacy of holistic value and inclusiveness — not just for Malaysia, but for the entire ASEAN family.

THE MINDS BEHIND IGSC

Driven by IGSC's mission and vision, our multidisciplinary team advances strategic research and solutions that strengthen competitiveness while supporting vibrant, equitable, and sustainable ecosystems across society.



Prof. Pervaiz K. Ahmed

DIRECTOR

"I love nature and outdoor activities."



Prof. Santha Vaithilingam

DEPUTY DIRECTOR

"I cherish my nature walks, for they gift me with immense peace and serenity."



Prof. Mahendhiran
Sanggaran Nair
MEMBER

"Life is an awesome Odyssey - I don't have a job, but a hobby that rewards me well."



Yeng Hong Ching

SENIOR RESEARCH ANALYST

"Enjoys modern European-styled board games."



Dr Teow Hui Hui

POST-DOCTORAL RESEARCH FELLOW

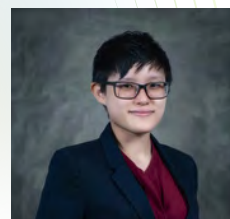
"I am a cat person; I fall in love with every cat I see."



Dr Mehrdad
Hadipourdashal

SENIOR RESEARCH FELLOW

"Passionate about environmental modelling and sustainability science."



Choong Chai Lim

RESEARCH ANALYST

"A lover of dogs and the occasional sci-fi novel."



Dhiviya Gopal

RESEARCH ANALYST

"A girl who loves sunrise, sunset, and sunflowers."



Naquiuddin Naqib

RESEARCH ANALYST

"Finds joy on the basketball and badminton courts."



Eve Loo Yeen Chenng

RESEARCH ANALYST

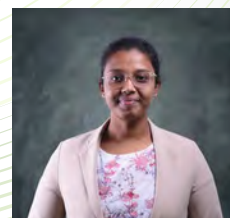
"Enjoy long walks and all things fluffy."



Sudhan Mahalingam

RESEARCH ANALYST

"Train hard. Think deep. Play loud."



Yogesswary Segar

RESEARCH ANALYST

"Enjoys getting lost in novels and spending time with family."



Muhammad Amirul
Ashraf
RESEARCH ANALYST

"Drawn to documentaries and the rhythm of the guitar."



Ashraf Hassan

RESEARCH ANALYST

"Driven by jogging, curiosity, and time with family."



Revan Lim Tai - Jie

RESEARCH ANALYST

"Outside work, found at debate tournaments worldwide as competitor, coach, and judge."



Aini Syafira Nor Azhan

RESEARCH ANALYST

"Recharges with nature walks and cafe hopping."



Janelle Tsan Yunxuan

RESEARCH ANALYST

"Finds joy in singing and has a soft spot for dogs."



Fathin Raihana

PROJECT MANAGEMENT EXECUTIVE

"Passionate about cats and calming yoga at the gym."

ADJUNCT FELLOWS



Barbara Ebbli

DESIGNER AND FOUNDER OF MALAIKA



Dr Joyce Chuah

CEO OF SUCCESS CONCEPTS
LIFE PLANNERS AND
FINANCIAL LITERACY
SPEAKER



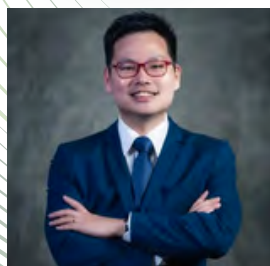
Dr Leila May Nair

LECTURER - SCHOOL OF
PHYSIOLOGY, SUNWAY
UNIVERSITY



Dr Chun Minsoo

LECTURER - DEPARTMENT OF
BUSINESS ANALYTICS,
SUNWAY UNIVERSITY



Assoc. Prof. Dr Jason
Ng Wei Jian

HEAD - CENTRE FOR
ACTUARIAL AND ANALYTICS
RESEARCH (CAAARE),
SUNWAY UNIVERSITY



Dr Hwang Li-Ann

ASSISTANT HEAD -
DEPARTMENT OF BUSINESS
ANALYTICS AND SENIOR
LECTURER, SUNWAY
UNIVERSITY



IGSC's 5-Year Journey

4 Projects



Science Outlook 2020



10-10 MySTIE 2.0



SIG COVID-19 Pandemic (2019-2020)



2021-2025
Macroeconomic Analysis and Forecasting

8 Publications



10-10 Malaysian Science, Technology, Innovation and Economy (MySTIE) Framework



Augmenting Employee Trust and Cooperation



Institutional Isomorphism and Environmental Sustainability: A New Framework from the *Shariah* Perspective

Frameworks

- ROV
- 10-10 MySTIE

8 Projects



Water Sector Transformation 2040



Malaysia Blue Economy Blueprint Study



Nexus of Biodiversity Conservation and Sustainable Socioeconomic Development in Southeast Asia

21 Publications

Position Paper on Blue Economy: Unlocking the Value of the Oceans



The Nexus of Biodiversity Conservation & Sustainable Socioeconomic Development in Southeast Asia



Values-based Development & Competitiveness: A Conceptual Analysis



Frameworks

- 8i Ecosystem 1.0
- 8R Philosophy 1.0

6 Projects



R.D.I.C.E Roadmap for Malaysia



Government Link Research Organization (GLROs)



2024-2025

National Planetary Health Action Plan

22 Publications

The role of dynamic capabilities in the development of organisational ambidexterity and its effect on timely responsiveness in emerging market high-tech firms



Planetary health issues in the developing world: Dynamics between transportation systems, sustainable economic development, and CO2 emissions



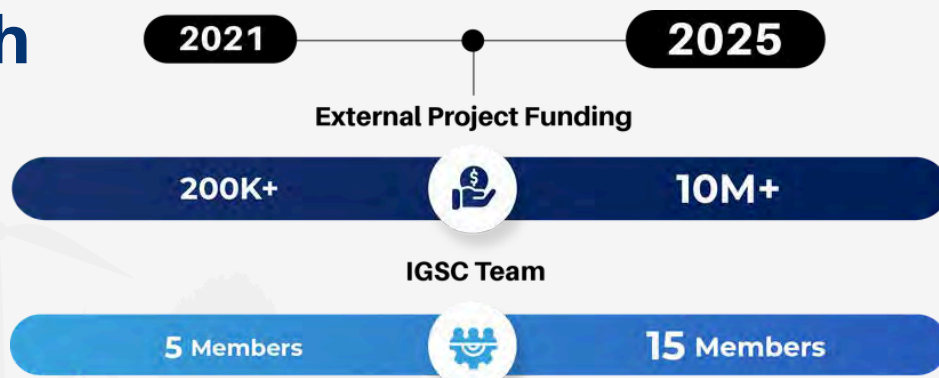
Malaysian Housing Affordability: Deciphering the Black Box



Frameworks

- 4F for Foresight

IGSC Growth Trajectory



5 Projects

2023

Frameworks

- Nature-Centric



Non-Radioactive Rare Earth Elements Industry (NR-REE)



DTNN 2021 - 2030



National Subsidy Rationalization Study



2021 -2025

Desa Mentari Community Project

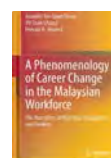
9 Publications



Institutional quality, financial development and sustainable economic growth among lower income countries



Nurturing Next-Generation Talent for Knowledge-Based, Values-Driven Development



A Phenomenology of Career Change in the Malaysian Workforce

10 Projects

2025



Lead with Purpose: From ROI to ROV



ASEAN Foresighting



GRI Joint Initiative

8 Publications

Enhancing cognitive function through ICT in low-SES Malaysian children



Return on values of hydrogen energy transitions: A perspective on the conceptual framework



Holistic Approach to Business Competitiveness: The CCP Framework

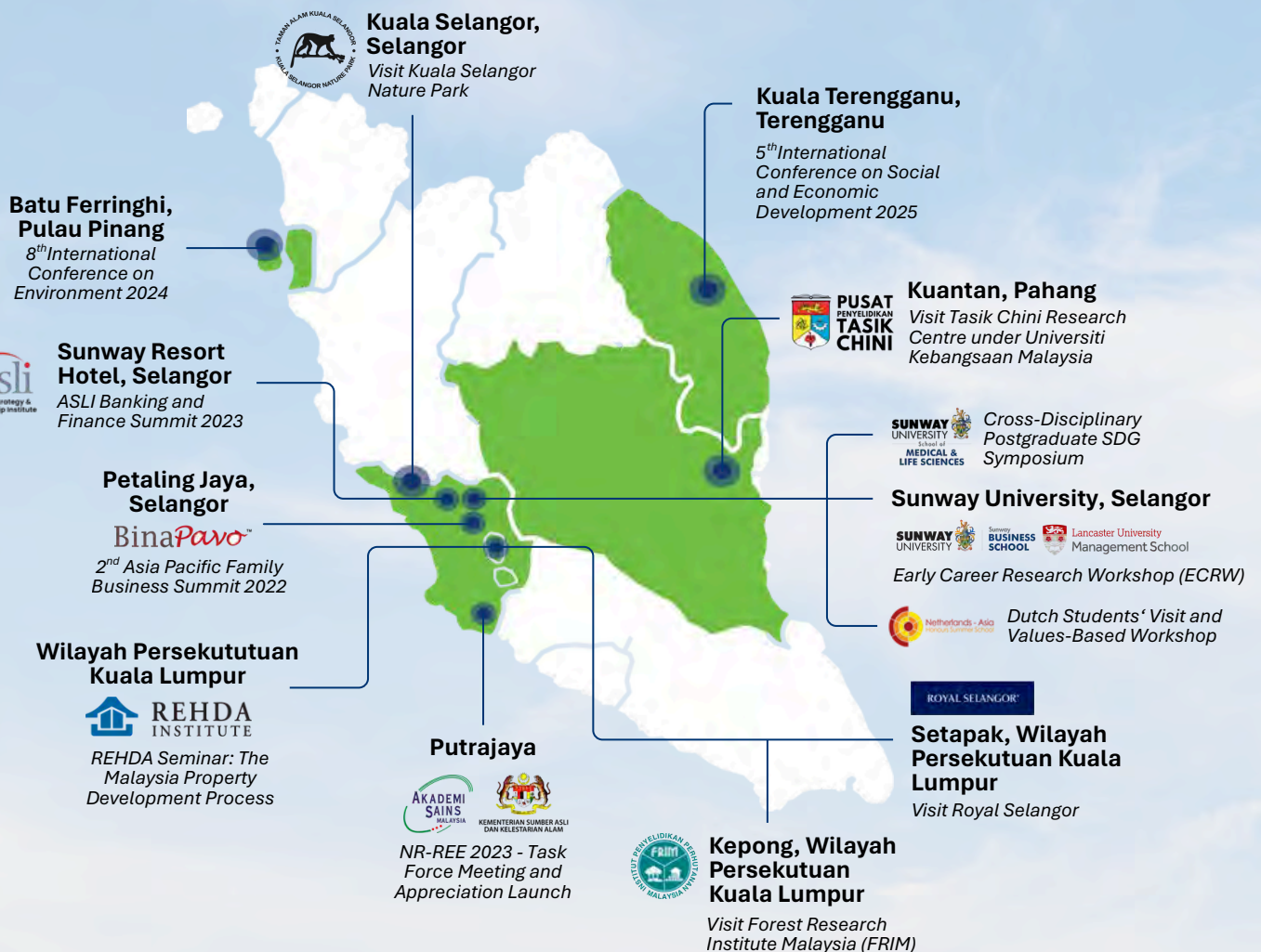


Frameworks

- 8R Philosophy 2.0
- 8i Ecosystem 2.0
- 8i-8R Integration
- Triple-10
- PVMV

Mapping IGSC's Engagements

MALAYSIA



INTERNATIONAL

Rotterdam, Netherlands
Planetary Health Annual Meeting 2025



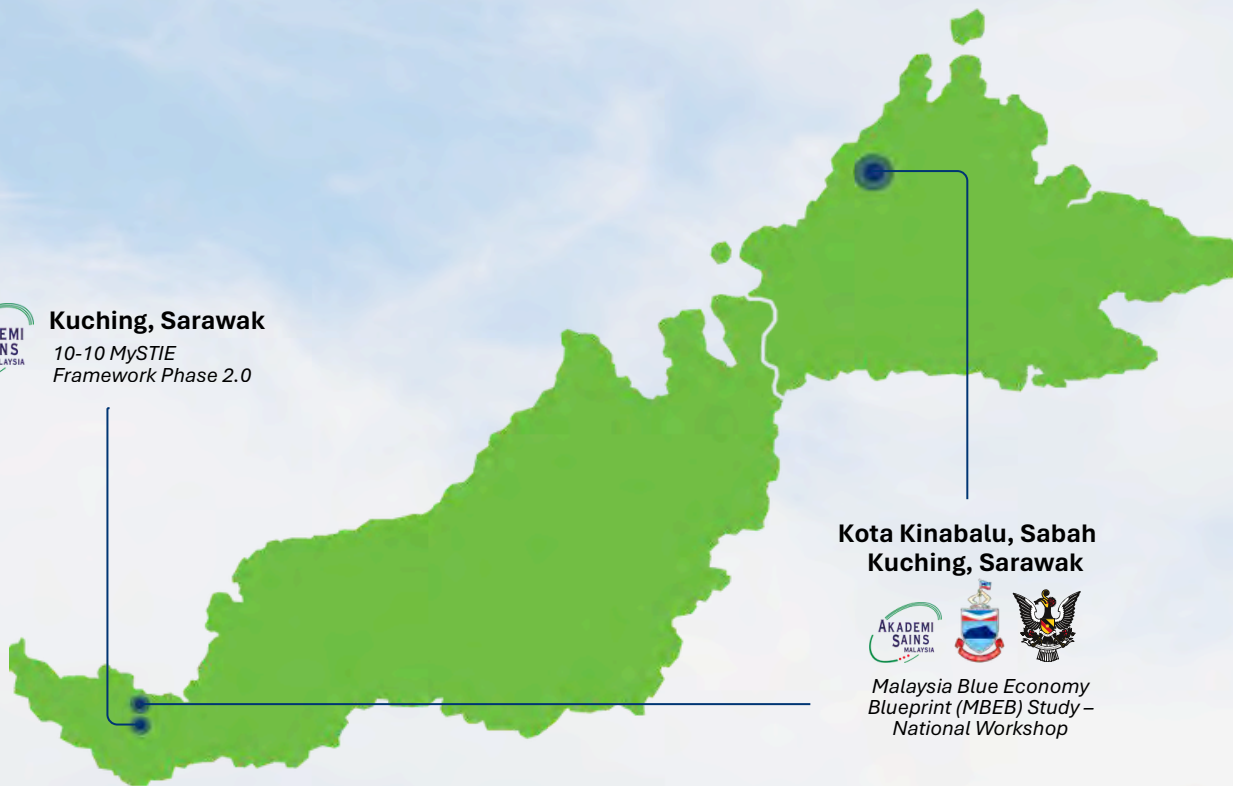
Nigeria
4th Annual Global Meeting of the Forum for Innovation in African Universities (FIAU)

Ho Chi Minh, Vietnam
RMIT UNIVERSITY
RMIT MOU Signing Ceremony

Singapore
REHDA INSTITUTE
REHDA Masterclass 2023



Kuching, Sarawak
10-10 MySTIE
Framework Phase 2.0



**Kota Kinabalu, Sabah
Kuching, Sarawak**



Malaysia Blue Economy
Blueprint (MBEB) Study –
National Workshop

ONLINE



URBANICE
MALAYSIA

Malaysia Urban Forum 2021:
Better Cities for All With
COVID-19



FUTURE CITIES RESEARCH INSTITUTE

Mobility Cities: Urban
Mobility for Future
Cities Webinar



Financial
Literacy Series



Identifying Exciting
Research Projects:
Guidelines and Trends



ASIAN DEVELOPMENT BANK



Habitat
for Humanity

South-East Asia
Affordable Housing Virtual
Symposium



PAMPLIN COLLEGE OF
BUSINESS
VIRGINIA TECH.

Online Workshop:
Introduction to Theory
and Theory Development

Project Partners



MINISTRY OF INVESTMENT,
TRADE AND INDUSTRY



Economic Research Institute
for ASEAN and East Asia



PERTUBUHAN TITAN DIGITAL
MALAYSIA



Malaysian Plastics Manufacturers Association

OUR PROJECTS

IGSC has established a strong track record of delivering impactful and transformative projects since 2021, contributing to national competitiveness and strategic development. Its work spans a range of priority areas

➤ INCLUDING:



Strategy Foresight and
Future Scenario Planning



Energy Systems and
Transition Pathways



Environmental Governance
and Planetary Health



Economic Modelling and
Policy Analytics



Industry Ecosystems and
Competitiveness



Talent Pipelines and
Future Workforce Development



Public Health Systems and
Societal Resilience



Community Development and
Inclusive Growth

An aerial photograph of a suburban residential area. The foreground is filled with rows of houses with dark brown tiled roofs and light-colored walls. In the middle ground, there is a large, circular stadium with a white facade and a dark roof. The word "LAND" is visible on the stadium's facade. In the background, there are several tall, modern apartment buildings. The sky is hazy, and the overall tone of the image is warm and slightly muted.

SOCIAL PILLAR



SUNWAY CITY & DESA MENTARI: A TALE OF TWO CITIES

The genesis of the Sunway Desa Mentari Programme began when a team of IGSC researchers visited the residents living in this ecosystem in 2023. To resolve this dichotomy, the team drafted a proposal to the senior managements of Sunway University and Sunway Group for the sustainable development of the Desa Mentari community. Today, the Sunway Desa Mentari Programme is a flagship initiative of Sunway University and supported by the Jeffrey Cheah Foundation.

Desa Mentari

Less than a kilometre separates Sunway City from Desa Mentari. The Federal Highway runs between them, but the distance it represents is considerably wider than the road itself.

On one side sits one of Malaysia's most ambitious integrated developments: an award-winning township with a world-class university, a medical centre, premium retail, and a business district that has attracted global partners and institutional recognition. On the other side is Desa Mentari: a cluster of high-rise, high-density public housing blocks originally built to relocate squatter settlements from the surrounding area, and home today to more than 5,000 households, an overwhelming proportion of whom fall within the B40 income bracket.



The flats are ageing. Lifts break down. Maintenance is chronically underfunded. Crime, sanitation, and social fragmentation have been persistent community concerns.

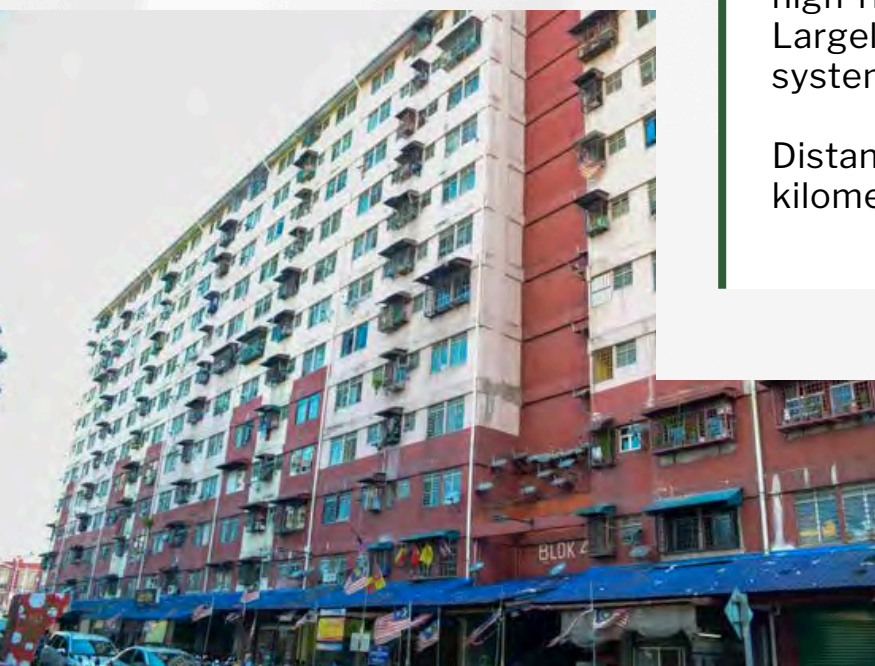
Sunway City

Integrated township. World-class university. Global partnerships. Award-winning infrastructure.

Desa Mentari

More than 5,000 households. Ageing high-rises. Chronic maintenance failures. Largely absent from official data systems.

Distance between them: less than two kilometres.





The Observation That Started It

The contrast between Sunway City's trajectory and the conditions in Desa Mentari was, in IGSC's framing, not merely a socioeconomic disparity. It was a research problem and a responsibility. Communities this close to institutional resources, yet this disconnected from them, are precisely the kind of structural paradox that applied policy research should be equipped to address.

That observation catalysed a decision. Sunway Group and Sunway University committed to adopting the Desa Mentari community as a long-term education, research and development initiative. This would combine targeted investment in amenities and quality of life improvements with a structured research programme, with the ambition that the work done here could ultimately produce a scalable blueprint for urban poverty intervention at the national level, and potentially beyond.

IGSC was not a passive witness to this development. It was the originating voice.



Building the Foundation: Trust as a Key Pillar for Community Development

IGSC worked closely with the Sunway Desa Mentari Community Development Team and Sunway University Leadership Team to approach this with a clear understanding of what trust-building in this context actually requires: consistent presence, genuine reciprocity, and patience measured in years rather than quarters.

In community development of this nature, access is not a given. It is earned, slowly and often precariously. Desa Mentari's residents have good reason for caution. They are a community that has, for decades, been subject to sporadic institutional engagement that rarely survives beyond the short-term, and media attention focused almost exclusively on its problems. Suspicion of outsiders, particularly those perceived as affiliated with large, powerful organisations, is not a cultural quirk. It is a rational adaptation to a long history of under-delivery.

“

Consistent, continuous communication with the community to address the challenges residents faced has been a core aspect since day one. The fact that IGSC has maintained continuous access since 2023 reflects a deliberate and disciplined approach — and that continuity is in itself a form of building trust.

Beginning in 2023, the team initiated its first touchpoints with the community and its leaders. These were not research and development engagements in the conventional sense. They were relationship-building exercises — visits to understand the physical realities of life within the development first hand, conversations with community representatives to understand their actual concerns and priorities rather than the concerns that external parties tend to project onto them, and a sustained commitment to showing up beyond any single objective or deliverable.

In parallel, IGSC supported the Sunway Desa Mentari Community Development Team, Sunway University and Sunway Group in their on-the-ground programmes, including back-to-school initiatives through which free uniforms and shoes were distributed to children in the community. These contributions were modest in scale but meaningful in what they communicated to residents. That is, Sunway staff and students were genuinely interested in learning from the community and improving the quality of life for residents in Desa Mentari.

The fact that IGSC has maintained continuous access since 2023, navigating those sensitivities across multiple engagements and through a series of pilots in 2025, reflects a systematic approach to community engagement. That continuity is itself a form of building strong institutional trust with the community.





The Census: Making the Invisible Visible

One of the most significant outcomes of IGSC's work in Desa Mentari is the development of a comprehensive baseline census survey — an undertaking that is, in several respects, long overdue. Despite housing tens of thousands of residents across more than a decade, understanding Desa Mentari has remained a challenge for local authorities, policy makers and researchers. Quality data on various demographics and characteristics on the community will ensure the design of more effective development policies to meet the community and others like them.

Building from the community relationships cultivated since 2023, IGSC conducted a series of pilots in 2025 to test the instrument's viability and to ensure that the sensitivities of the community were adequately reflected in both the design and the process. Conducting a census in a community with this profile — multi-ethnic, economically precarious, and with understandable caution about how data gathered about them might eventually be used — requires considerably more than a standard survey instrument. Sequencing, language, cultural considerations, consent frameworks, and the management of community expectations all had to be carefully worked through before the exercise could be brought to the broader population.

The full census is scheduled for 2026. When completed, it will constitute the first structured, comprehensive demographic baseline for Desa Mentari — a dataset with direct relevance for policymakers, for the Sunway initiative's long-term planning, and for the broader urban poverty and social development research literature.



A Replicable Model

The significance of what IGSC has developed in Desa Mentari extends beyond the community itself. The methodology — the sequencing of trust-building before research access, the use of participatory pilots to stress-test both instruments and relationships, the embedding of community engagement within a broader social development framework — constitutes a transferable model for applied research in underserved urban communities.

Malaysia is not short of Desa Mentaris. High-density, low-income housing clusters adjacent to or within reach of major development corridors are a feature of the urban landscape across the Klang Valley and beyond. Many of them face comparable conditions: ageing infrastructure, fragmented governance, limited data visibility, and a history of institutional engagement that has generated more documentation than improvement.

The framework IGSC has developed and is testing in Desa Mentari provides a practical basis for replication — one that could inform how Sunway approaches similar communities adjacent to its other developments, and how policymakers and social development practitioners design community research programmes more broadly.

There is also a natural alignment here with national policy. The Desa Mentari initiative connects directly with the Madani framework's focus on inclusive growth and the eradication of hardcore poverty, as well as with SDG 1, 10, and 11 — the goals concerned with poverty reduction, reduced inequalities, and sustainable cities. An IGSC-developed replication model, grounded in demonstrable field experience rather than theoretical prescription, would give these policy commitments an operational dimension that they frequently lack.

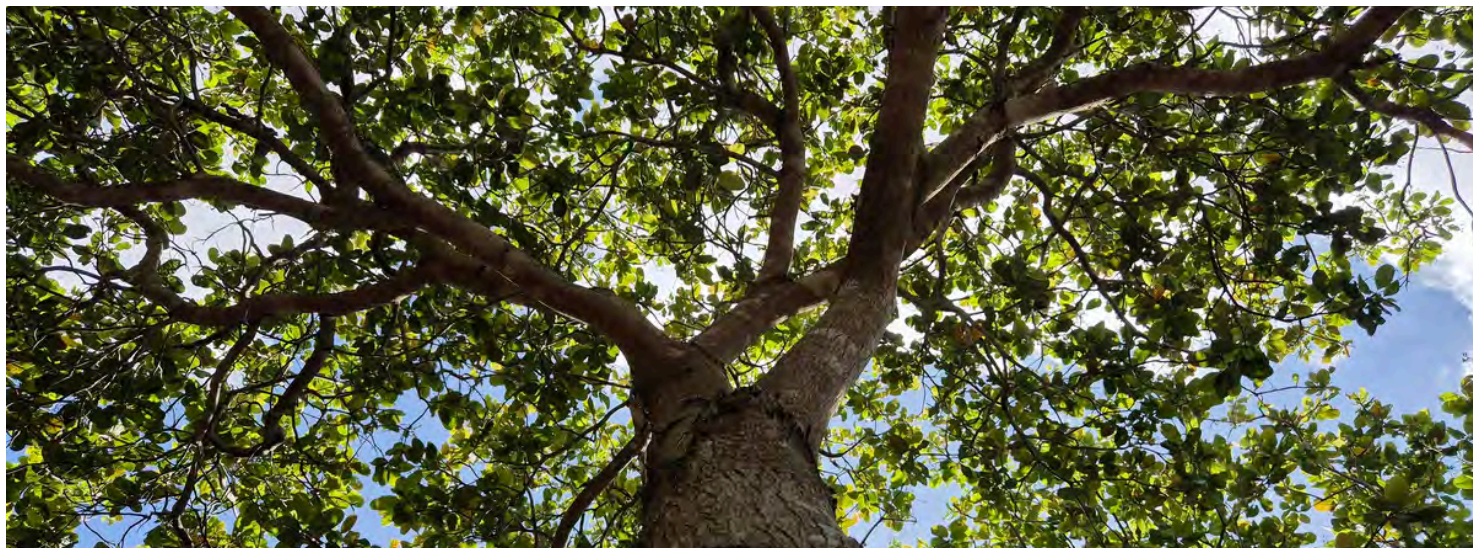
What This Represents

The Desa Mentari initiative illustrates what IGSC was designed to do. It laid the groundwork for an institutional commitment that now carries national policy relevance and global SDG alignment.

The initiative is still in its early stages. The census, when conducted, will open research possibilities rather than close them. But the conditions for meaningful, long-term engagement with this community now exist, and what IGSC will produce from them — a demographic baseline, a community engagement methodology, and ultimately a replicable model for research-led social intervention — represents the kind of work that IGSC champions for.



ENVIRONMENTAL PILLAR



The National Planetary Health Action Plan: From Research to National Blueprint

In 2015, the Lancet–Rockefeller Foundation Commission introduced the concept of planetary health, defining it as the health of human civilisation and the state of the natural systems on which it depends. The framing was clear and urgent. What it did not yet have was a national policy response — a government-commissioned blueprint that could translate the principle into governance, measurement, and systemic action. That response, a decade later, came from Malaysia.

The National Planetary Health Action Plan (NPHAP), published by the Academy of Sciences Malaysia (ASM) in 2025, is the world's first national action plan for planetary health, prepared through the collaborative effort between IGSC, the Sunway Centre for Planetary Health, several Malaysian universities, industry and government agencies. An integral part of the NPHAP was the use of the 8R-8i Ecosystem and ROV Framework developed by Sunway IGSC. In 2025, the plan was announced at the Planetary Health Annual Meeting (PHAM) in Rotterdam, The Netherlands.



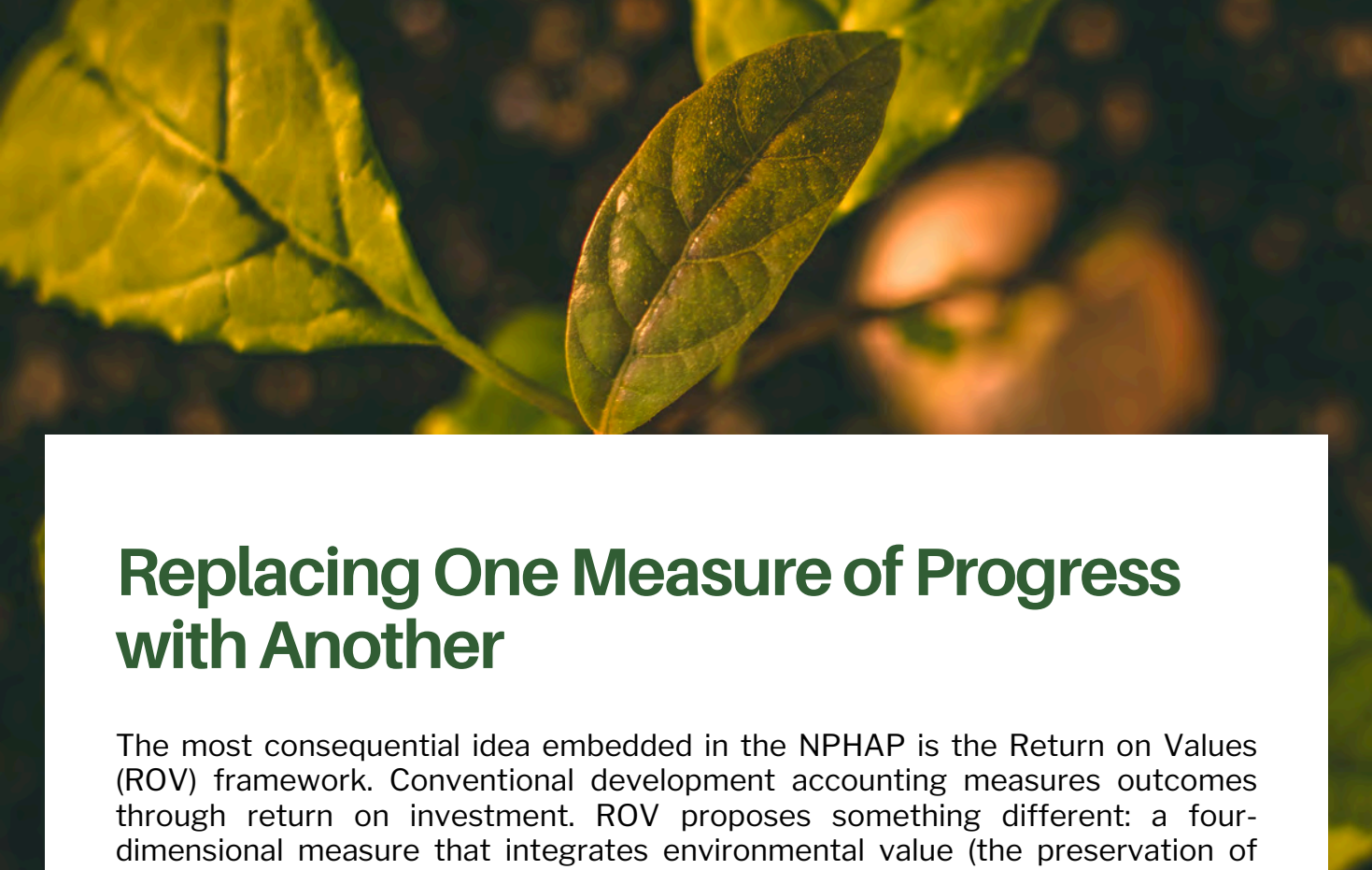
Designing the Framework

ASM brought in IGSC to do something more demanding than produce a background paper or review existing literature. The institute was asked to design the overall conceptual architecture of the plan and craft its narrative logic. IGSC led the Framework and Integration team: the group responsible for the plan's analytical foundations, on which all six Key Result Areas and the five Systemic Shifts are built.

The starting point was a body of work the team had developed from 2022 onwards. The Planetary Health Ecosystem 8R-8I Framework structures the analysis around eight systemic enablers through which sustainable change across any sector must ultimately be driven. Applied to the NPHAP, this framework gave the plan a consistent analytical lens across all six Key Result Areas (KRAs), allowing the team to assess where systems were misaligned and where interventions could most effectively be triggered.



Alongside the 8I framework sits the 8R planet-friendly values framework. These values are not decorative. They were applied as a philosophical and evaluative layer across the entire plan, anchoring its recommendations in a coherent set of principles rather than leaving each KRA to develop its own implicit logic. The third conceptual layer, Dynamic Capabilities, draws on IGSC's broader research tradition and asks how well individuals, organisations and systems can learn from nature, adapt to change, and develop new, nature-based solutions. The three capabilities — absorptive, adaptive and innovative — underpin the plan's approach to positioning businesses and institutions as drivers of planetary health outcomes rather than obstacles to them.



Replacing One Measure of Progress with Another

The most consequential idea embedded in the NPHAP is the Return on Values (ROV) framework. Conventional development accounting measures outcomes through return on investment. ROV proposes something different: a four-dimensional measure that integrates environmental value (the preservation of planetary boundaries and Malaysia's natural heritage), economic value (green industries, sustainable employment, nature-aligned growth), social value (public health, equity and quality of life) and political value (governance capacity and institutional stewardship). The plan explicitly calls for ROV to replace ROI as the operative measure of national development success.

The plan also draws directly on IGSC's 2024 Corporate Planetary Health Behavioural Dynamics study, produced jointly with the Academy of Sciences Malaysia, and provides the empirical grounding for the plan's analysis of firm-level and people-level sustainability behaviours. The findings of the above work led to the development of the 'Lead with Purpose: From ROI to ROV' 4-day workshop for industry leaders.



ECONOMIC PILLAR

ASEAN Ahead: Architecting a Regional Foresight for Science, Technology and Innovation



A Framework Built for Regional Scale

The conceptual centrepiece of ASEAN Ahead is the Triple-10 STIE Framework, and its lineage runs directly through IGSC's institutional history. The MySTIE Framework — which IGSC developed and which was incorporated into Malaysia's 12th National Plan — originally mapped ten national socioeconomic drivers against ten science and technology drivers to identify high-impact STI opportunities at the national level. For ASEAN Ahead, IGSC extended and regionalised that architecture. The Triple-10 Framework introduces a third dimension: ten global forces of change shaping ASEAN's position in the international innovation landscape. The result is an analytical cube that captures not just what STI can do for any given economy, but how it interacts with broader global currents and generates spillovers across the region.

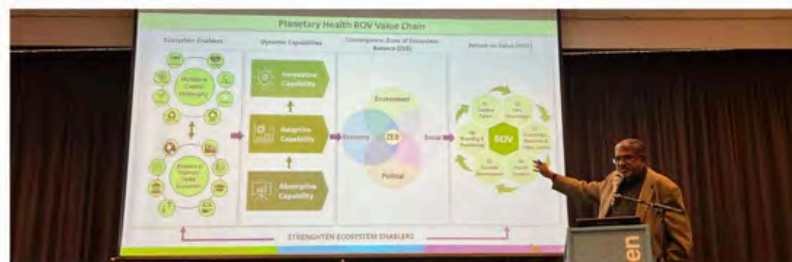
The MySTIE-to-Triple-10 evolution demonstrates something about how IGSC's frameworks are designed: they are built to scale. What began as a national competitiveness tool became a regional foresight instrument without losing its internal logic. The same drive — to show how STI interacts with the economy to create what the report terms Return on Values across economic, environmental, social and political dimensions — runs through both.

Designing the Foresight Process

The ASEAN Foresight report's analytical process is structured around the 4F Foresight Framework: forensics, forecasting, future-sighting and future-proofing. These four stages are not sequential in any simple sense; the framework is explicitly iterative, with feedback loops between stages running throughout the exercise. Identifying which forces of change matter, modelling their interactions, constructing plausible scenarios, and then designing the conditions for reaching a preferred future — this is a process that requires a coherent methodology, not just a list of themes.

The ecosystem analysis underpinning the forensics and forecasting stages draws on IGSC's 8i framework, which structures assessment across eight interconnected enablers. Applied across ASEAN's ten member states, the framework produced a taxonomy of three ecosystem types — pace-setters, maturing, and emerging — that gives the report's regional recommendations a differentiated rather than generic character.

The model governing how foresight cascades from regional to national to sectoral levels — and loops back — is the Iterative Foresight Cascade Model, developed by IGSC. This is the mechanism through which the report's scenarios and strategic directions are meant to translate into practical action, allowing ASEAN-level foresight to inform national plans and industry roadmaps without losing coherence in the translation.



Four Scenarios, One Aspiration

The four scenarios that anchor ASEAN Ahead — Collective Prosperity, Have and Have-Not, Misplaced Confidence, and Spiralling Out of Control — are not simply rhetorical devices. They are constructed from the intersection of two axes: the robustness of the STIE ecosystem, and the degree of regional coherence, cooperation and cohesion. The scenario the report advocates for, Collective Prosperity, is not described as inevitable or even straightforward. The report is candid that the Have and Have-Not path, in which external ecosystem players extract value while inequality deepens within the region, is at least as plausible as the preferred outcome, and that all three negative scenarios share a common root in some combination of complacency, fragmentation and the failure to assert regional control over STI.

That framing reflects a consistent strand in IGSC's research orientation: the conviction that well-designed systems do not automatically produce good outcomes, and that the institutional logic underneath any ecosystem needs to be surfaced and interrogated rather than assumed to be benign.

Policy Traction at Regional Scale

The NPHAP demonstrated what IGSC's frameworks could achieve when applied to national policy. ASEAN Ahead demonstrates what they can do at regional scale, under a different order of political complexity. The report was endorsed by five high-level councils — the National Science Council of Malaysia, SCIRD, COSTI, and the ASEAN Ministerial Meeting on Science, Technology and Innovation — and served as the principal reference document for the ASEAN Plan of Action on Science, Technology and Innovation (APASTI) 2026–2035. That is the region's operative STI policy framework for the next decade.

For IGSC, this represents the economic foresighting pillar's most consequential deployment to date. The institute's frameworks — developed through years of applied research on competitiveness, innovation ecosystems and socioeconomic development — now sit at the analytical foundation of a regional policy agenda spanning 693 million people and the third-largest combined economy in the world.

IGSC's PROJECT DETAILS



Malaysia Blue Economy Blueprint

Funding Organisations	Ministry of Economy
Project Partners	Academy Sciences Malaysia, other local universities, industry, and community organisations
Project Duration	24 Months

Project Overview

The Blue Economy is a significant contributor to Malaysia's economy. It spans several sectors from extractive industries (oil & gas), fishing and aquaculture, coastal and marine tourism, maritime shipping and logistics, and contributes around 8.4% of national GDP in 2024.

In 2024, IGSC was approached to jointly develop a blueprint for the Malaysian Blue Economy with the support and insights of stakeholders from government, industry, universities, non-governmental organisations and civil society.

Insights from the project culminated in the inclusion of the Blue Economy in the 13th Malaysia Plan as one of the key growth drivers for the Malaysian economy. Given Malaysia's coastal and marine economic and natural assets, it presents opportunities for transforming the coastal and maritime industries and communities.

IGSC's Contribution

IGSC's frameworks and emphasis on sustainable development are embedded in the Blue Economy Blueprint. Though the sectors have high potential for growth, this growth needs to be grounded in planetary health. The 8i-8R ecosystem framework guided the entire blueprint across all key sectors in identifying the necessary systemic shifts to transform Malaysia's Blue Economy into a sustainable growth powerhouse for the future.

IGSC's expertise in scenario forecasting also played a key role in generating the possible GDP growth trajectories for the 8 key sectors that will drive the future of Malaysia's Blue Economy. This includes emerging sectors such as ocean renewable energy, desalination, and marine biotechnology and bioprospecting.

The team also led 2 of the 8 sectors, extractive industries and waste management. This entailed rigorous engagements with multiple stakeholders from government authorities to industry and local communities, ensuring that key voices are represented in this blueprint.





Project Overview

The global business landscape is at a tipping point. Environmental degradation, wealth inequality, and social vulnerability are no longer peripheral concerns and represent direct and material risks to business resilience and long-term economic stability.

To address this, we developed the Lead With Purpose leadership programme to guide business leaders in transitioning their companies from a Return-on-Investment (ROI) mindset towards a Return-on-Values (ROV) framework. The programme provides the necessary tools and frameworks for business leaders to transition towards sustainable growth that creates value across four dimensions of economic, social, environmental and political empowerment.

Lead with Purpose: ROI to ROV Programme

Funding Organisations	InTent
Project Partners	Sunway Centre for Planetary Health
Project Duration	36 Months (On-Going)

IGSC's Contribution

Funded by InTent, the programme is centered around a 4-day module workshop spread across 12 months. IGSC developed the modules by translating high-impact frameworks to the practical level and translating them into actionable strategic plans for business leaders.

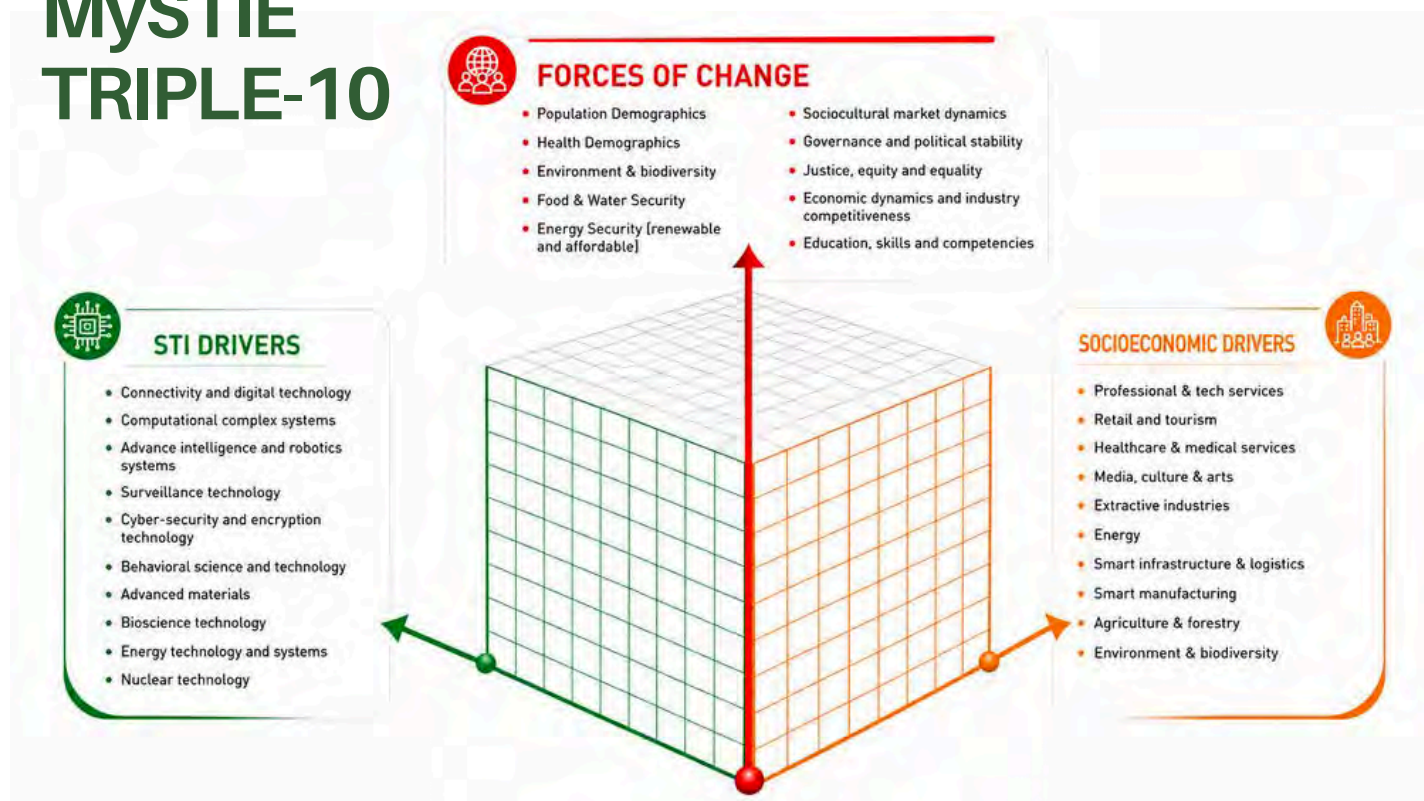
Across 4 modules, the programme has our trainers and facilitators guide business leaders through the purpose they serve, diagnosing their ecosystem, developing strategies, and communicating their value creation to stakeholders. In 2025, we were joined by over 40 companies and 150 business leaders across the first two modules and 12 sessions. Together, we examined their company's purpose, values and how they can address the gaps in their ecosystem for ROV.

MPMA JOINS SUNWAY UNIVERSITY'S "RETURN-ON-INVESTMENT TO RETURN-ON-VALUES" LEADERSHIP TRANSFORMATION PROGRAMME – MODULE 1



On Saturday, 9 August 2025, MPMA joined Module 1 of Sunway University's ROI • ROV Leadership Transformation Programme – a two-year, six module initiative designed to help businesses move beyond traditional profit measures toward a values-driven approach that delivers lasting economic, social, and environmental impact.

MySTIE TRIPLE-10



**Designed by Sunway IGSC
in partnership with ASM.**

The Triple-10 Project is a national strategic initiative aimed at strengthening the adoption and mainstreaming of the 10-10 MySTIE Framework within Malaysia's Science, Technology, Innovation, and Economy (STIE) ecosystem.

Building on this foundation, Sunway IGSC and ASM is advancing a second-generation framework known as "Triple-10," which introduces ten global transformative forces that shape the existing ten STI drivers and ten socioeconomic drivers. To refine and validate this next-generation model, ASM and Sunway IGSC is conducting nationwide stakeholder workshops involving government, industry, and academia. These engagements are designed to ensure that the framework reflects current national priorities, integrates global trends, and is ready for policy integration within the 13th Malaysia Plan.

Funding Organisations	Academy of Sciences Malaysia
Project Partners	Academy of Sciences Malaysia
Project Duration	24 Months (On-Going)

The Triple-10 Project builds upon IGSC's existing frameworks, contributing to Malaysia's strategic planning by enhancing the integration of foresight-driven approaches into national policy development. It applies structured methodologies such as horizon scanning, trend analysis, and stakeholder consultations to identify emerging technologies, priority sectors, and cross-cutting challenges. This ensures that the refined STIE Niche Areas and the Triple-10 framework are evidence-based, forward-looking, and aligned with both domestic needs and global developments.



WATER SECTOR TRANSFORMATION 2040

Funding Organisations	Ministry of Economy
Project Partners	Academy Sciences Malaysia, other local universities, industry, and community organisations
Project Duration	24 Months

Project Overview

Water plays a critical role in supporting Malaysia's social and economic development. However, rapid urbanisation and development pressures have contributed to increasing challenges, including floods, water pollution, and supply disruptions.

In response, this study was undertaken as part of the Roadmap for the National Agenda on Water Sector Transformation 2040 (WST2040), led by the Academy of Sciences Malaysia (ASM) in collaboration with Sunway IGSC and other public universities. The initiative aimed to guide the development of a more resilient and economically significant water sector.

 Every drop is precious, says PM on World Water Day

Every drop is precious, says PM on World Water Day

PETALING JAYA: The government will ensure there is water security for all Malaysians in the future under Water Sector Transformation 2040, says Prime Minister Tan Sri Muhyiddin Yassin.

IGSC's Contribution

Over the two-year period, eight expert groups co-developed the roadmap, integrating multidisciplinary expertise to support the transformation of Malaysia's water sector. Extensive stakeholder engagement activities with 73 stakeholders and a survey of 900 participants from industry and the general public were conducted to capture on-the-ground sentiments on current water sector challenges. One of IGSC's core contributions was the 8R-8i Ecosystem Framework that underpins the report's insights and roadmap.

Since its launch, WST2040 has been incorporated into the 12th Malaysia Plan and is intended to guide national implementation over a 20-year horizon.

TheStar

StarPlus News Asean+ Business Sport Metro Lifestyle Food Tech Education Opinion

TOPICS : Flood Alert StarESG Urban Biodiversity True or Not SOBA 2022 Covid-19 Watch Sabah

Focus is on WST2040, making water sector economic source, says Nik Nazmi



National Fuel Subsidy Rationalisation: A Behavioral Economic Analysis

Funding Organisation	Ipsos
Project Partners	Ipsos
Project Duration	8 Months

Project Overview

Subsidies are a key component of Malaysia’s socio-economic framework, helping to manage cost-of-living pressures and support households and key sectors. However, rising subsidy expenditure — particularly in fuel — has increased fiscal strain, prompting greater scrutiny over the long-term sustainability and efficiency of broad-based subsidy mechanisms.

This study, undertaken in collaboration with Ipsos, examines the effectiveness of Malaysia’s current fuel subsidy system and explores potential reform pathways to better align fiscal sustainability with social protection objectives.

IGSC’s Contribution

The team conducted behaviour modelling to assess the sentiments of diverse consumers on the fuel subsidy rationalisation program. The IGSC team also estimated the impact of fuel rationalisation on inflation and the potential savings from transitioning towards more targeted approaches. It highlighted inefficiencies in blanket subsidy systems, including disproportionate benefits to higher-income groups and challenges in resource allocation.

The project also provided policy-relevant insights and strategic recommendations to support a more efficient, equitable, and sustainable subsidy framework in Malaysia.

MALAYSIA

DPM Zahid: Blanket diesel subsidy gives rise to leakages, smuggling





Corporate Behavioral Modelling Of Planetary Health Best Practices

Funding Organisations	Ministry of Science, Technology and Innovation
Project Partners	Academy of Sciences Malaysia, Sunway Centre for Planetary Health
Project Duration	12 Months

Project Overview

This project aimed to establish a unified planetary health framework for Malaysia through a Return-on-Values development approach, in collaboration with the ASM and Sunway Centre for Planetary Health (SCPH). It is grounded in the recognition that economic development, environmental sustainability, and societal well-being are deeply interconnected and must be addressed in a more integrated manner within national planning systems.

The initiative supports ongoing national efforts to strengthen sustainability-oriented policymaking by embedding planetary health principles into development strategies and governance structures. It contributes to a long-term vision for Malaysia that seeks to balance economic progress with environmental integrity, resilience, and social well-being in a more systematic and coordinated way.



IGSC’s Contribution

The project developed a structured planetary health framework for assessing the key drivers (8R-8i Ecosystem Enablers) that impact the ROV for firms that are aligned to planetary health best practices.

In collaboration with ASM, SCPH and key stakeholders, it synthesised cross-sectoral insights to identify gaps and opportunities in integrating planetary health considerations across policy domains and firm-level decision making. The resulting framework strengthened policy coherence and supports a more holistic approach to sustainable and inclusive national development.





Funding Organisations	ASEAN, Ministry of Science, Technology and Innovation
Project Partners	Academy of Sciences Malaysia, ASEAN Foresight Alliance, ASEAN Foresight Research Cohort
Project Duration	12 Months

Project Overview

The ASEAN region has experienced rapid economic growth over recent decades, supported by a population of more than 660 million and a combined GDP exceeding USD 3 trillion. Despite this progress, the region continues to face significant and interconnected challenges, including disparities in economic development, political uncertainty, social inequality, environmental degradation, and biodiversity loss.

The ASEAN Foresight Project responded to these challenges by identifying emerging regional issues and future trends shaping ASEAN's long-term development towards 2050. The project is structured around ten key forces of change, including economic dynamics, governance systems, justice, education, and biodiversity, to support a comprehensive understanding of future uncertainties and opportunities.

ASEAN Foresighting



IGSC's Contribution

The project is undertaken in collaboration with the Academy of Sciences Malaysia, policymakers, and representatives from ASEAN member states, with IGSC contributing to a regional foresight initiative focused on strengthening long-term strategic planning across ASEAN.

The team applied a structured foresight methodology, including trend analysis, scenario development, expert consultations, and validation workshops, to systematically examine possible future pathways and their implications for regional development. The project integrated multi-country and cross-sectoral perspectives to ensure that the analysis reflected diverse regional realities. Its key output is a comprehensive blueprint for a “utopian ASEAN 2050,” anchored on three pillars: people’s health and wellbeing, planetary health, and economic development, supporting policymakers in formulating coordinated and future-ready regional strategies.



NON-RADIOACTIVE RARE EARTH INDUSTRY (NR-REE)

Funding Organisations	Ministry of Natural Resources, Environment and Climate Change
Project Partners	Academy Sciences Malaysia, other local universities, industry, and community organisations
Project Duration	12 Months

Project Overview

Rare earth elements are essential inputs in modern technologies such as smartphones, electric vehicles, and wind turbines. While they are critical to supporting global decarbonisation, their extraction and processing must be managed responsibly to minimise environmental and social impacts.

Malaysia holds significant rare earth resources and has been identified as a potential key player in the global supply chain. National policy discussions have increasingly emphasised the need to develop a more integrated and sustainable value chain, while addressing gaps in downstream processing capability and technical expertise.

This project is undertaken in collaboration with the ASM for the Ministry of Natural Resources, Environment and Climate Change. It aimed to support the development of Malaysia’s rare earth industry through a sustainable business model guided by a planetary health approach.



IGSC’s Contribution

Since 2022, the team has undertaken structured stakeholder engagement with representatives from government agencies, industry players, and non-governmental organisations to develop a comprehensive understanding of Malaysia’s rare earth ecosystem. These engagements explored key dimensions of the sector, including regulatory frameworks, environmental safeguards, technological readiness, and industry capacity constraints across the value chain. A key contribution of IGSC is the development of a comprehensive supply chain using the 8R-8i Ecosystem ROV Framework.

The insights gathered were synthesised to identify critical gaps and opportunities within the current system, particularly in relation to downstream processing capabilities and sustainable resource governance. The framework emphasised alignment between economic potential, environmental stewardship, and social considerations under a planetary health approach.





Sunway Desa Mentari Community Development Programme

Funding Organisations	Sunway University and Sunway Group
Project Partners	Suriana Welfare Society, Sunway University, Sunway Group, Desa Mentari Community
Project Duration	36 Months (On-Going)

Project Overview

The Sunway Desa Mentari Community Development Programme supports inclusive and sustainable urban development within Malaysia's evolving socio-economic landscape. Desa Mentari, home to over 5,000 households, is a key site under the Selangor Zero Squatter Programme, focusing on improving living conditions through affordable housing while enhancing access to education, healthcare, and economic opportunities.

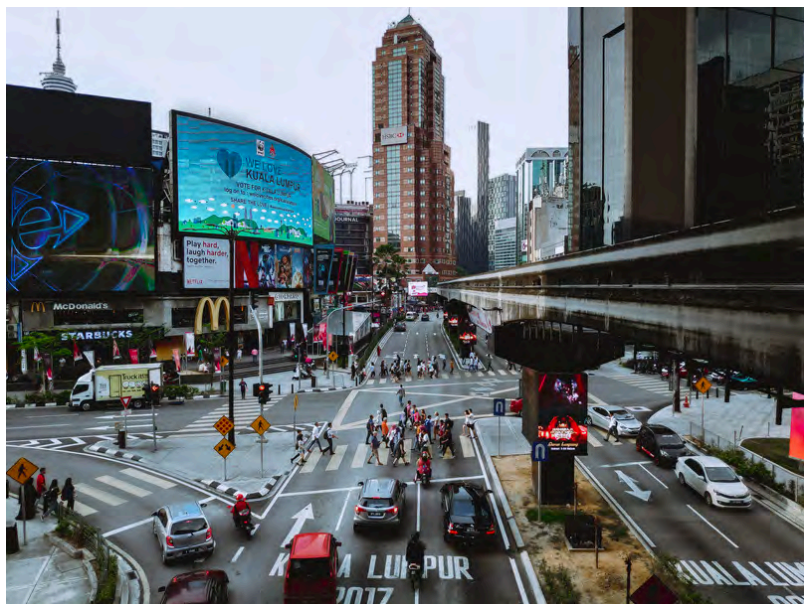
Despite these efforts, the community continues to face persistent challenges, including limited employment opportunities, socio-economic vulnerabilities, ageing infrastructure, and gaps in stakeholder coordination, underscoring the need for a more integrated development approach.

IGSC's Contribution

Sunway IGSC contributed through ongoing community engagement and stakeholder collaboration to strengthen the understanding of local needs and development priorities within Desa Mentari. IGSC is also leading the baseline survey for the community. This included engagement sessions with residents and community leaders to gather insights on key socio-economic challenges affecting the community.

The insights generated inform the identification of priority intervention areas, particularly in education, livelihoods, and community wellbeing, while supporting more coordinated engagement among relevant stakeholders. These inputs also contribute to the development of more targeted and context-specific initiatives, strengthening a more evidence-informed approach to community development in Desa Mentari.





R.D.I.C.E Roadmap For Malaysia

Funding Organisations	Ministry of Science, Technology, and Innovation
Project Partners	Academy Sciences Malaysia, other local universities, industry, and community organisations
Project Duration	12 Months

Project Overview

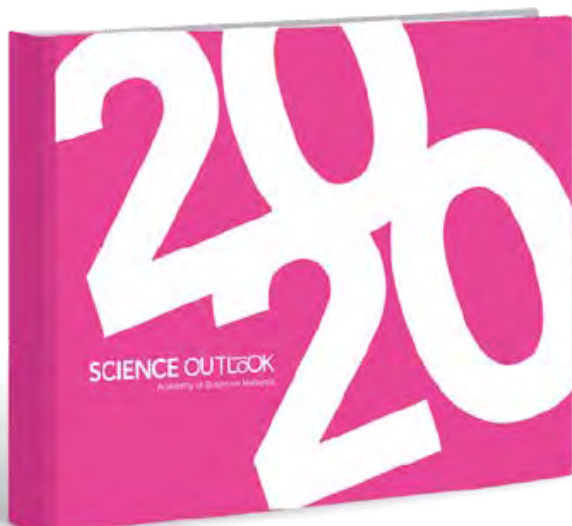
The RDICE (Research, Development, Innovation, Commercialisation, and Economy) ecosystem plays a pivotal role in supporting Malaysia's transition towards a knowledge-based and innovation-driven economy. Despite its strategic importance, the current science, technology, and innovation (STI) landscape remains fragmented, characterised by limited coordination, a lack of strategic focus, and relatively low levels of industry adoption and commercialisation.

Developed in collaboration with the Academy of Sciences Malaysia (ASM) for the Ministry of Science, Technology and Innovation (MOSTI), this project established a national RDICE roadmap to strengthen alignment between STI initiatives and Malaysia's broader economic priorities. The roadmap provided a strategic framework to enhance ecosystem coherence and improve the effectiveness of research and innovation efforts across the value chain.

IGSC's Contribution

The project delivered a comprehensive national roadmap that sets out a clear direction for the development of a more integrated and performance-driven RDICE ecosystem. It addressed key structural challenges by moving beyond fragmented and supply-driven approaches towards a more coordinated, demand-driven model that emphasised industry relevance and market-oriented delivery.

Central to the roadmap is the strengthening of linkages between research, industry, and commercialisation — anchored by IGSC's 8i STIE Framework as the key foundation of the RDICE ecosystem — enabling the translation of scientific and technological capabilities into high-value, high-technology outputs. In doing so, the project supports the advancement of national priorities outlined in the Shared Prosperity Vision 2030, contributing to enhanced innovation capacity, improved ecosystem efficiency, and the narrowing of Malaysia's innovation gap.



SCIENCE OUTLOOK 2020

Funding Organisations	Academy of Sciences Malaysia
Project Partners	Academy Sciences Malaysia, other local universities, industry, and community organisations
Project Duration	18 Months

Project Overview

Conducted in collaboration with the Academy of Sciences Malaysia (ASM), this project examines the role of Science, Technology, Innovation, and Economy (STIE) in shaping Malaysia's long-term economic, social, and environmental development since the introduction of Vision 2020.

The study is situated within Malaysia's national aspiration of becoming a high-income and innovation-driven economy, assessing how the STIE ecosystem has evolved over time and the extent to which it has contributed to broader development outcomes. It further identified key systemic strengths, structural gaps, and opportunities for strengthening the national innovation landscape.

IGSC's Contribution

This project was designed to strengthen national understanding of Malaysia's STIE ecosystem and its contribution to long-term development planning and policy direction. It brought together evidence and stakeholder perspectives to provide a more holistic view of ecosystem performance.

It delivered three key outcomes:

1. Assessment of STIE contributions to Malaysia's economic, social, and environmental development through a structured framework.
2. Development of a national composite STIE index to benchmark ecosystem performance and identify system-level strengths and gaps.
3. Generation of forward-looking insights to support Malaysia's high-income nation aspirations by 2030, including strategic recommendations for strengthening STI governance and coordination.



A Reality Check Of Malaysia's Progress In Science, Technology, And Innovation For Past 30 Years

By CodeBlue | 7 October 2021



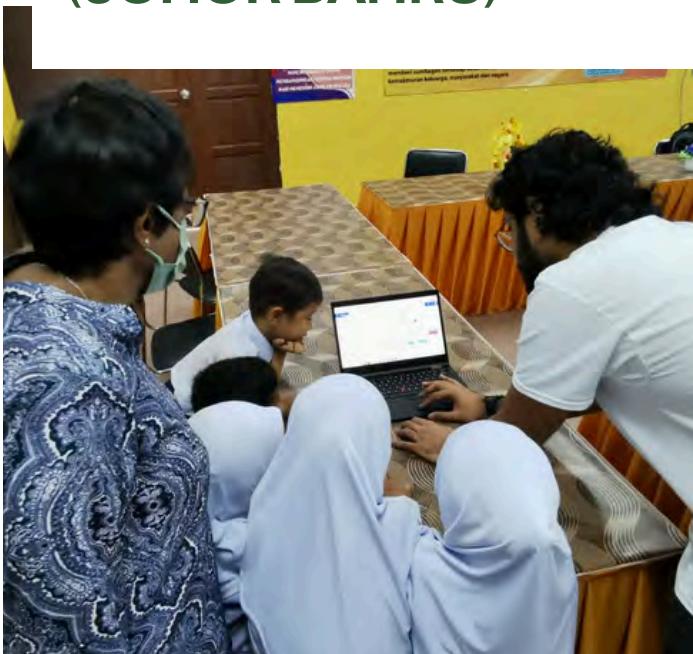
Project Overview

Children in vulnerable communities tend to live in environments that provide less cognitive stimulation compared to children in well-off families, resulting in a deficit in neuroplasticity that impairs the development of their brain systems linked to executive functions such as goal setting, completing complex tasks, and adaptability.

The study aims to better inform the ICT educational curriculum which will equip students of today with 21st-century skills for the increasing technological challenges of tomorrow. By moving towards a technocratic society, the bottom 40% of the population can increase productivity through the adoption of modern technology and improve

Funding Organisations	Sunway Group
Project Partners	Project Titian Digital (PTD)
Project Duration	36 Months (On-Going)

Vulnerable Community ICT Education (JOHOR BAHRU)



Vulnerable Community ICT Education (Pulau Carrey)

their problem-solving skills as well as overall well-being via concrete recommendations of policies based on evaluations of real-world initiatives such as the PTD.

IGSC's Contribution

Our research findings support furthering theories on the role of neuroplasticity in poverty- cognition links and inform policies, such as initiatives to transition traditional teaching towards innovative pedagogy with integrated ICT among this segment of the population. These policies could mitigate the effects of poverty on brain development in low-income Malaysian indigenous school children, narrowing economic inequalities in Malaysia, and align with the 13th Malaysian Plan and UNSDGs 1, 3, 4 and 10. Their findings were also published in a journal and a book chapter (see Publications).

DTNN 2030 drives peaceful use of nuclear technology in Malaysia

By Bernama - September 20, 2023 @ 2:04pm



National Nuclear Technology Policy (DTNN) 2021-2030

Malaysia's vision to become a progressive and prosperous nation by 2030 includes the peaceful use of nuclear technology as a key enabler of socio-economic development. In this context, the National Nuclear Technology Policy 2021-2030, developed in collaboration with ASM, provides a framework to guide the advancement of nuclear technology across priority sectors. The study used the 10-10 MySTIE Framework developed by IGSC in collaboration with ASM.

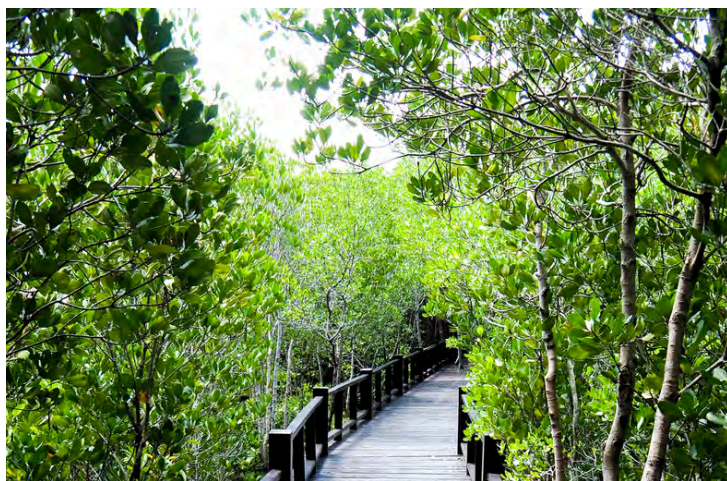
The policy outlines strategic directions to maximise the use of existing technologies while identifying next-generation applications to deliver sustainable socio-economic outcomes, serving as a reference for national efforts to advance the safe and effective use of nuclear technology.

Environmental pollution and ecosystem degradation have been longstanding challenges in Malaysia, where economic growth has often come at the expense of environmental and social wellbeing. This study examines opportunities to strengthen governance by improving coordination across environmental-related agencies and ministries to achieve better outcomes.

Undertaken in collaboration with ASM and the Ministry of Environment and Water (KASA), the study developed an 'Environmental Dividend Framework' to address financing gaps between federal and state institutions. It also proposes legislative and enforcement enhancements to strengthen institutional capacity and governance effectiveness. The IGSC team contributed to the development of the empirical analysis for the Federal-State Revenue Sharing Model.



Strengthening Environmental Governance in Malaysia



Nexus of Biodiversity Conservation and Sustainable Socioeconomic Development in Southeast Asia

Southeast Asia is one of the most biodiverse regions in the world, hosting about 80% of the world's biodiversity. However, as rapid industrialisation and urbanisation spread across ASEAN, the mode of growth for the region needs to be re-examined. To put things in perspective, the value of this biodiversity and the ecosystem services that nature provides in the region needed to be identified.

IGSC, together with Campaign for Nature and Academy of Sciences Malaysia, estimated that nature's economic value contribution to ASEAN was around USD 2.2 trillion. Against this figure, using the 8R-8i Ecosystem Framework, the team identified the gaps in the current state of policies related to conservation and sustainable socioeconomic development. Key recommendations to strengthen the ecosystem was proposed in the study.

Transportation is a key enabler of modern society. In Malaysia, however, transportation options are often car-centric with few alternatives. Recognising the need for more sustainable modes of transportation, Sunway Group enlisted researchers from IGSC and Monash University Malaysia to develop a Sustainable Intelligent Transportation Ecosystem (SITE) for Sunway City.

The team conducted behavioural studies to gauge the factors that encourage and discourage people from using non-car transportation options, such as the integrated elevated walking paths found across Sunway City. Complementing this, IGSC also did a comprehensive site walk to identify gaps in existing alternative options. Many of the improvements recommended have been taken up by the Sunway Group and implemented.



Sunway Sustainable Intelligent Transportation Ecosystem (SITE)



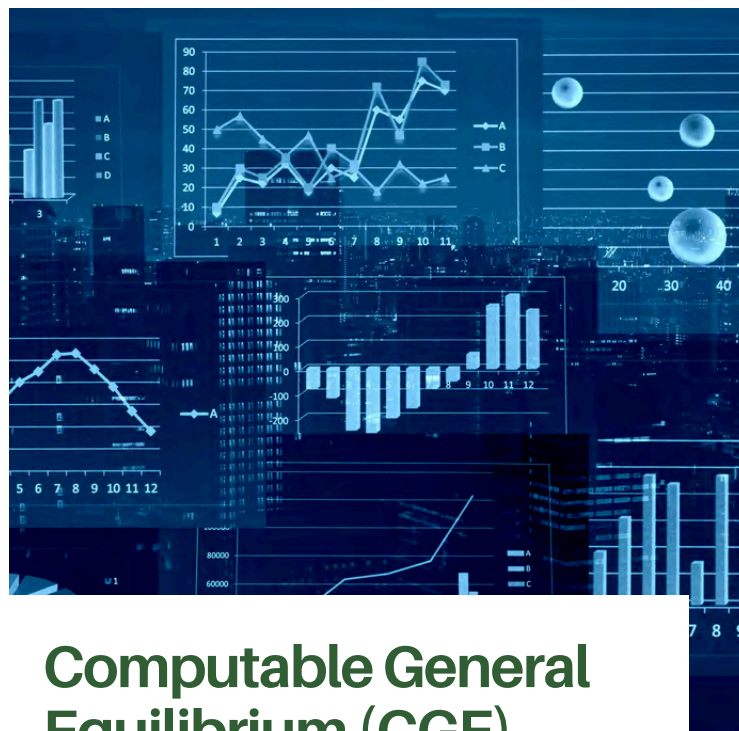
Long-Term GDP Forecast - Single Buyer, Tenaga Nasional Berhad

Long-term GDP forecasting is a key input into energy infrastructure load demand planning. IGSC has been engaged by Ratings Agency Malaysia (RAM), Single Buyer and Tenaga Nasional Berhad (TNB) since 2021 to conduct a long-term GDP forecast and annual model update. These comprehensive forecasts and econometric modelling covered all 13 states of Malaysia and their key contributing sectors. In total, over 50 econometric forecasting models were developed for this study.

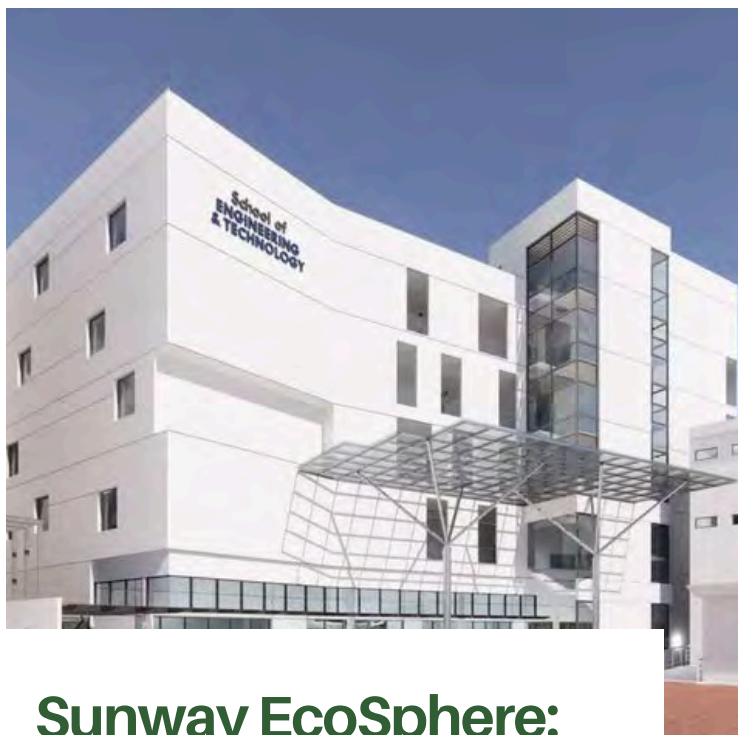
The GDP forecasts were used to estimate the energy demand from industry and households which informed TNB and the Energy Commission's decisions on energy infrastructure planning.

In collaboration with Victoria University and the Sunway School of Business, IGSC worked with the Ministry of Investment, Trade Industry to develop a computable general equilibrium (CGE) model for Malaysia's economy.

These are computer-based, multi-sectoral economic simulations that estimate how policy changes or external shocks (like taxes, climate events, or trade shifts) that affect key economic variables such as gross domestic product, productivity and the labour market. The team modelled interactions between households, firms, and government to analyse both direct and indirect effects.



Computable General Equilibrium (CGE) Modelling of the Malaysian Economy



Sunway EcoSphere: The FET-Annex Net Zero Carbon Building

The increase in greenhouse gases and their associated effects on climate change call for concerted global efforts towards emission reduction. To evaluate and demonstrate the potential of achieving net zero emission for a university building, this project aims to implement green technologies and smart systems to reduce carbon footprint and optimise the energy efficiency, water consumption and waste management of a new 7-storey annex building for School of Engineering and Technology.

IGSC leads the Social Impact Analysis based on the ROV framework, studying the tangible and intangible impacts of such a building beyond traditional financial metrics.

Neurodevelopmental disorders are becoming increasingly common in Malaysia. A large factor driving this is inadequate awareness and access to the right information and resources to manage these disorders.

In collaboration with the Sunway School of Psychology, IGSC worked with Spark Child Development Centre to develop an ROV-based cost-benefit analysis for a hypothetical mobile app intervention for child neurodevelopmental disorders. Through this ROV lens, the team identified that these disorders carry significant indirect costs to Malaysia's economic productivity and social well-being.



Return-on-Values (ROV) Analysis for Technology Interventions on Child Neurodevelopmental Disorders



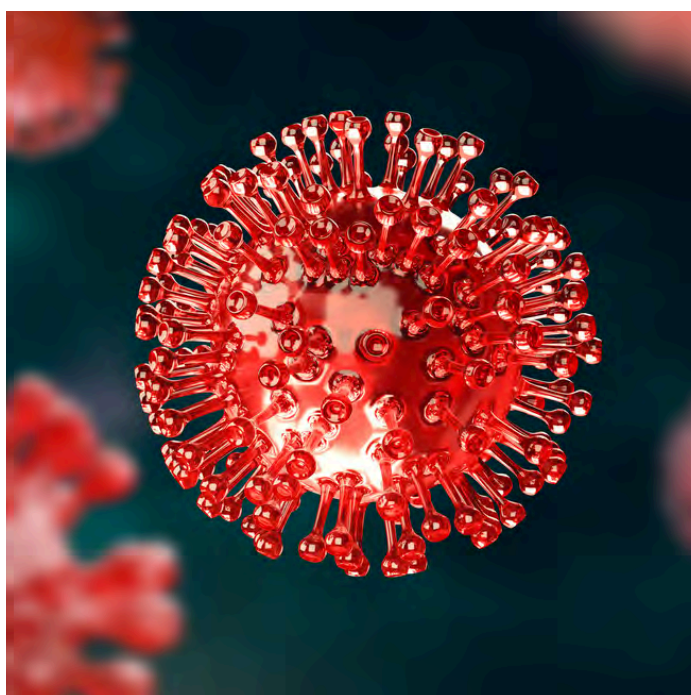
SIG Hydrogen Economy

This initiative explored opportunities to develop a local hydrogen economy ecosystem in Malaysia as part of efforts to support a climate-resilient energy transition. The Position Paper, developed by IGSC and ASM, highlighted the importance of early adoption of hydrogen as a key future energy source and proposed the implementation of demonstration projects in two areas: fuel cell-based public transport and logistics, and hydrogen applications for industrial and residential power generation.

It further emphasised the need for a coordinated ecosystem involving government, universities, and industry stakeholders, supported by a designated lead agency to drive and align national efforts in developing the hydrogen economy. IGSC's work on the 10-10 MySTIE and 8i Ecosystem Frameworks provided the foundation for analysis and key recommendations for this study.

Position Paper on COVID-19

This position paper on COVID-19 discusses Malaysia's preparedness to address infectious disease outbreaks using STIE Framework (10-10 MySTIE), developed jointly by IGSC and ASM.





SIG Industry-Ready Talent

The rapid pace of technological advancement and globalisation has created a volatile, uncertain, complex, and ambiguous (VUCA) labour market, requiring a resilient and continuously upskilled workforce. However, skills gaps persist in Malaysia, where graduates often lack the practical competencies and industry exposure required by employers, highlighting the need for stronger alignment between higher education and industry needs.

In response, the Special Interest Group on Industry-Ready Talent (SIGIRT), in collaboration with the Academy of Sciences Malaysia and Sunway IGSC, developed a position paper titled “Nurturing Knowledge-Based Industry-Ready Talent.” The paper identifies key challenges across the talent pipeline and proposes strategies to strengthen a coordinated talent development ecosystem.

Malaysia is projected to be an “Aged-Nation” by 2045, and a “Super-Aged Nation” by 2060. With this growing ageing population, maintaining physical and cognitive abilities becomes crucial in maintaining quality of life.

As part of the Ministry of Higher Education’s Long Term Research Grant (LRGS), IGSC, the Sunway School of Business, the Jeffrey Cheah Sunway Medical School, Monash University Malaysia and Universiti Kebangsaan Malaysia are exploring interventions that have the potential to delay ageing-related physical and cognitive decline. In addition, jointly with the School of Business, the potential solutions will be evaluated against a cost-benefit analysis to propose cost-effective, evidence-based insights to policy-makers.



Successful Ageing: Interventions to Delay Ageing-Related Decline

PUBLICATIONS

IGSC advances knowledge and informs policy discourse through publications, including journal articles, conference papers, book chapters, policy papers, and technical reports, supporting evidence-based decision-making and strategic development. Its work spans a range of priority areas

INCLUDING:



Sustainability and
Environmental
Governance



Energy Transition and
Climate Resilience



Economic Development
and Policy Analytics



Industry Transformation
and Innovation Systems



Public Health and
Societal Resilience



Talent Development and
Future Workforce Systems

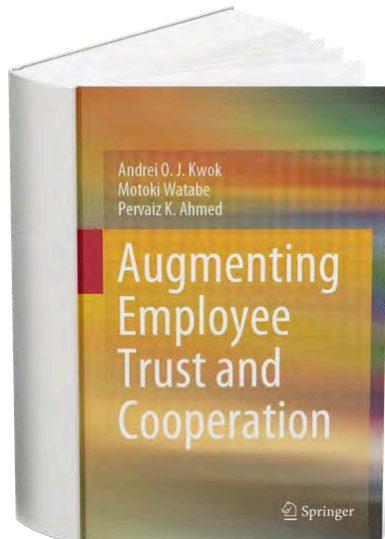


Digital Transformation
and Institutional
Development



Inclusive Growth and
Community Development

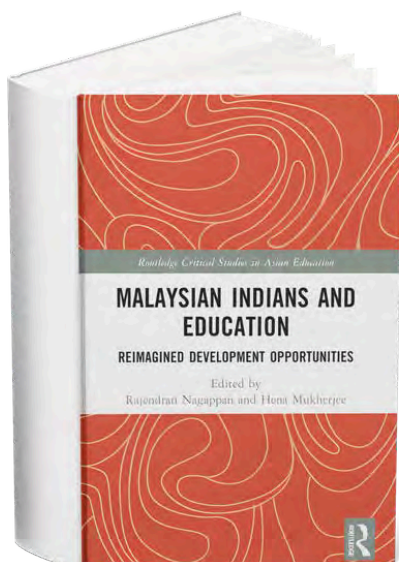
Augmenting Employee Trust and Cooperation



Authors: Andrei O.J. Kwok, Motoki Watabe, Pervaiz K. Ahmed
Year: 2021

This book guides academics and practitioners in understanding individual differences in employee personality and their impact on motivation, engagement, and performance. It explains how organisations can adopt more personalised motivation strategies in response to digital transformation and evolving employee expectations. In the context of intensifying talent competition and declining psychological attachment, it highlights employees' growing expectation to be recognised, valued, and rewarded as individuals.

Future-Proofing the Talent of Malaysia's Indian B40 Community for the New Economy: A Multi-Stakeholder Partnership Framework



Authors: Mahendhiran S. Nair, Santha Vaithilingam, Pervaiz K. Ahmed, Li-Ann Hwang, Jason W.J. Ng
Year: 2022

This chapter in *Malaysian Indians and Education: Reimagined Development Opportunities* examines how talent drives socioeconomic development amid labour market changes from digital technologies. It highlights widening inequality due to unequal technology access and assesses the readiness of the bottom 40% of Indians in Malaysia (iB40). It calls for a stronger, partnership-driven education and training ecosystem to ensure equitable access to 21st-century skills.

Chapter 7

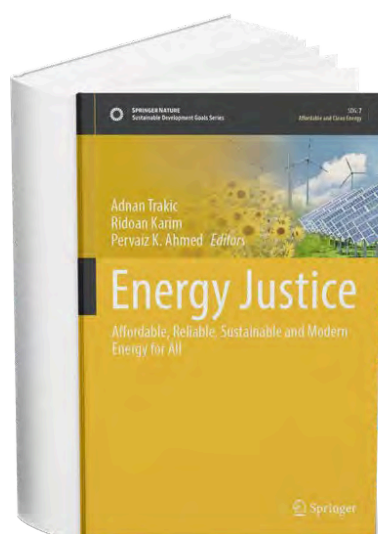


Chapter 1

Intertemporal Linkages between Government Expenditure and Corruption in a Digital Economy: A Panel Granger Causality Framework

Authors: Rudra P. Pradhan, Mahendhiran S. Nair, Mak B. Arvin, Mohamed S.B. Ali
Year: 2022

This chapter in *Digitalization and Economic Development* examines ICT's role in improving government efficiency and corruption control. It examines the relationship between ICT infrastructure, corruption control, and government expenditure in lower-income countries from 2005–2019 using VECM and Granger causality. Results show strong short-run linkages, while ICT infrastructure and government expenditure emerge as key long-run drivers of corruption control.



Energy Justice: Affordable, Reliable, Sustainable and Modern Energy for All

Editors: Adnan Trakic, Ridoan Karim, Pervaiz K. Ahmed
Year: 2024

This book examines energy justice in relation to SDG 7, highlighting its social, political, environmental, and human rights dimensions. It explores the disproportionate energy burdens faced by low-income communities and the complex trade-offs involved in meeting basic needs. Drawing on diverse perspectives, the chapters analyse the roles of policy, industry, and technological innovation, while considering global dynamics and alternative viewpoints, to provide a comprehensive understanding of pathways towards a more equitable energy transition.

● Chapter 1

Energy Justice: What is It and Why It Matters?

Authors: Adnan Trakic, Ridoan Karim, Pervaiz K. Ahmed

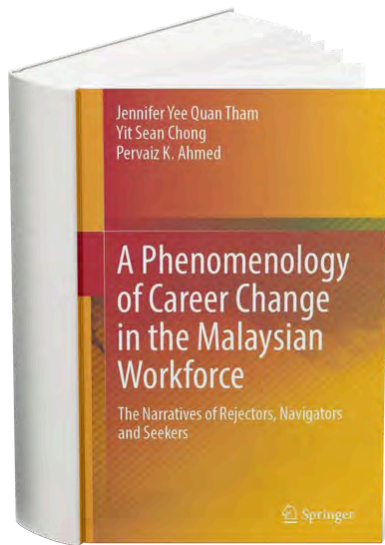
This chapter explores the concept of energy justice and its importance in today's energy landscape. It highlights the global climate crisis and the urgent need for sustainable energy solutions, referencing the United Nations' call to achieve Sustainable Development Goal (SDG) 7 for affordable, reliable, sustainable, and modern energy for all. Energy justice is built on three principles: distributive justice, procedural justice, and recognition justice. By establishing a foundation for the book, this chapter sets the stage for further discussion on the multifaceted aspects of energy justice, guiding readers toward a more inclusive and sustainable energy future.

● Chapter 16

Building a Just Energy Future: Findings and Recommendations

Authors: Adnan Trakic, Ridoan Karim, Pervaiz K. Ahmed

This chapter presents an ethical framework for achieving energy justice, summarising key points from earlier chapters. It explores the link between energy access and human rights, energy and environmental justice, and social and economic factors influencing energy access. The framework emphasises a comprehensive approach, considering socio-economic conditions, technological advancements, and political influences, supported by robust regulations, financial incentives and societal values. This chapter guides policymakers, researchers and practitioners to navigate the complex landscape of energy justice and contribute to a just energy transition.

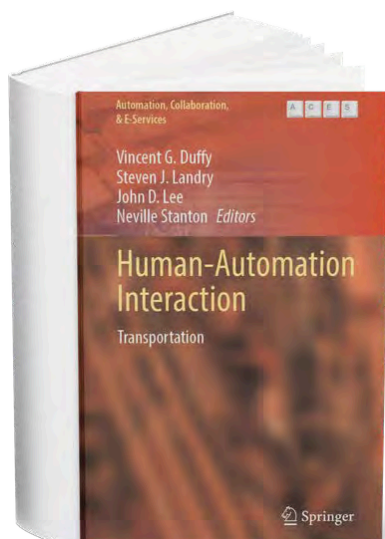


A Phenomenology of Career Change in the Malaysian Workforce: The Narratives of Rejectors, Navigators and Seekers

Authors: Jennifer Y.Q. Tham , Yit S. Chong , Pervaiz K. Ahmed

Year: 2023

This book examines the evolving career landscape amid economic, technological, and social change, highlighting boundaryless and Protean careers. Based on a phenomenological study of 30 Malaysian working adults, it identifies three career change narratives - Rejectors, Navigators, and Seekers - revealing diverse motivations, behaviours, and the significant role of negative emotions in shaping career transitions.



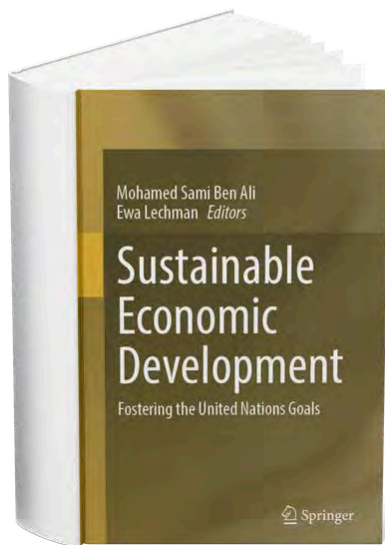
Travel Behaviour and Mobility in Smart Cities: An Interdisciplinary Review of Mass Transit in a Smart City in Malaysia

Authors: Santha Vaithilingam, Pei-Lee Teh, Pervaiz K. Ahmed, Chee Pin Tan, Sui-Jon Ho

Year: 2022

This study proposes a user-centric framework to assess sustainable transportation services based on user agency, performance, scalability, and cost. It is conducted in Sunway City, Malaysia, a planned township with diverse sustainable transport initiatives (SITE projects). Using data from 306 survey respondents and 90 focus group participants, the study evaluates the effectiveness of key programmes and facilities supporting inter- and intra-city travel based on adoption and usage behaviour.

Chapter 29

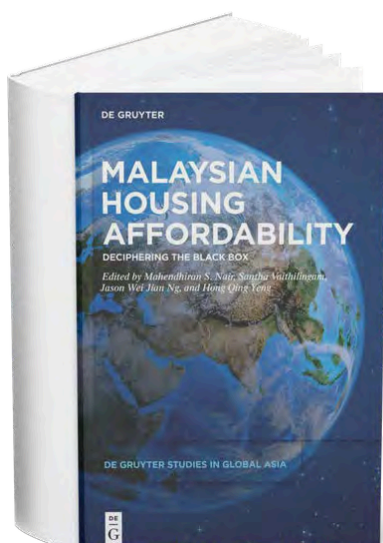


Chapter 1

Institutional Quality, ICT Infrastructure, Transportation, and Sustainable Development: The Case of Lower Income Countries

Authors: Rudra P. Pradhan, Mahendhiran S. Nair, John H. Hall, Sara E. Bennett, Sahar Bahmani
Year: 2024

In many developed economies, significant investments are channelled to develop efficient transportation systems. Intensifying investments in ICT and institutions of governance are critical to ensure that the transportation system deepens its impact on economic growth. The present study examines the relationship between ICT infrastructure, transportation system, institutional governance, and economic growth. Careful curation of co-development policies is needed to enable low income countries to transition onto a path of sustained economic growth.



Malaysian Housing Affordability: Deciphering the Black Box

Editors: Santha Vaithilingam, Mahendhiran S. Nair , Hong Qing Yeng and Jason W.J. Ng
Year: 2025

Malaysia, a nation at the forefront of economic development and urbanisation, is grappling with a significant housing affordability crisis. The ramifications of Malaysia's housing affordability crisis extend beyond the domestic sphere into the national economic arena. This book boldly positions housing at the heart of discourse on productivity and competitiveness for the 21st-century economy. Examining housing's socioeconomic spillovers on individuals and households and the broader impact on the economy, this book builds an imperative for a paradigm shift in how housing policies are conceptualised and prioritised.

● Chapter 6

Understanding Access and Accessibility: The State of Transportation Infrastructure and Affordable Housing in Kuala Lumpur and Putrajaya

Authors: Chai Lim Choong, Hong Qing Yeng, Santha Vaithilingam, Mahendhiran S. Nair

This chapter explores existing literature on accessibility and how the integration of the former and housing could play a role in upward mobility. A geospatial approach was used to determine if affordable housing developments in Kuala Lumpur and Putrajaya granted accessibility to key amenity groups and public transit services. Findings suggest that most electoral zones within these cities have high accessibility via multimodal transport. However, existing political and economic factors, land-use patterns, and transport infrastructure favouring mobility-oriented development have contributed to existing norms of car dependence.

● Chapter 7

Housing Affordability and Productivity: The Socioeconomic Case for Inclusive Urban Housing Policies in Malaysia

Authors: Hong Qing Yeng, Chai Lim Choong, Santha Vaithilingam, Mahendhiran S. Nair

Key insights from research on housing's multidimensional impacts highlight that the economic burden of inadequate affordable housing extends to increased health costs and lower productivity, showing the intricate links between housing, health, and socioeconomic well-being. Efforts to improve housing liveability and affordability are crucial for mitigating these impacts. Addressing these issues requires comprehensive strategies that enhance housing accessibility and quality while recognising the broader implications for societal wellbeing and economic resilience.

● Chapter 8

Malaysian Housing Affordability: Conclusion and the Way Forward

Authors: Mahendhiran S. Nair, Santha Vaithilingam, Jason W.J. Ng, Hong Qing Yeng, Chai Lim Choong

This book began with a review of the current understanding of housing affordability, highlighted the issues of the supply and demand structure of affordable housing in Malaysia, and ended with a call to expand the concept of housing from affordability to liveability. The authors advocate for 6 crucial directions for future research and policy reform: Holistic metrics that go beyond surface affordability; Tailored and targeted policies; Sustainable models that balance public and private sector outcomes; Ongoing program evaluation of existing initiatives; Integrated urban planning; and More expanded studies on socioeconomic spillover effects of housing.

JOURNAL ARTICLES

PUBLICATIONS



Are There Links Between Institutional Quality, Government Expenditure, Tax Revenue, and Economic Growth? Evidence from Low-Income and Lower Middle-Income Countries

Arvin, M.B., Pradhan, R.P., & Nair, M.S. (2021). Are there links between institutional quality, government expenditure, tax revenue and economic growth? Evidence from low-income and lower middle-income countries. *Economic Analysis and Policy*, 70, 468–489. <https://doi.org/10.1016/j.eap.2021.03.011>

This study (2005–2019) examined institutional quality, government expenditure, tax revenue, and economic growth in low- and lower-middle-income countries using a temporal causal framework. It found short-term linkages, while institutional quality and fiscal factors - especially spending and tax revenue - are key long-term drivers of growth.



Institutional Isomorphism and Environmental Sustainability: A New Framework from the *Shariah* Perspective

Nasir, N.M., Nair, M.S., & Ahmed, P.K. (2021). Institutional isomorphism and environmental sustainability: a new framework from the *Shariah* perspective. *Environment Development and Sustainability*, 23(9), 13555–13568. <https://doi.org/10.1007/s10668-021-01227-0>

Islam emphasises environmental stewardship through the Quran and Prophet Muhammad (pbuh), yet its role in corporate sustainability is underexplored. This paper found that firms are mainly driven by secular stakeholder pressures, with limited influence from *Shariah* principles, and proposed a *Shariah*-based framework to strengthen corporate environmental practices in Malaysia.



Nurturing Academic Enthusiasm and Creativity Among Children from Vulnerable Communities: The Role of Computers

Hwang, L.-A., Vaithilingam, S., Nair, M.S., & Ng, J.W.J. (2021). Nurturing academic enthusiasm and creativity among children from vulnerable communities: the role of computers. *Behaviour & Information Technology*, 41(12), 2596–2615. <https://doi.org/10.1080/0144929x.2021.1938227>

This study examined bottom 40% (B40) students in a developing country and the role of computer-aided learning in improving academic enthusiasm and creativity using the UTAUT framework. Based on 414 primary students analysed via PLS-SEM, results show that performance expectancy, social influence, and facilitating conditions significantly drive computer use for learning, which in turn enhances enthusiasm and creativity.



Sustainable Economic Development in India: The Dynamics Between Financial Inclusion, ICT Development, and Economic Growth

Pradhan, R.P., Arvin, M.B., Nair, M.S., Hall, J.H., & Bennett, S.E. (2021). Sustainable economic development in India: The dynamics between financial inclusion, ICT development, and economic growth. *Technological Forecasting and Social Change*, 169, 120758. <https://doi.org/10.1016/j.techfore.2021.120758>

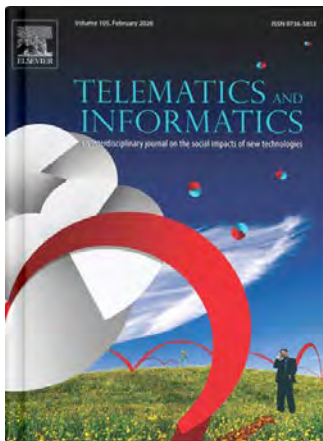
This study examined the short- and long-run relationships between economic growth, financial inclusion, and ICT infrastructure across 20 Indian states (1991–2018) using a Granger-causality approach. Findings revealed strong temporal causality among the variables, highlighting the need for coordinated ICT, financial inclusion, and economic strategies for sustainable growth.



The Dynamics Between Financial Market Development, Taxation Propensity, and Economic Growth: A Study of OECD and non-OECD Countries

Pradhan, R.P., Arvin, M.B., Nair, M.S., & Hall, J.H. (2021). The dynamics between financial market development, taxation propensity, and economic growth: a study of OECD and non-OECD countries. *Quality & Quantity*, 56, 1503–1534. <https://doi.org/10.1007/s11135-021-01192-w>

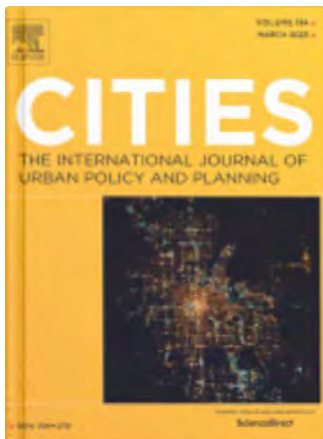
This study examined financial market development, taxation propensity, and economic growth in OECD and non-OECD countries (1961–2019) using dynamic panel data. Results show financial development and taxation supporting long-term growth, while short-run effects vary by financial measure, highlighting the need for integrated financial and fiscal policies.



Uncovering Interlinks Among ICT Connectivity and Penetration, Trade Openness, Foreign Direct Investment, and Economic Growth: The Case of the G-20 Countries

Arvin, M.B., Pradhan, R.P., & Nair, M.S. (2021). Uncovering interlinks among ICT connectivity and penetration, trade openness, foreign direct investment, and economic growth: The case of the G-20 countries. *Telematics and Informatics*, 60, 101567. <https://doi.org/10.1016/j.tele.2021.101567>

This paper examined the relationships between ICT, international trade, FDI, and economic growth in G-20 countries (1961–2019). It found complex temporal interlinks among the variables, with long-term growth driven by coordinated development of ICT, FDI, and trade openness, while short-run effects show varying interconnections across these factors.



Urbanisation, Transportation Infrastructure, ICT, and Economic Growth: A Temporal Causal Analysis

Pradhan, R.P., Arvin, M.B., & Nair, M.S. (2021). Urbanisation, transportation infrastructure, ICT, and economic growth: A temporal causal analysis. *Cities*, 115, 103213. <https://doi.org/10.1016/j.cities.2021.103213>

This study examined urbanisation, transport infrastructure, ICT, and economic growth in G-20 countries (1961–2016) using a panel vector error-correction model. It found short- and long-run causal links, highlighting that coordinated development of urban systems, transport, and ICT is key to sustainable growth.



Different Types of Innovations and Dynamic Capabilities in Achieving Timely Responsiveness: Some Implications for Supply Chain Management

Ng, S.P., & Ahmed, P.K. (2022). Different Types of Innovations and Dynamic Capabilities in Achieving Timely Responsiveness: Some Implications for Supply Chain Management. *Journal of General Management*, 49(4), 247-257. <https://doi.org/10.1177/03063070221123056>

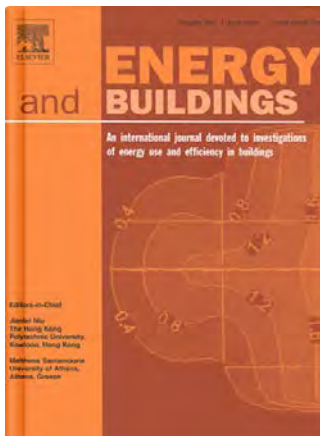
This study examined how dynamic capabilities - sensing and reconfiguring - and innovation (product, process, and management) influence timely responsiveness in firms. Findings show that these capabilities enable innovation, which enhances responsiveness, offering implications for supply chain management and organisational agility.



Environmental Sustainability and Contemporary Islamic society: A Shariah Perspective

Nasir, N.M., Nair, M.S., & Ahmed, P. K. (2022). Environmental sustainability and contemporary Islamic society: A Shariah perspective. *Asian Academy of Management Journal*, 27(2), 211-231. <https://doi.org/10.21315/aamj2022.27.2.10>

This paper examined Islamic environmental theology in addressing modern environmental challenges, highlighting stewardship responsibilities under Islamic law at individual, societal, and firm levels. It underscores the Islamic legal maxim of harm prevention in promoting sustainability and calls for progressive Shariah interpretations to address evolving ecological issues.



Exploring the Temporal Links Between Foreign Aid, Institutional Quality, and CO₂ Emissions for Poorer Countries

Arvin, M.B., Pradhan, R.P., Nair, M.S., & Dabir-Alai, P. (2022). Exploring the Temporal Links Between Foreign Aid Institutional Quality, and CO₂ Emissions for Poorer Countries. *Energy and Buildings*, 270, 112287. <https://doi.org/10.1016/j.enbuild.2022.112287>

This study examined whether there are temporal causal links between foreign aid (which many developing countries depend on), CO₂ emissions, and the quality of the institutions of governance in poorer countries. It found complex and varied endogenous dynamics amongst all three variables in the short run. Over the longer period, both institutional quality and CO₂ emissions Granger-cause foreign aid.



Giving Electronic Word of Mouth (eWOM) as a Prepurchase Behavior: The Case of Online Group Buying

Lim, W.M., Ahmed, P.K., & Ali, Md.Y. (2022). Giving Electronic Word of Mouth as a Prepurchase Behaviour: The Case of Online Group Buying. *Journal of Business Research*, 146, 582-604. <https://doi.org/10.1016/j.jbusres.2022.03.093>

This study examined electronic word of mouth (eWOM) as a prepurchase behaviour in online group buying using a Solomon experimental design. It found higher eWOM for utilitarian products when combined with affective messaging and larger discounts, compared to hedonic products, offering insights for marketing strategies and limits of promotional incentives.



Institutional Development in an Information-Driven Economy: Can ICTs Enhance Economic Growth for Low- and Lower Middle-Income Countries

Pradhan, R.P., Arvin, M.B., Nair, M.S., Hall, J.H., & Bennett, S.E. (2022). Institutional Development in an Information-Driven Economy: Can ICTs Enhance Economic Growth for Low- and Lower Middle-Income Countries. *Information Technology for Development*, 28(3), 468-487. <https://doi.org/10.1080/02681102.2022.2051417>

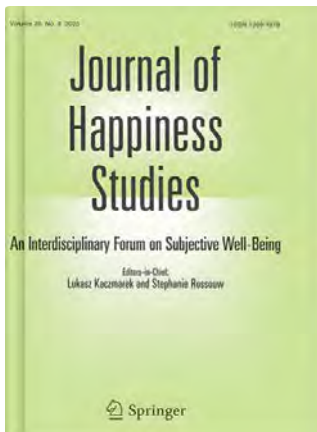
This paper examined ICT infrastructure, institutional quality, and economic growth in developing countries (2005–2019) using a vector error-correction model and Granger causality analysis. It found short-term interactions, while improvements in institutional quality and ICT infrastructure drive long-term growth, highlighting the importance of stronger governance and digital infrastructure.



Key Predictors of COVID-19 Vaccine Hesitancy in Malaysia: An Integrated Framework

Ng, J.W.J., Vaithilingam, S., Nair, M.S., Hwang, L.A., & Musa, K.I. (2022). Key Predictors of COVID-19 Vaccine Hesitancy in Malaysia: An Integrated Framework. *PLOS ONE*, 17(5), e0268926. <https://doi.org/10.1371/journal.pone.0268926>

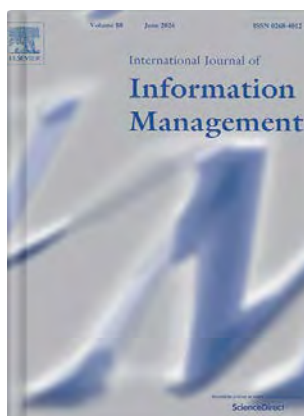
As Malaysia's COVID-19 vaccination rollout progresses, the focus shifted from vaccine supply to public acceptance. This study used an integrated Health Belief Model (HBM) and Theory of Reasoned Action (TRA) framework to examine the predictors of intention to receive COVID-19 vaccines in Malaysia.



Life Satisfaction and Incumbent Voting: Examining the Mediating Effect of Trust in Government

Ng, J.W.J., Vaithilingam, S., Lee, G.H.Y., & Rangel, G.J. (2022). Life Satisfaction and Incumbent Voting: Examining the Mediating Effect of Trust in Government. *Journal of Happiness Studies*, 23(6), 2947-2967. <https://doi.org/10.1007/s10902-022-00536-z>

This study examined the relationship between life satisfaction and incumbent voting in Malaysia, focusing on the mediating role of trust in government using World Values Survey data (Wave 7) prior to GE14. Findings show that trust significantly mediates this relationship, with distinct effects in GE14 compared to GE13, highlighting its role in electoral behaviour in transitioning political systems.



Mobile Communication and Use Behavior of the Urban Poor in a Developing Country: A Field Study in Malaysia

Vaithilingam, S., Nair, M.S., Macharia, M., & Venkatesh, V. (2022). Mobile communication and use behavior of the urban poor in a developing country: A field study in Malaysia. *International Journal of Information Management*, 63, 102440. <https://doi.org/10.1016/j.ijinfomgt.2021.102440>

We developed a contextualised UTAUT-based model of mobile technology use among the urban poor in Malaysia, based on 396 users. It identified five facilitating conditions - infrastructure, technical support, legal/regulatory frameworks, affordability, and self-efficacy - as drivers of instrumental and non-instrumental use, highlighting the importance of context-specific enablers for adoption and policy coordination.



Public Debt, Economic Openness, and Sustainable Economic Growth in Europe: A Dynamic Panel Causal Analysis

Pradhan, R.P., Arvin, M.B., Nair, M.S., & Hall, J.H. (2022). Public Debt, Economic Openness, and Sustainable Economic Growth in Europe: A Dynamic Panel Causal Analysis. *Journal of Economic Development*, 47(1), 167-183. <https://doi.org/10.35866/caujed.2022.47.1.007>

This paper examined the short-term and long-term dynamics between public sector debt, economic openness, and economic growth in European countries between 1990 and 2018. It found that there are strong endogenous links between public debt, economic openness and economic growth in Europe in the short run.



COVID-19 Vaccine Hesitancy and Its Drivers: An Empirical Study of the Vaccine Hesitant Group in Malaysia

Vaithilingam, S., Hwang, L.-A., Nair, M.S., Ng, J.W.J., Ahmed, P., & Musa, K.I. (2023). COVID-19 vaccine hesitancy and its drivers: An empirical study of the vaccine hesitant group in Malaysia. *PLOS ONE*, 18(3), e0282520. <https://doi.org/10.1371/journal.pone.0282520>

Sporadic COVID-19 outbreaks continue to challenge public health in Malaysia, particularly where vaccine uptake remains low. This study focused on individuals who had not registered for vaccination and integrated the Health Belief Model (HBM) and Theory of Reasoned Action (TRA) to examine key predictors and their relationships in shaping vaccination intention among vaccine-hesitant groups.



Does Foreign Aid Affect Innovation and Institutional Quality in Middle-Income Countries?

Pradhan, R.P., Arvin, M.B., Nair, M.S., & Bennett, S.E. (2022). Does foreign aid affect innovation and institutional quality in middle-income countries? *Evaluation & Program Planning*, 100, 102340. <https://doi.org/10.1016/j.evalprogplan.2023.102340>

This study examined the dynamic relationships between innovation, institutional quality, and foreign aid in 79 middle-income countries (2005–2020). It found strong endogenous linkages among the variables, with short-run Granger causality showing innovation affects institutional quality, foreign aid influences innovation, and institutional quality affects foreign aid.



Does Foreign Aid Procurement in Resource-Rich Countries Depend on These Countries' Financial Development and Institutional Quality? Evidence From PVECM and Quantile-on-Quantile Regression

Pradhan, R. P., Bennett, S. E., Nair, M. S., & Arvin, M. B. (2023). Does foreign aid procurement in resource-rich countries depend on these countries' financial development and institutional quality? Evidence from PVECM and quantile-on-quantile regression. *Socio-Economic Planning Sciences*, 88, 101649. <https://doi.org/10.1016/j.seps.2023.101649>

Many resource-rich developing countries still rely on foreign aid to strengthen institutions and financial systems. This study examined the short- and long-run relationships between foreign aid, financial development, and institutional quality (2005–2020) using PVECM and QQR.



Institutional Quality, Financial Development, and Sustainable Economic Growth Among Lower-Income Countries

Pradhan, R. P., Nair, M. S., Arvin, M. B., & Hall, J. H. (2023). Institutional quality, financial development and sustainable economic growth among lower income countries. *Natural Resources Forum*, 47(3), 435–483. <https://doi.org/10.1111/1477-8947.12291>

The global economy has been reshaped by globalisation, technology, and trade liberalisation, yet many resource-rich developing countries still lag behind and rely on foreign aid to strengthen institutions and financial systems. This study examined the short- and long-run relationships between foreign aid, financial development, and institutional quality in resource-rich countries (2005–2020) using PVECM and QQR.



Interface Between Energy Consumption, CO₂ Emissions, Economic Growth, and Macroeconomic Openness in Financial Action Task Force Countries: A Causality Approach

Pradhan, R.P., Arvin, M.B., Nair, M.S., Bennett, S.E., & Hall, J.H. (2023). Interface between energy consumption, CO₂ emissions, economic growth, and macroeconomic openness in financial action task force countries through the lens of a causality approach. *Environmental Science and Pollution Research*, 30(9), 24256–24283. <https://doi.org/10.1007/s11356-022-23641-1>

CO₂ emissions drive global warming, with links to trade and fossil-fuel industrialisation affecting growth and wellbeing. This study used Granger causality to examine relationships between energy use, CO₂ emissions, economic growth, trade openness, and FDI in FATF countries.



Academics' Continuance Intention to Use Learning Technologies During COVID-19 and Beyond

Vasuthevan, K., Vaithilingam, S., & Ng, J.W.J. (2024). Academics' continuance intention to use learning technologies during COVID-19 and beyond. *PLOS ONE*, 19(1), e0295746–e0295746. <https://doi.org/10.1371/journal.pone.0295746>

Drawing upon the Unified Theory of Acceptance and Use of Technology (UTAUT), and Expectation Confirmation Model (ECM), this study examined the salient determinants influencing the continuance intention of academics to use learning technologies in their teaching pedagogy during and after COVID-19.



Career Change Intentions of Science and Engineering Undergraduates: A Behavioral Neuroscience Inquiry

Chong, Y.S., Ahmed, P.K., & Amin, H.U. (2024). Career Change Intentions of Science and Engineering Undergraduates: A Behavioral Neuroscience Inquiry. *IEEE Education Society Section*, 12, 46401-46409. <https://doi.org/10.1109/ACCESS.2024.3375358>

Based on self-determination theory, this study examined the mental and emotional states of final year Science and Engineering undergraduates in career change considerations. While almost all participants opted for a R&D career during the experiment, the survey data revealed a stronger intention among less self-determined individuals to leave science at a later juncture due to perceived lower salary and a lack of work-life balance.



Competency Development Opportunities and Organizational Citizenship Behaviours: The Mediating Role of Subjective Career Success

Teow, H.H., Au, W.C., & Ahmed, P.K. (2024). Competency development opportunities and organizational citizenship behaviors: the mediating role of subjective career success. *Career Development International*, 29(4), 452-465. <https://doi.org/10.1108/CDI-06-2023-0194>

Building upon Social Exchange Theory, this study explored the relationship between perceived opportunities for competency development (POCD), subjective career success (SCS), and organizational citizenship behaviors (OCBs). Given the importance of SCS in providing mutual benefits for both the employee and the organization, this study examined how SCS plays a mediating role in the relationship between POCD and OCBs.



Do Innovation and Institutional Quality Elevate Economic Growth? Empirical Evidence From Developing Countries

Pradhan, R.P., Arvin, M.B., Nair, M.S., Bennett, S.E., & Brem, A. (2024). Do Innovation and Institutional Quality Elevate Economic Growth? Empirical Evidence from Developing Countries. *International Journal of Innovation and Technology Management (IJITM)*, 21(2), 2450011. <https://doi.org/10.1142/S0219877024500111>

This paper investigated temporal causal interactions among institutional quality, innovation, and economic growth for developing countries (DCs) spanning the period of 2005–2020. Employing a vector error-correction model (VECM), it found that there is evidence of the long-run causality from institutional quality and innovation to economic growth.



Green Education Divide: A Comparative Case Study Analysis of Countries of the Association of Southeast Asian Nations

Teow, H.H., Ahmed, P.K., Nair, M.S., & Vaithilingam, S. (2024). Green education divide: a comparative case study analysis of countries of the Association of Southeast Asian Nations. *The Lancet Planetary Health*, 8(1), S20. [https://doi.org/10.1016/S2542-5196\(24\)00085-8](https://doi.org/10.1016/S2542-5196(24)00085-8)

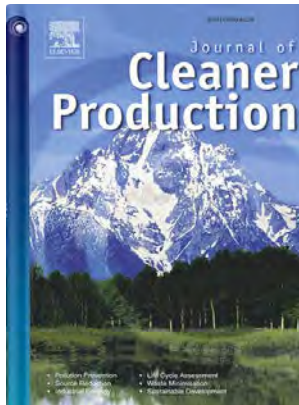
The paper aimed to analyse and compare the disparities in green education among pace-setter, maturing, and emerging ASEAN countries. This study provided insights into the best practices and challenges surrounding green education within pace-setter, maturing, and emerging ASEAN countries. To address the disparities in green education among these countries, there is a need to adopt a holistic ecosystem framework characterised by the 8i enablers.



Navigating Sustainable Careers: The Role of Subjective Career Success, Career Crafting, and Social Capital

Teow, H.H., Au, W.C., & Ahmed, P.K. (2024). Navigating sustainable careers: the role of subjective career success, career crafting, and social capital. *European Journal of Work and Organizational Psychology*, 34(1), 58-74. <https://doi.org/10.1080/1359432x.2024.2440173>

Leveraging the Conservation of Resource theory, this study differentiated between internally and externally directed career crafting behaviours and examined their relationships with subjective career success and turnover intention. It also examined how social capital (internal and external) moderates these relationships, reflecting the influence of proximal and distal contexts.



Planetary Health Issues in the Developing World: Dynamics Between Transportation Systems, Sustainable Economic Development, and CO₂ Emissions

Pradhan, R.P., Nair, M.S., Hall, J.H., & Bennett, S.E. (2025). Planetary health issues in the developing world: Dynamics between transportation systems, sustainable economic development, and CO₂ emissions. *Journal of Cleaner Production*, 449, 140842–140842. <https://doi.org/10.1016/j.jclepro.2024.140842>

This study examined the causal interface between transportation infrastructure development, economic growth, institutional quality, and CO₂ emissions in 79 developing countries over the period 2005 to 2022. The empirical findings show strong endogenous relationships between the variables in the short-run and long-run.



Reconceptualising Brand Transgressions in the Context of Sacred Consumption: An Institutional Perspective

Kaur, S., Chong, Y.S., Ahmed, P.K., & Ali, M.Y. (2025). Reconceptualising brand transgressions in the context of sacred consumption: an institutional perspective. *Asia Pacific Journal of Marketing and Logistics*, 37(7), 1816-1833. <https://doi.org/10.1108/apjml-03-2024-0370>

This research investigated how religion uniquely influences consumer behaviour by exploring the dynamics when a brand transgression violates a religious norm. It found that trust and behavioural intentions were significantly lower following a religion-related brand transgression compared to a general brand transgression.



Relational HR Practices in Malaysian SMEs: An Ethics of Care Perspective

Au, W.C., Stephens, S., & Ahmed, P. K. (2023). Relational HR Practices in Malaysian SMEs: An Ethics of Care Perspective. *Journal of Business Ethics*, 191(2), 323-336. <https://doi.org/10.1007/s10551-023-05458-1>

Adopting an Ethics of Care theoretical framework, this paper aimed to investigate the way in which the owner-managers (OMs) of small and medium-sized enterprises in Malaysia engage in human resource management. It found that HRM practices occur within the remit of management but are described by the managers in terms of relational obligations and cannot be fully accounted for using a strategic, instrumental, or critical lens.



Robustness Checks in PLS-SEM: A Review of Recent Practices and Recommendations for Future Applications in Business Research

Vaithilingam, S., Ong, C.S., Moisescu, O.I., & Nair, M.S. (2024). Robustness checks in PLS-SEM: A review of recent practices and recommendations for future applications in business research. *Journal of Business Research*, 173, 114465. <https://doi.org/10.1016/j.jbusres.2023.114465>

This study showcased the findings of a review of PLS-SEM use in business research, by examining papers published between 2016 and 2021 in business journals. The study explored the extent to which researchers have performed robustness checks regarding nonnormality, endogeneity, unobserved heterogeneity, nonlinearity, and heteroskedasticity. The findings highlighted that statistical rigor remains a serious problem in business-related studies employing PLS-SEM.



Role Incongruity and Prejudice: Barriers in Malay Muslim Women Managers' Career Experiences

Rossenkhani, Z., Au, W.C., & Ahmed, P.K. (2025). Role incongruity and prejudice: barriers in Malay Muslim women managers' career experiences. *Equality, Diversity and Inclusion*, 44(8), 1181-1200. <https://doi.org/10.1108/EDI-03-2023-0075>

The study aimed to explore the career experiences of Malay Muslim women (MMW) managers in Malaysia. By applying an intersectionality lens to the role congruity theory of prejudice, we sought to uncover how the interaction of multiple identities influences the career experiences of MMW. It found that MMW experience prejudice differently in Malay majority (in-group) and non-Malay majority (out-group) work contexts.



The Continuance Intention to Vaccinate Against COVID-19: An Empirical Study From Malaysia

Hwang, L.-A., Vaithilingam, S., Ng, J.W.J., Nair, M.S., Ahmed, P.K., & Musa, K.I. (2024). The continuance intention to vaccinate against COVID-19: An empirical study from Malaysia. *PLOS ONE*, 19(4), e0301383. <https://doi.org/10.1371/journal.pone.0301383>

Adapting the expectations confirmation model (ECM) to the public health context and in a developing country, this study integrated the ECM with the health belief model (HBM) and the theory of reasoned action (TRA) to examine the inter-relationships of the predictors of people's continuance intention to vaccinate against COVID-19.



The Role of Dynamic Capabilities in the Development of Organisational Ambidexterity and Its Effect on Timely Responsiveness in Emerging Market High-Tech Firms

Ng, S.-P. and Ahmed, P.K. (2025), The role of dynamic capabilities in the development of organisational ambidexterity and its effect on timely responsiveness in emerging market high-tech firms. *R&D Management*, 55, 577-597. <https://doi.org/10.1111/radm.12712>

The study examined how dynamic capabilities, specifically, sensing and reconfiguring capabilities, influence the development of ambidexterity and the effect of ambidexterity on timely responsiveness. It found that the application of sensing and reconfiguring capabilities enables emerging market high tech firms to develop ambidexterity and that ambidexterity improves timely responsiveness.



Unpacking the Cultural Impacts on Long-Term Manufacturer-Supplier Relationships in the Arab Middle East Region: The Moderating Role of Trust

Al-Ma'aitah, N., Liao, Y., Soltani, E., Ting, C.-W., & Ahmed, P. K. (2024). Unpacking the cultural impacts on long-term manufacturer-supplier relationships in the Arab Middle East region: the moderating role of trust. *Production Planning & Control*, 35(16), 2304-2326. <https://doi.org/10.1080/09537287.2024.2313516>

The study aimed to examine the impact of cultural facets of the Arab Middle East region on long-term manufacturer-supplier relationships (LTR) and to uncover the ways trust functions as a moderator (facilitating or hindering) of the relationships. The findings supported the general consensus of the need to consider cultural and trust issues in building LTR.



Enhancing Cognitive Function Through ICT in Low-SES Malaysian Children

Ng, J.W.J., Vaithilingam, S., Hwang, L.-A., Vasuthevan, K., Chan, J.K., & Nair, M.S. (2025). Enhancing cognitive function through ICT in low-SES Malaysian children. *Acta Psychologica*, 259, 105326. <https://doi.org/10.1016/j.actpsy.2025.105326>

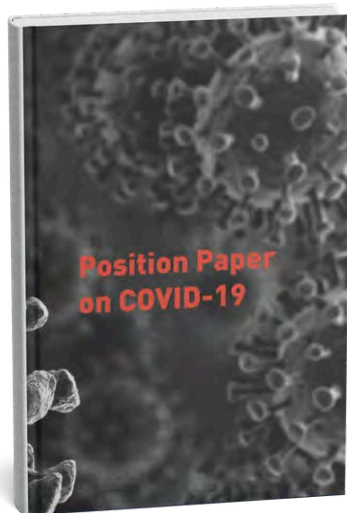
This study investigated the impact of technology exposure on executive functions (EF), particularly cognitive flexibility, among children from low socioeconomic status (SES) backgrounds in Malaysia. Results showed significant improvements in the treatment group, supporting the neuroplasticity theory and highlighting the potential of ICT interventions to enhance cognitive development in vulnerable populations.



Return on Values of Hydrogen Energy Transitions: A Perspective on the Conceptual Framework

Hannan, M.A., Nair, M.S., Ahmed, P.K., Vaithilingam, S., Wali, S.B., Reza, M.S., Abu, S.M., Ker, P.J., Begum, R.A., Ong, H.C., Ng, D.K.S., & Jang, G. (2025). Return on values of hydrogen energy transitions: A perspective on the conceptual framework. *Technology in Society*, 81, 102821. <https://doi.org/10.1016/j.techsoc.2025.102821>

This study introduced a novel, value-based approach with the primary aim of creating a sustainable Hydrogen Energy (HE) ecosystem framework that spans three pillars-economic, social, and environmental, aligned with the United Nations Sustainable Development Goals (UN-SDGs). The study provided a comprehensive characterisation of the enablers required for a robust HE ecosystem. These enablers are necessary for ensuring both tangible and intangible outcomes across the three pillars, consequently enhancing value creation for all stakeholders.



Position Paper on COVID-19

IGSC Contributors: Mahendhiran S. Nair
Year: 2021

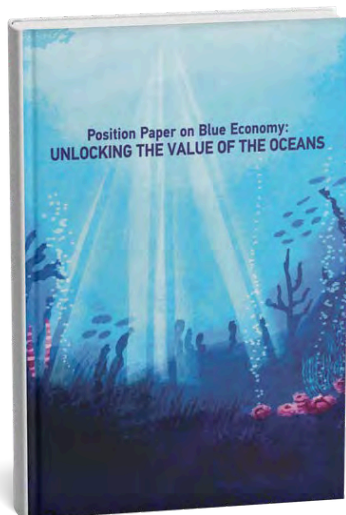
Explores Malaysia's COVID-19 response, its impacts on health and socio-economic systems, and the role of AI and big data analytics. Expert focus groups identified key challenges affecting education, tourism, and SMEs, including lockdown decision-making. It recommends strengthened national policies, improved laboratory capacity, support for SMEs and education, greater use of digital technologies, and enhanced collaboration for future pandemic preparedness.



The Nexus of Biodiversity Conservation and Sustainable Socioeconomic Development in Southeast Asia

IGSC Contributors: Mahendhiran S. Nair, Pervaiz K. Ahmed, Santha Vaithilingam, Shirlyn Tang, Hui Hui Teow, Chai Lim Choong, Hong Qing Yeng
Year: 2022

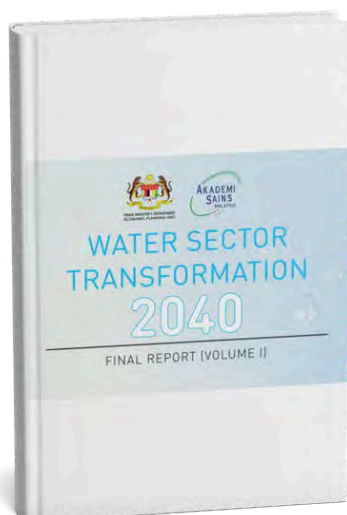
Examines the nexus between biodiversity and economics, emphasising the growing dependence of global and regional economies on natural assets. It highlights how the ongoing degradation of biodiversity poses significant economic risks and underscores the need to integrate ecological considerations into economic planning and policy.



Position Paper on Blue Economy: Unlocking the Value of the Oceans

IGSC Contributors: Mahendhiran S. Nair, Pervaiz K. Ahmed, Santha Vaithilingam, Chai Lim Choong, Hong Qing Yeng, Zhuan Kee Leong, Shirlyn Tang, Hui Hui Teow, Daniel L.W. Lee
Year: 2022

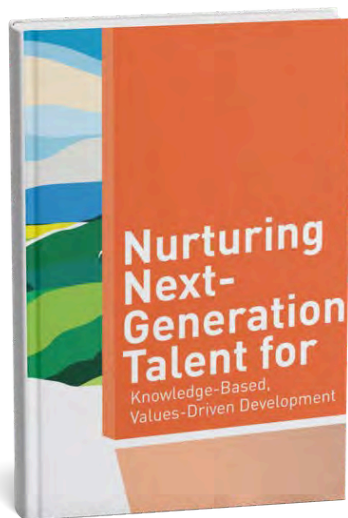
Outlines a framework for developing a sustainable, inclusive, and future-ready Blue Economy for Malaysia's marine and maritime sectors. It provides science-based policy recommendations to strengthen governance and support a collaborative approach involving government, academia, industry, and community stakeholders, aimed at enhancing economic, environmental, and social outcomes.



Water Sector Transformation 2040: Volume IX - Water as an Economic Sector (WST2040)

IGSC Contributors: Mahendhiran S. Nair, Pervaiz K. Ahmed, Santha Vaithilingam, Daniel L.W. Lee, Hong Qing Yeng, Chai Lim Choong, Chu Sun Ong, Shirlyn Tang, Zhuan Kee Leong
Year: 2022

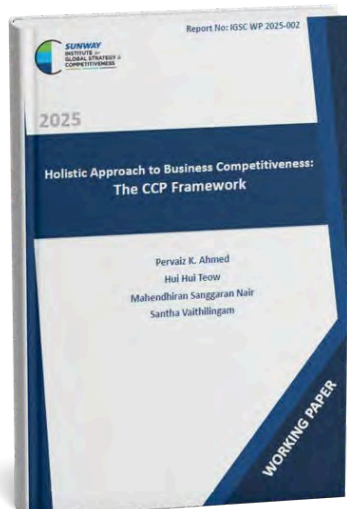
Outlines a roadmap for the transformation of Malaysia's water sector that contributes to national growth by supporting key economic sectors while providing accessible quality water to ordinary citizens. The roadmap provides recommendations for a collective effort from government, industry, academia and society, aimed at creating economic, environmental, and social value.



Nurturing Next-Generation Talent for Knowledge-Based, Values-Driven Development

IGSC Contributors: Mahendhiran S. Nair, Pervaiz K. Ahmed, Santha Vaithilingam
Year: 2025

The study proposed several recommendations to ensure that the local talent nurtured not only meets the needs of current and future industries but, more importantly, ensures the sovereignty of the nation. These recommendations will nurture creative talent that develop indigenous Science, Technology and Innovations, strengthen the competitiveness of local business supply chains, and enable local firms to move up the global value chain.



Holistic Approach to Business Competitiveness: The CCP Framework

Authors: Pervaiz K. Ahmed, Hui Hui Teow, Mahendhiran S. Nair, Santha Vaithilingam
Year: 2025

The world is facing a planetary health poly-crisis, with several planetary boundaries already breached, requiring stronger business action to address environmental degradation. This paper proposes the Configuration-Context-Performance (CCP) Framework, integrating six key elements (6Ps): Perspective, People, Processes, Position, Place, and Performance, to align business models with sustainability. A Procter & Gamble case study illustrates how firms can balance profitability with environmental responsibility and achieve sustainable growth.

2021

Sustainable Smart Transportation System: Through the Lens of a Smart City in an Emerging Country

Proceedings of the 21st International Conference on Electronic Business, Volume 21

Authors: Santha Vaithilingam, Pei-Lee Teh, Pervaiz K. Ahmed, Sui Jon Ho, Mahendhiran S. Nair, Chee Pin Tan

A Qualitative Investigation of Within-Organization Sustainable Career

2021 AIB Asia Pacific Regional Conference

Authors: Hui Hui Teow, Wee Chan Au, Pervaiz K. Ahmed

Learning from Failure: A Case Study of a Manufacturer's Business Analytics Implementation

PACIS 2022 Proceedings

Authors: Angelica K.Y. Lim, Chun Yong Chong, Kerry J. Tanner, Santha Vaithilingam

Global Value Chain and Environment, Social & Governance Goals in Malaysia: A Multinational Corporation Perspective from a Developing Country

2022 International Conference on Sustainable Development (ICSD)

Authors: Hong Qing Yeng, Chai Lim Choong, Mahendhiran S. Nair, Pervaiz K. Ahmed, Santha Vaithilingam

2022

2022

Burnout and Turnover Intention: Examining the Mediating Roles of Career Crafting Behaviours

AIB Asia Pacific Regional Conference

Authors: Hui Hui Teow, Pervaiz K. Ahmed, Wee Chan Au

Roles of Malaysian Indigenous Communities in Biodiversity Conservation: A Case Study Approach

International Conference on Sustainable Development (ICSD)

Authors: Hui Hui Teow, Shirlyn Tang, Pervaiz K. Ahmed,
Mahendhiran S. Nair, Santha Vaithilingam

Assessing Walkability in Bandar Sunway

43rd Australasian Transport Research Forum (ATRF) 2022

Authors: Susilawati, Meng Kiat Lee, Pei-Lee Teh, Tan Chee Pin,
Sekhar Somenahalli, Santha Vaithilingam

Retirement Readiness and Financial Sustainability: Investigating the Behavioural Dynamics Among Millennials in Malaysia

National Financial Literacy Symposium 2023: Empowering
Communities for Sustainable Financial Well-being

Authors: Joyce S.S. Chuah, Santha Vaithilingam, Sharon G.M. Koh,
Mahendhiran Nair

2023

2024

8i Ecosystem Analysis of the Plastics Ecosystem in Malaysia

8th International Conference on Environment 2024 (ICENV2024)

Authors: Yeen Chenng Loo, Naquiuddin Naqib Mohamad Khairri, Pervaiz K. Ahmed, Hui Hui Teow, Santha Vaithilingam, Mahendhiran S. Nair

Protean Career Orientation and Turnover Intention: Exploring the Mediating Effect of Subjective Career Success

2024 Australian & New Zealand Academy of Management (ANZAM) Conference

Authors: Hui Hui Teow, Wee Chan Au, Pervaiz K. Ahmed

8i Ecosystem Analysis of the Plastics Ecosystem in Malaysia

8th International Conference on Environment 2024 (ICENV2024)

Authors: Yeen Chenng Loo, Naquiuddin Naqib Mohamad Khairri, Pervaiz K. Ahmed, Hui Hui Teow, Santha Vaithilingam, Mahendhiran S. Nair

Protean Career Orientation and Turnover Intention: Exploring the Mediating Effect of Subjective Career Success

2024 Australian & New Zealand Academy of Management (ANZAM) Conference

Authors: Hui Hui Teow, Wee Chan Au, Pervaiz K. Ahmed

2025

Green Lending and Financial Performance: An Empirical Study of Malaysian Public Listed Banks

10th International Conference on Governance and Accountability 2025 (ICGA2025)

Authors: Ashraff Hassan

The Nexus of Human, Economy, and Environment in Malaysia

5th International Conference on Social and Economic Development 2025

Authors: Yogesswary Segar

ENGAGEMENT & EVENTS

IGSC actively delivers a diverse range of strategic events and engagements aimed at strengthening capabilities and fostering meaningful connections with key stakeholders across government, industry, and academia. Through these platforms, IGSC promotes knowledge exchange, collaboration, and capacity building to support informed decision-making and long-term impact.



**Policy Dialogues
and Roundtables**



**Industry Consultations
and Stakeholder
Engagements**



**Academic Conferences
and Knowledge Forums**



**Capacity Building
Workshops and
Training Programmes**



**Public Lectures and
Thought Leadership
Series**



**Strategic Partnerships
and Collaborative
Initiatives**

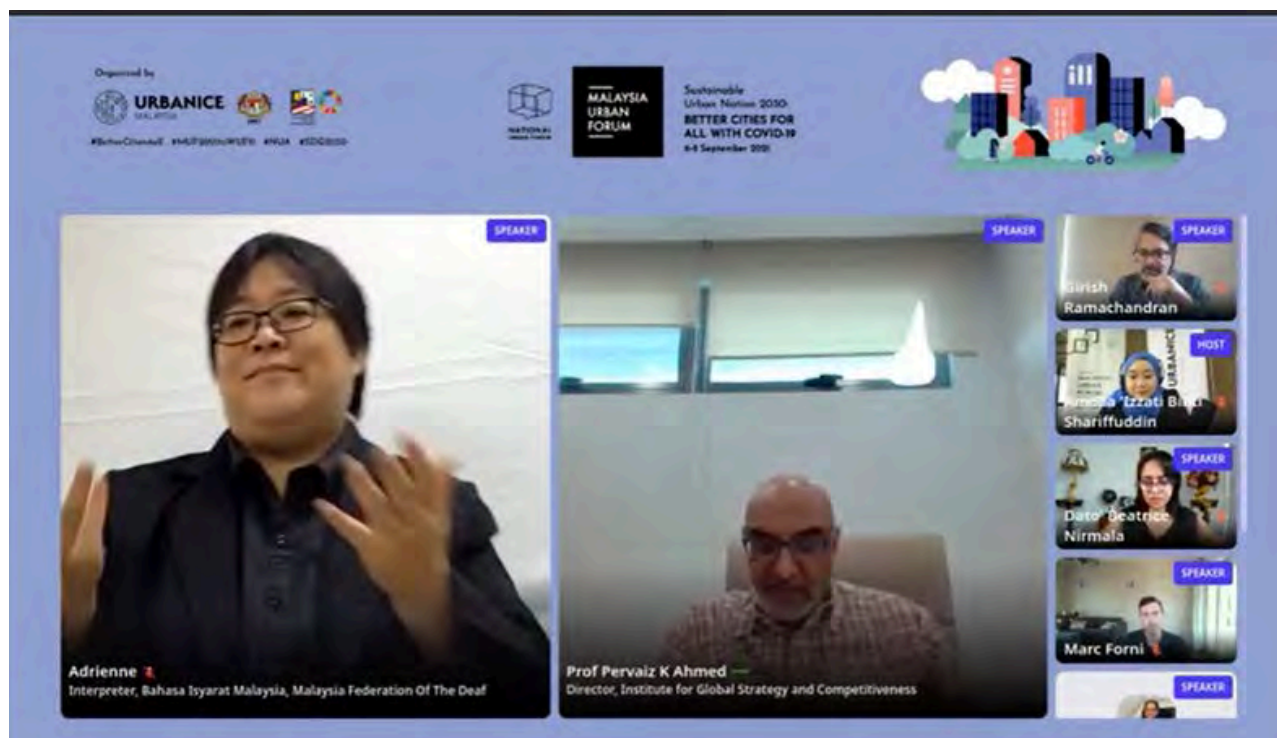


Planetary Health Annual Meeting (PHAM) 2025: Rotterdam, The Netherlands

Sunway IGSC's Prof Pervaiz and Prof Santha were invited as panelists at the Planetary Health Annual Meeting in Rotterdam. The discussion, centred on sustainable development for planetary health and how businesses can transition from a Return-on-Investment to Return-on-Values approach, was joined by Prof Mahendhiran Nair (PVC of Sunway University), Prof Anke van Hal (Nyenrode Business University) and Malaika Barbara Ebpli (fashion brand Malaika).

The team, alongside the Sunway Centre for Planetary Health, also featured the National Planetary Health Action Plan (NPHAP). The document outlines the roadmap for Malaysia's transition towards sustainable development for planetary health. The team's presentation has garnered recognition from the Ministry of Science, Technology and Innovation (MOSTI) for showcasing the country's resolve towards safeguarding health of the people and planet.

Malaysia Urban Forum 2021: Better Cities for All With COVID-19



Prof Pervaiz Ahmed, was a panelist during a High-level Discussion on the topic, 'Pathway to Inclusive Growth and Resilient Economic Recovery' at the Malaysia Urban Forum 2021 (MUF2021). The event, hosted by URBANICE Malaysia, is Malaysia's third urban forum, focusing on 'Sustainable Urban Nation: Better Cities for All With COVID-19'. With 53 online sessions, over 350 speakers and panellists, and more than 100 partners, MUF2021 is the largest urban forum this year. Despite the ongoing pandemic, the forum aims to continue the dialogue on achieving concrete, equitable, and impactful outcomes for sustainable urbanization. Prof Pervaiz Ahmed's participation reflects the commitment of Sunway IGSC to fostering inclusive growth and resilient economic recovery in Malaysia's urban development.





2nd Asia Pacific Family Business Summit 2022: “Sustainability: The Heart and Bedrock of Family Business Continuity in the Turbulent Global Environment”



The summit was organised by BinaPavo, in collaboration with Sunway IGSC and Sunway University as the knowledge partners. Proudly launched by Yang Amat Berhormat Dato’ Menteri Besar Selangor Dato’ Seri Amirudin Shari, the summit was held at Hilton Hotel, Petaling Jaya, on 18th October 2022. The purpose of this summit was to bring together experts, practitioners, and leaders from the business community to discuss and find solutions to the challenges faced by family-owned businesses in achieving sustainability.

Helping family businesses to grow



By AIDA AHMAD

METRO NEWS

Wednesday, 02 Nov 2022



The summit provided a platform for exchanging ideas, learning about best practices, and creating networks to help family businesses navigate the complexities of sustainable development and make informed decisions that contribute to a more sustainable future. The goal was to promote awareness and action on sustainability among family businesses and encourage them to take a leadership role in promoting sustainable development.

R EDUCATION IN A PO



Innovation in African Universities (FIAU), 3rd Global Annual Meeting

Prof Pervaiz Ahmed, was a panelist during a High-level Discussion on the topic, 'Pathway to Inclusive Growth and Resilient Economic Recovery' at the Malaysia Urban Forum 2021 (MUF2021). The event, hosted by URBANICE Malaysia, is Malaysia's third urban forum, focusing on 'Sustainable Urban Nation: Better Cities for All With COVID-19'. With 53 online sessions, over 350 speakers and panellists, and more than 100 partners, MUF2021 is the largest urban forum this year. Despite the ongoing pandemic, the forum aims to continue the dialogue on achieving concrete, equitable, and impactful outcomes for sustainable urbanization. Prof Pervaiz Ahmed's participation reflects the commitment of Sunway IGSC to fostering inclusive growth and resilient economic recovery in Malaysia's urban development.





REHDA's Malaysia Property Development Masterclass



Prof. Pervaiz Ahmed, delivered a keynote address at the REHDA seminar, "The Malaysia Property Development Process," underscoring the vital nexus between leadership and sustainability amidst dynamic global changes. Insights from Prof. Pervaiz and the IGSC team hold promise for the implementation of more sustainable strategies and policies within the property sector.



This seminar formed a segment of the 4-week programme, The Property Development Masterclass. Following the sessions, participants who successfully completed the course received certificates of completion during a graduation ceremony graced by Datuk Ng Seing Liong (REHDA Institute Trustee), alongside Puan Ra Adrina (REHDA Wilayah Chairlady) and Prof. Pervaiz K. Ahmed (Sunway IGSC).



The impact of this engagement prompted REHDA Institute to invite IGSC to deliver sustainability-focused addresses at its Malaysia Property Development Process Masterclass across three regional editions, Penang, Johor, and the Klang Valley, recognising sustainability as a central theme within the evolving property development landscape and Sunway IGSC's insights as a valuable contribution to the programme



Building ASEAN Ties: RMIT Vietnam

Prof. Pervaiz and Prof. Santha's visit to RMIT Vietnam marks the beginning of a long collaborative relationship between the two institutions. During the trip, the professors delivered a full-day workshop at RMIT Saigon South, Vietnam, to explore research application in real-world contexts through a blend of interactive discussions on advanced research methodologies, hands-on exercises, and case studies. The event was followed by engagements with education campuses to foster dialogue and exploration into potential research collaboration opportunities.

The trip was concluded with the signing of the Memorandum of Understanding between Sunway University and RMIT Vietnam. Facilitated by Sunway IGSC, the formalisation of this engagement strengthens ties between the two education institutions through joint research projects, academic exchanges, co-hosted events, curriculum development and talent building initiatives in areas of business innovation, sustainable development, digital transformation and entrepreneurship.

ASLI Banking Finance Summit 2023

by Prof. Pervaiz Ahmed



Prof Pervaiz was invited to moderate the first session of the ASLI Banking Finance Summit 2023, hosted by the Asian Strategy and Leadership Institute (ASLI). The session, “The Future of Banking and Finance,” featured esteemed panelists, Dato’Prof. Yeah Kim Leng (Director of Economic Studies at Jeffrey Cheah Institute on Southeast Asia), Muzaffar Hisham (then Group CEO of Maybank), Henry Cheong (CEO of Fusang Exchange, Hong Kong) and Pei Si Lai (CEO and Managing Director of GX Bank Berhad).

National Economic Outlook Conference (NEOC)

by Prof. Santha Vaithilingam

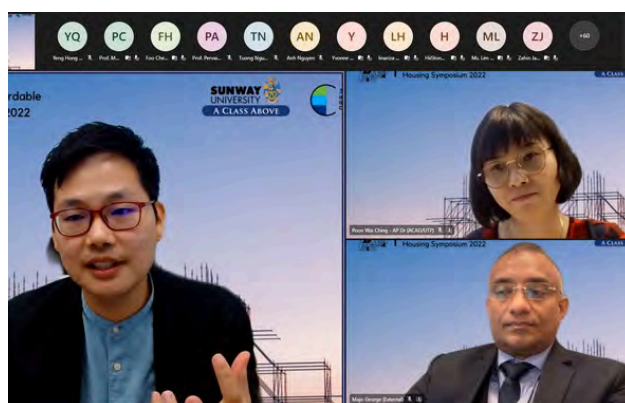
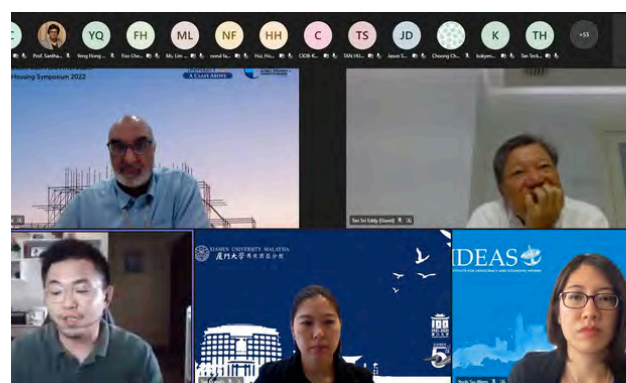


Sunway IGSC and the School of Prof Santha was invited as a featured panellist at the National Economic Outlook Conference (NEOC) 2025, organised by the Malaysian Institute of Economic Research. Held at Menara AFFIN@TRX on 27 November 2025, the conference brought together industry experts, professionals, and academics to discuss the theme, “Towards Innovation-Based Economic Growth.” Professor Santha participated in Session 2, “From Innovation to Economic Growth and Corporate Prosperity,” followed by a panel discussion and Q&A session.

Sunway IGSC and the School of Mathematical Sciences jointly hosted the first virtual South East Asia Affordable Housing Symposium in August 2022. The symposium centred on factors and solutions for housing affordability, including determinants of housing developers' selling prices, private rental housing affordability, and measuring subjective housing affordability in Malaysia. The event was joined players across the industry, including Dr Jason Ng (Sunway University), Dr Lee Hong Soo (Senior Urban Specialist from the Asian Development Bank), Dr Foo Chee Hung (MKH Berhad and REHDA Selangor), Mardi Mapa-Suplido (CEO of Habitat for Humanity Philippines), and Dr Majo George (RMIT Vietnam).

The highlight of the symposium was a panel discussion on the state of affordable housing, governance systems, prevailing market behaviours and potential solutions. Moderated by Prof. Pervaiz, the insightful discussion was joined by Tan Sri Datuk Eddy Chen (REHDA Institute), Dr Tricia Yeoh (CEO of the Institute for Democratic and Economic Affairs), Dr Consilz Tan (Xiamen University Malaysia) and Sean Tan (Brand and Marketing Manager of The Makeover Guys and property influencer),

South East Asia Affordable Housing Virtual Symposium 2022



Engagements with Desa Mentari Community



Sunway IGSC has been actively supporting the Sunway Desa Mentari Community Development Programme team and Sunway University to engage meaningfully with the Desa Mentari community. IGSC has provided on-the-ground support across a range of programmes designed to uplift community well-being and foster long-term, inclusive development. A cornerstone of these efforts is the Back-to-School (Back2School) initiative, introduced in 2024, which supports more than 1,000 students from underprivileged families by providing school uniforms, shoes, and other essential educational supplies. This initiative reflects a shared commitment to ensuring that financial constraints do not become a barrier to education for children in the community.

Beyond educational support, IGSC has participated in a variety of community engagement activities throughout the year, including festive gatherings, sports events, Malaysia's Independence Day celebrations, Hari Raya festivities, and community engagement dinners. These activities serve to strengthen the social fabric of the Desa Mentari community and nurture a spirit of unity and mutual support.

Visit to Kuala Selangor Nature Park



Sunway IGSC has conducted a visit to Kuala Selangor Nature Park (Taman Alam Kuala Selangor) on 24 January 2025. The primary objective of the visit was to deepen the team's understanding of the mangrove ecosystem and its multifaceted ecological functions. Mangroves are recognised as one of the most productive and ecologically valuable coastal ecosystems in the world — providing critical shoreline protection against erosion and tidal forces, functioning as vital breeding and nursery grounds for fish and marine life, offering refuge to a wide array of wildlife including migratory birds and endemic species, and supplying timber and non-timber forest resources to local communities.

Visit to Forest Research Institute Malaysia (FRIM)



The visit to the Forest Research Institute Malaysia (FRIM) provided a comprehensive understanding of Malaysia's forest ecosystems and the vital importance of sustainable management. Through guided educational activities and exposure to FRIM's research initiatives, the IGSC team gained deeper insights into the ecological functions of tropical forests, contemporary environmental challenges, and the critical role of conservation in maintaining biodiversity. Furthermore, the visit highlighted the interconnected relationship between forest health, climate resilience, and community well-being.

Visit to Tasik Chini Research Centre (TPCC)



Sunway IGSC engaged with the Tasik Chini Research Centre (PTCC) at Universiti Kebangsaan Malaysia (UKM) to explore the region's unique ecosystem and the cultural heritage of the Jakun Orang Asli community. The visit featured an ethnographic introduction to the Jakun people, offering insights into their customs and the modern challenges of sustaining their traditional lifestyle. This was complemented by a guided forest exploration that allowed participants to witness the area's immense biodiversity firsthand while gaining a deeper understanding of how human activities impact the forest ecosystem.

Visit to Royal Selangor

The visit to Royal Selangor Visitor Centre provided the Sunway IGSC team with valuable insights into Malaysia's rich craftsmanship legacy and the role of heritage-based industries in sustainable economic development. Through guided tours and interactive demonstrations, the team gained a deeper understanding of the intricate pewter-making process, the preservation of traditional artisanal skills, and the importance of innovation in maintaining the relevance of heritage industries in a modern economy. Furthermore, the visit highlighted how heritage-based industries can contribute to sustainability by promoting responsible production, heritage conservation, and community engagement.



Visit to the Catalyst for Malaysia's Technology Ecosystem (CREST)

During the roll-out of our Lead with Purpose Programme, the Sunway IGSC team were invited to visit the Catalyst for Malaysia's Technology Ecosystem (CREST) in Penang. The visit provided the team with a firsthand understanding of CREST's mandate in accelerating the growth of Malaysia's Electrical and Electronics (E&E) sector, particularly through connecting businesses to relevant resources, training, and industry networks. The team also visited two E&E companies, Infinecs and M Plus, gaining direct exposure to the operational realities, workforce development priorities, and sustainability challenges facing firms within the sector.



Date	Details
3/8/2023	NR-REE 2023 – Task Force Meeting and Appreciation Launch
31/10/2023	RAM Forum: Emerging Risks – How Can Malaysia Steer Ahead, Prof Mahendhiran speaker
11/9/2023	Rare Earth Workshop with NRESS, JMG, etc 2023
2/5/2023	REHDA Masterclass (Singapore) 2023
9/5/2023	REHDA Workshop 2023
17/5/2023	Desa Mentari Visit
27/6/2023	Desa Mentari Community Engagement Dinner at Sunway University
30/1/2023	Desa Mentari Visit
31/7/2023	Entrepreneurship For a Better World: Achieving The Three Zeros Agenda by Prof Muhammad Yunus
17-18/12/2024	8th International Conference on Environment 2024 by Eve Loo Yeen Chenng
10/2024	Restore Our Amazing Rainforest: Tree Planting by Prof Pervaiz
8/10/2024	10-10 MySTIE Framework Phase 2.0 in Kuching by Prof Mahendhiran
25/7/2024	A National Dialogue on Planetary Health: The Interconnectivity of Humans, Planet and Prosperity
8-9/9/2025	5th International Conference on Social and Economic Development 2025 by Yogesswary Segar
3/3/2025	Malaysia Blue Economy Blueprint (MBEB) Study – National Workshop
4/1/2025	National Level ICT Competition for Tamil School Students
7/10/2025	Planetary Health Annual Meeting in Rotterdam

CAPACITY BUILDING

IGSC delivers a range of capacity and capability development initiatives to enhance the knowledge, skills, and competencies of individuals and organisations across key sectors. Through these efforts, IGSC supports the capabilities needed to address economic, social, and environmental challenges.



Training Programmes
and Professional
Development



Workshops and
Technical
Skill-Building Sessions



Research Collaborations
and Applied Projects



Policy Advisory and
Strategic Consulting



Institutional
Strengthening and
Capability Development



Knowledge Transfer
and Learning
Platforms

Financial Literacy Series

by Joyce Chuah

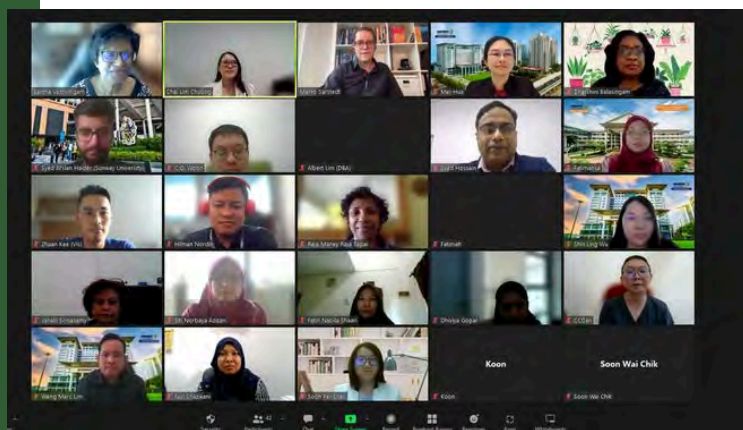


Financial literacy is essential to a global strategy for competitiveness and nation-building. Our financial literacy webinar series takes a comprehensive approach to equip young and middle-aged working adults and students with the necessary skills to manage their financial lives and contribute to a brighter financial future for themselves and the nation. Through a focus on real-life stories, expert insights, and interactive discussions, a total of 87 participants learned about the importance of financial planning, the risk factors affecting their money, taking charge of their financial habits, and the major questions in their financial lives. Led by Joyce Chuah, a highly experienced CEO and Founder of Success Concepts Life Planners, with 25 years of experience in financial services, participants gained the tools to achieve their financial goals and become part of the financial literacy revolution.

Virtual Webinar Series - Identifying Exciting Research Projects: Guidelines and Trends

by Prof. Dr. Dr. h.c Marko Sarstedt

Marko Sarstedt, a chaired professor of marketing at the Ludwig-Maximilians-University Munich and an adjunct research professor at Babeş-Bolyai-University Cluj-Napoca, hosted a research seminar discussing what makes a research idea "great" from both an editor's and author's perspective. He drew on success factor research in strategic management to highlight the requirements needed to translate a research project into a top-tier publication. The seminar also provided an overview of current marketing trends that can be applied to other fields such as IS.



With over 100,000 citations, his research ranks among the most frequently cited in the social sciences, and he has been repeatedly named a member of Clarivate Analytics' Highly Cited Researchers List.



Data Fluency with R Workshop

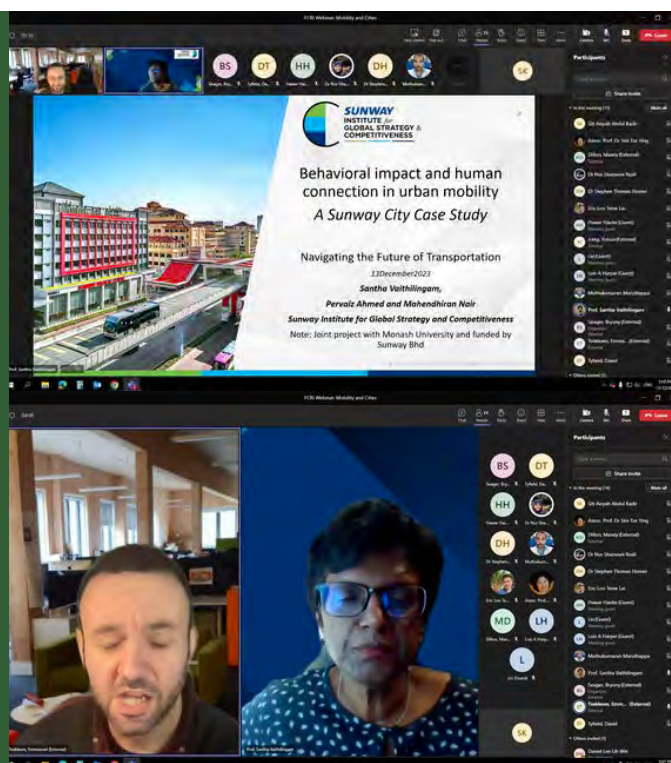
by Assoc. Prof. Dr Jason Ng Wei Jian

Sunway IGSC organized a workshop in collaboration with the School of Mathematical Sciences, providing participants with a comprehensive platform to enhance their data analysis skills. The workshop, attended by over 20 colleagues from Sunway University and Sunway College, featured three key modules: Basics with R, Data Manipulation with dplyr and (gg)Plot Your Data! (Data Visualization). Through these modules, participants gained a solid foundation in R programming and its applications in data analysis, fostering fluency in working with data across various domains and disciplines.

Mobility Cities: Urban Mobility for Future Cities Webinar

by Prof. Santha Vaithilingam

Prof Santha, Sunway IGSC's Deputy Director was invited as a speaker at a recent webinar hosted by Future Cities Research Institute (FCRI) titled, "Mobility Cities: Urban Mobility for Future Cities." The session included two insightful lightning talks offering cross-disciplinary perspectives on designing cities that nurture human health and breakout group discussions to exchange interests, explore potential research questions, and ideate new collaborations.



Values-Based Workshop for Visiting Dutch Students



Sunway IGSC were invited to facilitate an invigorating session entitled, “Values-Based Development: Transitioning from ROI to ROV,” participated by 70 Dutch students from the Netherlands-Asia Honours Summer School Programme. Presented by our Pro-Vice Chancellor (Research and Sustainability), the session explored the necessary shift from the conventional Return-on-Investment (ROI) way of development to a Return-on-Values (ROV) approach, to reshape new minds through a holistic education that integrates planetary health.

Cross-Disciplinary Postgraduate Research for SDG Symposium *by Prof. Pervaiz Ahmed*



Prof Pervaiz was invited as a panelist at the symposium entitled “Cross-Disciplinary Postgraduate Research for SDG Symposium, jointly hosted by the Sunway Business School and School of Medical and Life Sciences. The inaugural event aimed to provide a knowledge sharing platform to unite research scholars, showcase SDG-related projects and foster cross disciplinary collaboration for SDG-embedded postgraduate research.

Training at RMIT University Vietnam



Prof Pervaiz and Prof Santha conducted a full-day training session at RMIT University, Vietnam on advanced research methodologies, alongside engagements with academic institutions in Vietnam to foster regional collaboration. The engagement subsequently led to a Memorandum of Understanding (MoU) between Sunway University and RMIT University Vietnam, supporting joint research, academic exchanges, and collaboration in areas including business innovation, sustainable development, and digital transformation.

Theory Development Workshop Series with Prof Viswanath Venkatesh



Sunway IGSC organised a series of virtual and physical theory development workshops featuring esteemed researcher, Prof Viswanath Venkatesh. Believing that theory development is fundamental to the quality of a publication, Prof Viswanath guides early career researchers and postgraduate students using examples in social and behavioural sciences and information systems. Prof Viswanath is a prolific researcher in his field globally, ranking in the top 500 among 9 million scientists.

Early Career Research Workshop Series *by Prof. Pervaiz Ahmed*

Prof Pervaiz has been invited numerous times as a keynote speaker in Early Career Research Workshops, organised by the Sunway School of Business. These workshops are developed to guide early career researchers by providing them a platform for knowledge sharing, networking and research collaborations through panel discussions, interactive Q&A sessions and individual consultation sessions.



Leveraging Data Analytics for Sustainable Development

by Prof. Santha Vaithilingam

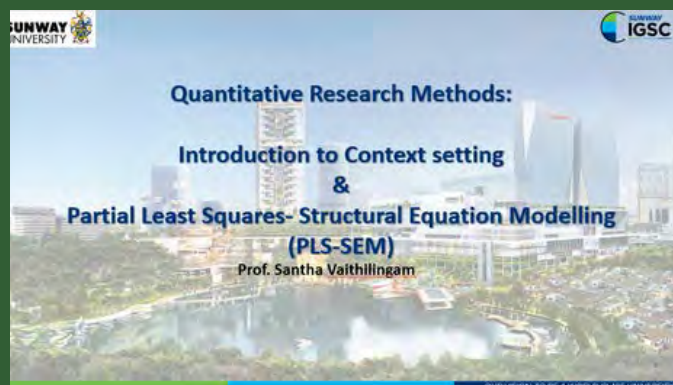


Prof Santha delivered a lecture on “Leveraging Data Analytics for Sustainable Development” for the Master’s in Sustainable Development programme, under the unit “Introduction to Sustainable Development.” The session introduced students to the application of data analytics in evidence-based policymaking, covering techniques such as trend analysis and data visualisation using real-world datasets and case studies aligned with the United Nations Sustainable Development Goals (UNSDGs).

Prof Santha delivered a seminar on “Quantitative Research Methods: Introduction to Context Setting and Partial Least Squares-Structural Equation Modelling (PLS-SEM),” focusing on the importance of contextualising research and understanding the appropriate application of PLS-SEM in quantitative studies. The session introduced key methodological considerations, including research design, preparatory steps before data collection, and common challenges such as common method bias, social desirability bias, and redundancy analysis.

Quantitative Research Methods

by Prof. Santha Vaithilingam



Sunway University Research Supervisors Enhancement (SURE) Workshops



Prof Pervaiz and Prof Santha served as facilitators for the Sunway University Research Supervisors Enhancement (SURE) Programme organised by Sunway University. Conducted over two days, the workshops brought together more than 80 academic staff involved in Master's by research and doctoral supervision. The sessions covered topics including supervision and ethical conduct, postgraduate research policies and regulations, student-supervisor relationships, and collaborative supervision. Through case studies, fireside reflections, and candid panel discussions, the programme fostered engaging conversations on research supervision in the context of emerging technologies and evolving expectations in academia and industry.



J-PAL SEA Executive Education: Evaluating Social Programs

Prof Santha and Sudhan Mahalingam attended the 5-day J-PAL Southeast Asia Executive Education Programme on Evaluating Social Programs, held in Bali, Indonesia. Organised by the Abdul Latif Jameel Poverty Action Lab (J-PAL) Southeast Asia, the intensive training programme focused on the design and implementation of impact evaluations for social and development programmes using randomized evaluation methods. The programme covered key topics including theory of change and measurement, impact evaluation methods, randomization techniques, sample size and statistical power, ethical considerations, threats to validity, and evidence-informed policymaking. Through lectures, case studies, group discussions, and hands-on exercises, participants gained practical exposure to evaluating policy interventions and strengthening evidence-based decision-making for social impact initiatives.



HRDC Train The Trainer (TTT) Certification

Sunway IGSC participated in a 5-day Train The Trainer (TTT) Programme to support researchers in the pursuit of education and training. Conducted by a certified external trainer, the programme engaged 16 researchers in the competencies required for effective instructional delivery, including facilitation techniques, adult learning principles, and training design. The 5-day programme ended with an assessment to ensure our new trainers met the certification standards required by the Human Resources Development Corporation (HRDC).



Learning With IGSC - Interns and PhD Students

At the Sunway Institute for Global Strategy and Competitiveness (IGSC), we are dedicated to cultivating a community of passionate researchers committed to positively impacting their respective fields. We believe in empowering aspiring researchers to advance their knowledge and skills, and we encourage them to pursue a PhD with us to achieve their academic and research goals.

In addition to our PhD program, we also onboard research assistants and interns to empower and mentor them in their research careers. These programs provide invaluable experiences and opportunities for individuals to develop their research skills, knowledge, and networks. We look forward to continuing to empower and mentor the next generation of research leaders at IGSC.



Shirlyn Tang

PhD Student

Women entrepreneurs' personal branding on social media: An exploratory study of identity and business

“

This PhD journey has not been easy, with challenges galore and moments that test my confidence. But with the unwavering support of my supervisors and loved ones, I'll keep pushing through!



**Jacinta
Priyadarshini a/p
David Dorairaj**

PhD Student

Behavioral Approach To Planetary Health in a Developing Country Setting

“

PhD journey seems all about progress, not perfection. Just need to enjoy climbing this mountain without giving up.



Nicholas Boey

Research Assistant

“

Working as a Research Assistant exposed me to a lot of new skills and had the opportunity to work on Data crunching, model building: endless possibilities!

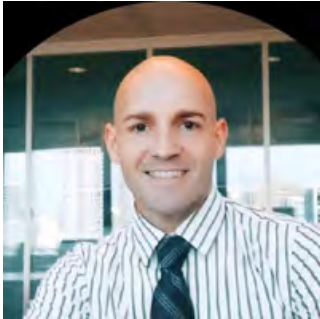


Ashank Sahu

Intern

“

My time at IGSC had been wonderful, it was very helpful for my career by letting me be involved in impactful projects.



**Emer
Roelof Borger**

PhD Student

*Moral-Strategic
Responsiveness - A Grounded
Theory of Dutch Corporate
Responses to the Russian
Invasion of Ukraine*

“

As a doctoral researcher affiliated with the Institute of Global Strategy and Competitiveness, I had the privilege of working under dedicated supervision. The institute provided the intellectual environment and resources necessary to conduct rigorous research, and fostered a culture of academic excellence that pushed me to think critically, write clearly, and contribute meaningfully to scholarly debate. I am deeply grateful to the entire team at the Institute of Global Strategy and Competitiveness for their support throughout my PhD journey. The institute is not only a space for research, but also a community that actively invests in its researchers, both professionally and personally, and prepares them well for their future careers in academia.



**Pritchard
Muzanarwo**

PhD Student

*The Informal Economy as a
Sociotechnical Organising
Logic: The Case of Zimbabwe*

“

My PhD journey has been truly transformative — intellectually rigorous and deeply personal. The unwavering support of my supervisors made every challenge worthwhile. Their mentorship extended beyond research, offering life guidance that shaped both my scholarship and character. I am profoundly grateful for every discussion, every word of encouragement, and every moment invested in my growth.



ON AIR

MEDIA MENTIONS

IN THE MEDIA

IGSC continues to gain media recognition for its research, thought leadership, and contributions to policy and industry dialogue across key sectors. Below are some key media mentions.



Southeast Asia's Biodiversity Worth \$3 Trillion a Year: Report

'One of the report's authors, Professor Pervaiz Ahmed from Malaysia's Sunway University, said their valuation considered four domains: A forest's role in soaking up carbon dioxide and preventing floods, its role as a habitat for wildlife species' survival, its place in education and tourism, and lastly, its provisional services such as the value of timber, food and medicine from the rainforest.'



Development the Natural Way

'Prof Pervaiz Ahmed of Sunway University in Malaysia, one of the report's authors, said the evaluation method was based on four domains: the role of a forest role in soaking up carbon dioxide and preventing floods, its role as a habitat for wildlife species' survival, its place in education and tourism, and its provisional services such as the value of timber, food and medicines.'



15 June 2022

South-east Asia's Biodiversity Worth \$3 Trillion a Year in Economic Growth, Jobs: Report

'He added at a virtual media briefing streamed from Kuala Lumpur on Wednesday: "Previous valuation studies have been looking (only) at provisioning systems, such as, if we exploit nature or timber, what is the value we will get... we moved away from that narrow view which (is) simple, immediate and profit-centric.'

teropong
senayan.com

07 Nov 2022

House of Representatives Marine Caucus Encourages Conservation of Biological Resources and Natural Ecosystems

‘Sementara itu, Prof. Pervaiz K. Ahmed, Direktur Institute for Global Strategy and Competitiveness, Sunway University menegaskan tentang perlunya mengatasi eksternalitas negatif dari perubahan iklim, yang akan paling mempengaruhi Indonesia sebagai negara kepulauan terbesar di dunia.’

THE EDGE
MALAYSIA

04 Nov 2022

Ravindra Airlangga: Strengthening Protection and Conservation Aspects in the KSDAE Bill

‘Sebagai informasi, pertemuan tersebut dihadiri oleh Komite Pengarah Global Campaign for Nature Prof. Dr. Emil Salim, Guru Besar IPB University Prof. Rokhmin Dahuri, Guru Besar Sunway University Malaysia Prof. Pervaiz K. Ahmed, Plt. Deputy Bidang Kemaritiman dan Sumber Daya Alam Kementerian PPN/Bappenas Dr. Vivi Yulaswati, Direktur Jenderal Pengelolaan Ruang Laut KKP Victor Gustaf Manoppo’

Tribunnews.com

07 Nov 2022

Commission IV of the House of Representatives Emphasizes the Importance of the Bill on the Conservation of Biological Resources and Natural Ecosystems

"Indonesia dapat memperoleh manfaat sosial ekonomi senilai \$1 triliun USD dari Kawasan Konservasi yang menggarisbawahi satu lagi alasan mengapa Indonesia harus membantu berkontribusi pada tujuan global 30x30," kata Pervaiz.

LinkedIn

Nov 2022

"Building Back Sustainably - A Malaysian Family-Firms Perspective" - Leilanie Mohd Nor, Ph.D.

‘The keynote, "Building Back Sustainably - A Malaysian Family-Firms Perspective" presented by Prof. Pervaiz K. Ahmed, Director of the Sunway Institute for Global Strategy and Competitiveness & Distinguished Research gave us incredible insight into an academic overview of the state of family businesses in relation to sustainability and ESG issues in Malaysia.’

TheStar
02 Nov 2022

Helping Family Businesses to Grow

‘Menteri Besar Datuk Seri Amirudin Shari added that in line with SDG number 17 – Partnerships for Goals – Selangor government and Yayasan Selangor were happy to support the summit this year alongside BinaPavo and Sunway University’s Institute for Global Strategy and Competitiveness.”

malaymail
15 Aug 2022

Selangor Forms Consultative Council on Indian Community Issues

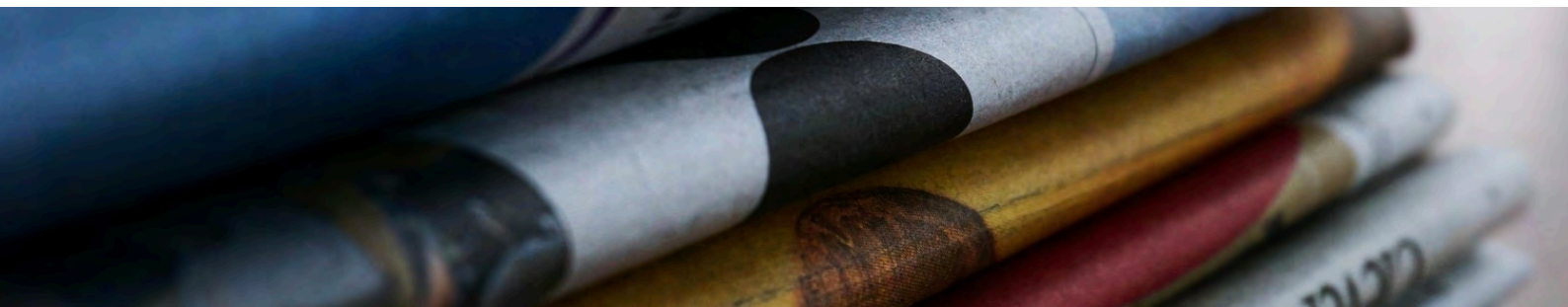
‘Among them are academics, planners, business community leaders, educators, former senior government servants and grassroots leaders. Two other members named were Kuala Lumpur and Selangor Indian Chamber of Commerce and Industry president Nivas Ragavan and professor of econometrics and policy modelling at Sunway University Santha Vaithilingam.”

BORNEO POSTonline
THE LARGEST ENGLISH NEWS SITE IN BORNEO

01 Dec 2021

To Encourage COVID-19 Vaccination in Malaysia, Ipsos Study Reveals Peer Pressure and Influencers May Be Key

‘Researchers who were involved in the study are Dr Jason Ng Wei Jian (Monash University Malaysia), Dr Hwang Li-Ann (Monash University Malaysia), Prof Santha Vaithilingam (Sunway University), Prof Mahendhiran Nair (Sunway University), Assoc Prof Kamarul Imran Musa (Universiti Sains Malaysia), and Ipsos associate director Lars Erik Lie. — Malay Mail”





Blazing a Trail for Smart Cities in Developing Nations

‘Meanwhile, Prof Teh and Prof Santha Vaithilingam of Sunway University’s School of Business worked together to study on the behavioural aspects of participants in the survey, in addition to developing the five pillars that played a pivotal role in measuring and rating the success of Sunway City KL’s smart transportation initiatives.’



REHDA Institute Signs MoU with Sunway University Malaysia

‘REHDA Institute – the training, research and education arm of the the Real Estate and Housing Developers’ Association of Malaysia (REHDA) – has signed a memorandum of understanding (MoU) with Sunway University Malaysia for the collaboration on plans including research relating to environmental, social and governance (ESG) and sustainability, affordable housing, as well as industry and consumer surveys and focus groups, according to a press statement.’



The Plan must be to benefit all

‘Prof Mahendran Sanggaran Nair and Prof Santha Vaithilingam of Sunway University contributed to the development of a working paper under the Sustainable Inclusive and Consultative Council (SICC), focusing on structural socioeconomic challenges affecting segments of the Malaysian Indian community.’



24 Oct 2025

ASEAN Launches Foresight Report To Shape Region’s STI Future

‘According to MOSTI, the ASEAN Ahead report’s core is the Triple-10 ASEAN STI Framework, a bold model inspired by Malaysia’s 10-10 MySTIE Framework introduced in 2020, which aligns ten socio-economic drivers with 10 science and technology drivers to accelerate high-impact growth across the region.’



Way Forward 2026 AND BEYOND

The Architecture of What's Next

he next phase of IGSC's work is organised around a sharper architecture. At its centre sits the question that defines everything else: what competitiveness should mean in this moment, and how that definition shapes the choices available to societies, economies, and institutions. Three outer pillars — social, environmental, and political — extend that central question into the dimensions where its consequences are actually felt.

**This is where the next stage
of the work will be.**

Economic Competitiveness

The central pillar

The argument for redefining competitiveness sits at the centre of everything else IGSC will do, because the model that prevails here shapes what becomes possible across every other dimension. The next phase sharpens that argument in the context of AI — the most consequential technology of the moment, capable of accelerating either an extractive race for narrow gains or a regenerative reorganisation of how value is created. Which trajectory dominates depends on how the technology is adopted, deployed, and governed by the businesses and societies it is reshaping.

Social

The human substrate of competitive systems

A competitive economy that does not strengthen the social fabric beneath it is competing on borrowed ground. The social pillar examines what regenerative competitiveness requires of communities, institutions, and the relationships between them — from the conditions that allow people to participate meaningfully in economic life, to the equity and trust that determine whether competitive gains are widely shared or narrowly captured. It also asks how the most transformative technologies of the coming decade can be designed and governed to serve collective rather than narrow benefit.

Environmental

The natural foundations of productive systems

Environmental integrity is not a constraint on economic ambition; it is the substrate on which economic ambition operates. The environmental pillar extends IGSC's work on ecological governance and natural capital, asking how productive systems can be designed to maintain — and where necessary restore — the natural foundations they draw from. It examines the financial, institutional, and policy mechanisms through which ecological value is currently underpriced or ignored, and what it would take for environmental health to be treated not as a reporting category but as a precondition for any competitiveness worth defending.

Five years ago, IGSC began with an argument: that the dominant model of competitiveness was consuming the conditions for its own continuation, and that a different model was possible and worth building. That argument has not changed. What has changed is the evidence behind it, the institutions that have engaged with it, and the scale at which it is now operating. The work ahead is harder than the work behind — moving from influence at the policy level to change at the operational level, across more countries, more sectors, and a technological landscape that is shifting faster than any framework can comfortably track. That is precisely the kind of problem IGSC was built for.

Political

Where political reality meets competitive strategy

Decisions about competitiveness are rarely made on the merits of competitiveness alone. The political pillar examines how geopolitical pressure, regulatory demands, and institutional power shape what is actually possible — how trade tensions, security considerations, and shifting alliances increasingly determine the conditions under which national and regional strategies are formed. It also asks how rigorous research and evidence can hold their ground in environments where political urgency frequently overrides longer-term considerations, and what role institutions in the Global South should play in shaping that agenda.

Work With Us

The problems this report addresses are not ones any single institution can resolve alone — and we have never pretended otherwise. If any of the work described here resonates with what your organisation is trying to do, we would like to hear from you. We are actively looking for partners, collaborators, and fellow researchers and practitioners who share the conviction that a different mode of competitiveness is both necessary and achievable.

Get in touch at
igsc@sunway.edu.my

We would like to thank our team, partners, collaborators, Sunway University and Sunway Group. The achievements of Sunway IGSC would not be possible without your contributions and commitment to our cause over the years. We strive to continue our mission towards redefining competitiveness for a better world for current and future generations.

Contact Us

Sunway Institute for Global Strategy and Competitiveness (IGSC)

Level 8, East Wing, Sunway University, 5, Jln Universiti, Bandar Sunway, 47500 Petaling Jaya, Selangor, Malaysia



igsc@sunway.edu.my



+60 3-7491 8622 (ext 7699)



sunwayuniversity.edu.my/research/Sunway-IGSC



my.linkedin.com/showcase/sunwayigsc/



instagram.com/sunwayigsc/

This report was prepared by Hong Qing Yeng, Chai Lim Choong, Eve Loo, Janelle Tsan, Aini Syafira and contributions from the Sunway IGSC Team.

Design by QC Fixer Sdn Bhd

The information in this publication is current at the date of printing and is subject to change.

For up to date information, visit our website and online platforms.

© 2026 Sunway IGSC. All rights reserved.

