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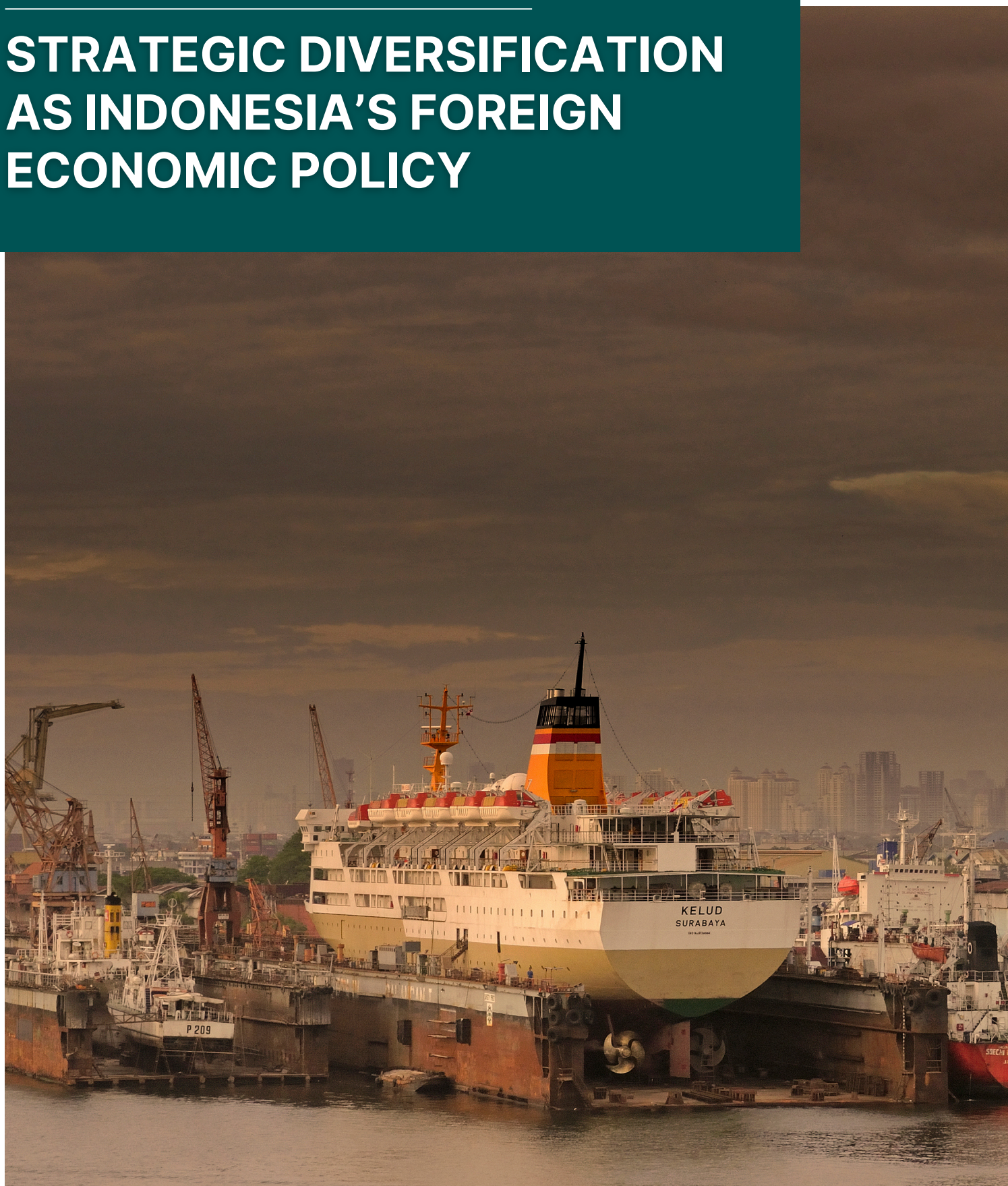
CSIS Research Report

STRATEGIC DIVERSIFICATION AS INDONESIA'S FOREIGN ECONOMIC POLICY

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Executive Summary

The global economy, as has been described in the previous Strategic Dependence Report, has reached what was once considered one of its worst-case scenarios. It has entered a phase where uncertainty is a permanent feature, not an exception. The disruption to food security following the Russia-Ukraine war, sweeping U.S. unilateral tariffs, competitive pressure from China's overcapacity, and the disruption to shipping through the Strait of Hormuz are just the latest testament to a broader pattern. Pressures on domestic stability are rising while room to manoeuvre is squeezing. Geopolitical forces now not only stress the agility of Indonesia's foreign policy, but also transmit directly into its trade, its investment, and its industry. Indonesia cannot afford to manage these risks using a reactionary approach any longer.

The answer is not to securitise the economy entirely or retreat into autarky. It is strategic diversification: a calibrated, purposeful orientation of Indonesia's foreign economic policy that preserves openness where it delivers welfare and capability and intervenes only where concentrated dependencies become binding constraints. This is distinct from decoupling, de-risking, or adding partners without strategic intent. It is, in essence, the economic operationalisation of *bebas aktif*, preserving Indonesia's room to manoeuvre across partners without dependence on any single power.

The findings of this report are sobering. Analysed across four mechanisms of what diversification does, namely substitutability, redundancy, resilience, and competitive leverage, as well as two enabling conditions of what makes those mechanisms possible to build and sustain, namely capability upgrading and institutional flexibility, Indonesia finds itself consistently constrained by structural bottlenecks, including regulatory inconsistency, fragmented institutional coordination, sector specific barriers (such as entrenched commercial networks in the food sector, limited domestic storage and refining capacity or weak domestic supplier base in the manufacturing and technology sector), and limited capacity to convert existing alternatives into usable options under stress. This assessment delves deeper into several sectors considered primary for Indonesia's resilience, namely food and energy security, as well as transformation, namely manufacturing and technology.

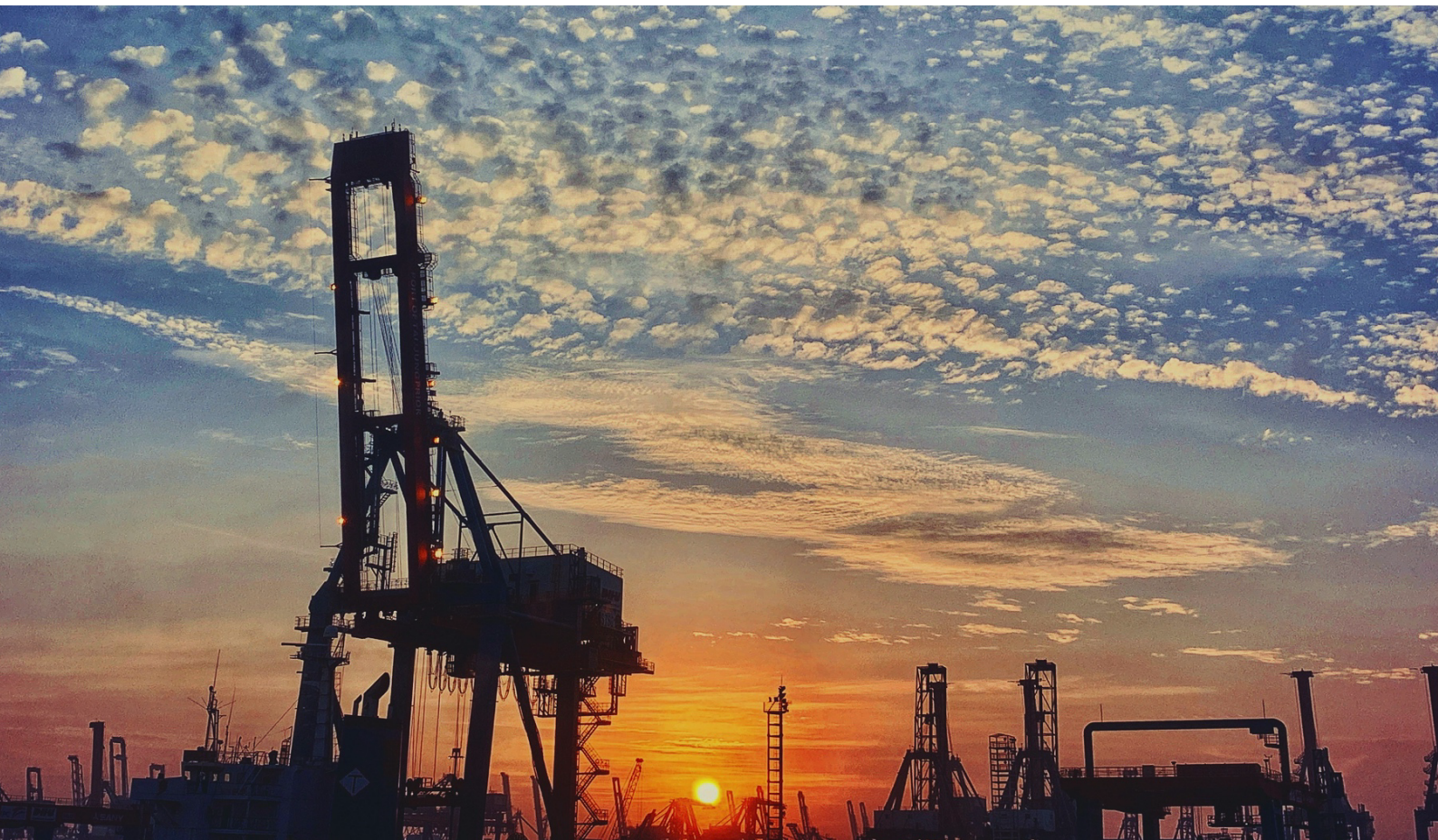
Food dependence on narrow import sources leaves Indonesia exposed to supply shocks that transmit rapidly into domestic inflation. Energy policy is pulled simultaneously in three contradictory directions with no coherent strategy binding them. Manufacturing remains too shallowly embedded in global value chains to capture their benefits or absorb their shocks effectively. Technology is the most structurally exposed: supply

chains are concentrated, barriers to entry are steep, and the national innovation ecosystem needed to convert technology access into domestic capability is largely absent.

A whole-of-government crisis simulation stress-tested how Indonesia's institutions would respond to simultaneous multi-sector pressure. The results confirmed the core diagnosis. Awareness of threats was strong. Coordinated response was not. Ministries defaulted to their own mandates. Decision-making slowed as pressure intensified. And *bebas aktif* was invoked repeatedly as a posture without being converted into concrete action. Indonesia's problem is not the absence of diversification. It is the absence of a strategic logic governing it.

This report argues that decision rules pre-crisis need to be in place along with a coordinating anchor. This report argues that the Ministry of Foreign Affairs (*Kemlu*) should play that role, not as a bureaucratic claim, but because foreign economic policy is fundamentally about managing Indonesia's relationships with the world, which is precisely *Kemlu's* mandate and comparative advantage.

Indonesia has the instincts, the resources, and many of the tools. What it has lacked is the strategic discipline to deploy them coherently. The cost of continued muddling through is no longer acceptable. The partnerships, the institutional habits, and the strategic options Indonesia will need when the next crisis arrives must be built before it does, and steadily refined as circumstances evolve.



Chapter 1. Introduction

Indonesia is entering a world where economic openness no longer guarantees stability: conflicts, chokepoints, export controls, sanctions, and securitised supply chains increasingly shape whether trade and investment remain usable under stress. At the same time, Indonesia's preference is not total securitisation or autarky, but a calibrated form of economic security – one that preserves openness where it still delivers welfare and upgrading capability, and intervenes only where concentrated dependencies become binding constraints. This is why this report departs from an assumption that the emergence of "strategic diversification" in Indonesia's foreign policy discourse matters: it signals an intent to manage dependency risks deliberately, without abandoning Indonesia's free and active tradition. Over the past year or two, from Trump's return to the escalation of conflict in Iran, Indonesia has been pushed toward a more honest national conversation about economic security. The old assumption that interdependence guarantees the uninterrupted flow of mutually beneficial economic engagement has not held up well. In practice, economic ties can just as easily become pressure points that more powerful states can exploit, especially in an era when great powers act increasingly on their own terms, with diminishing regard for others.

Much of the anxiety over the past decade has centred on how great powers have shown a growing willingness to politicise economic relationships, using market access, investment, and supply chain position as instruments of foreign policy pressure. Scholars of international political economy have a term for this: *weaponised interdependence*. The concept describes how global networks, financial systems, supply chains, and digital infrastructure create chokepoints that dominant states can exploit for strategic ends. What was once framed as mutual gain becomes an instrument of coercion.[1]

Today, deliberate weaponisation is only part of the picture. The threshold for treating economic relationships as security concerns has also dropped considerably. Trade deficits, technology gaps, and supply chain exposures that would once have been managed as ordinary policy problems are now routinely securitised, sometimes cynically, sometimes out of genuine anxiety. Geopolitical conflicts that Indonesia has no part in affect its rising economy. The disruption to shipping through the Strait of Hormuz demonstrated how quickly a distant conflict translates into energy price spikes, supply chain delays, and import cost pressures for a country that depends on those routes. And Indonesia is not simply a distant observer of geopolitical risk. It sits in a region where the most consequential potential flashpoints of the coming decades, the South China Sea and the Taiwan Strait, are close enough that any serious escalation would reorder the

[1] Henry Farrell and Abraham L. Newman, "Weaponized Interdependence: How Global Economic Networks Shape State Coercion," *International Security* 44, no. 1 (2019): 42-79.

economic geography of Southeast Asia overnight. Mutual interdependence, in this environment, is not a guarantee of positive relations. It is also a source of exposure, and one that Indonesia cannot afford to manage reactively.

Indonesia's response to this new reality should not be to securitise the whole economy, nor to pursue the illusion of self-sufficiency. Economic security is best treated as a targeted governance agenda: securitise only when dependencies are genuinely critical and coercion risks are material; desecuritise where ordinary regulation and market competition are sufficient; and keep openness as the default where it continues to generate capability and welfare. Strategic diversification is designed precisely to sit in this middle ground – managing concentrated risks without turning external economic policy into a domain of permanent exception.

Strategic diversification is not an end in itself but a means toward achieving longer-term national objectives. It is one option among several that sit along a broader spectrum of strategic choices, each carrying its own benefits and costs. At one end of the spectrum lies decoupling, the most radical form of separation from existing dependencies. At the other end lies integration, the deepest form of embedding within a given economic or technological relationship. Between these poles sit de-risking, diversification, and deepening as progressively more engaged postures. The appropriate position along this spectrum is not fixed; it depends on the sector, the nature of the dependency, and the strategic objectives at stake. Though strategic diversification matters, it is therefore not a universal solution. Treating it as one risks mistaking the instrument for the goal.

Indonesia is not uniquely vulnerable in this respect. If anything, its relatively low trade-to-GDP ratio, a reflection of an economy still deepening its integration into global supply chains, means its exposure to external shocks is structurally lower than that of more trade-dependent nations. There is room to grow, and growing carefully is still a choice Indonesia can make.

Despite its natural wealth, Indonesia cannot thrive by embracing the logic of total self-sufficiency, and there is no shame in that. Growing your own rice is not the same as building a competitive steel industry, a globally recognised halal products sector, or a garment industry that feeds into complex supply chains. It is certainly not the same as positioning yourself in green transition technologies, advanced manufacturing, refined mineral products, semiconductors, or artificial intelligence. Significant work remains across all of these. None of it happens without the world. Indonesia cannot stop learning from the outside, drawing on its capabilities and materials, if it ever hopes to contribute meaningfully back to it.

But that very reality is what makes the question of how Indonesia manages its external economic relationships so consequential. Good intentions are not a strategy. Preparedness is.

From Diagnosis to Prescription

In 2024-2025, CSIS Indonesia produced a study mapping Indonesia's strategic dependencies.[2] That work focused on the food and energy sectors and was primarily diagnostic. It identified where Indonesia is exposed, why those exposures matter, and what kinds of shocks could translate into genuine strategic vulnerability. What it did not provide was a framework for what to do about it.

This report, the Phase 2 of Indonesia's Strategic Dependency project, attempts to fill that gap. Where previous work mapped the problem, this phase attempts something harder, that is, to build a concrete operational concept, a framework that can actually guide how the Indonesian government acts, not just how it thinks. This is where we introduce the concept of Strategic Diversification.

The concept is not new to Indonesia's foreign economic policy. It is already embedded in the country's practice, even if it has operated more as instinct than as deliberate doctrine with institutionalized operational machinery. Nor has it ever lacked intellectual foundation. The then-Vice President Mohammad Hatta made the economic case for such concept with remarkable clarity: independence through the deliberate cultivation of diverse partnerships, not dependence, was indispensable to Indonesia's economic survival.[3] Tying the country to a narrow set of economies would undermine Indonesia's capacity to mobilize the external support necessary for national construction, develop the industrial base needed to generate greater value from its natural resource wealth, and weather the price swings that had long characterized its commodity-dependent export structure. Only genuine independence of alignment, Hatta concluded, could adequately protect Indonesia's economic interests.

Following the collapse of global oil prices in the early 1980s, Indonesia shifted away from oil-dependent revenues and built new export industries in textiles, garments, footwear, and plywood.[4] When US arms embargoes in the 1990s exposed the risks of concentration in defence procurement, Indonesia diversified its military suppliers, the same strategic logic applied to a different domain.[5] And when the 2026 US-Israel strikes on Iran and the subsequent Hormuz crisis disrupted oil shipping routes, Pertamina moved quickly to

[2] Lina A. Alexandra, Andrew W. Mantong, Dandy Rafitrandi, M. Habib Abiyan Dzakwan, M. Waffaa Kharisma, Pieter A. Pandie, Anastasia A. Widyautami, and Balthazaar A. Ardhillah, "Indonesia's Strategic Dependencies," *CSIS Research Report*, Jakarta: CSIS Indonesia, 2025, https://www.csis.or.id/publication/indonesias-strategic-dependencies/.

[3] Mohammad Hatta, "Indonesia's Foreign Policy," Foreign Affairs, Vol. 31, No. 3, (April 1953), p. 441-452.

[4] Latif Adam, "The Indonesian Garment Industry: Past Performance and Future Challenges," *Economics and Finance in Indonesia* 52, no. 2 (2004): 103-121, accesible via https://www.lpem.org/repec/lpe/efijnl/200407.pdf; Thee Kian Wie, "The Impact of the Economic Crisis on Indonesia's Manufacturing Sector," *The Developing Economies* 38, no. 4 (2000): 420-53, accesible via https://www.ide.go.jp/library/English/Publish/Periodicals/De/pdf/00_04_02.pdf.

[5] Ron Matthews, Curie Maharani, Jupriyanto, and Shang Su Wu, "Indonesia's Defense Acquisition Strategy," *Asian Security* 21, no. 2 (2025): 125-148. Accesible via https://doi.org/10.1080/14799855.2025.2527088.

diversify its energy sourcing and tighten distribution to absorb the shock.[6] These are not isolated episodes. They reflect a recurring pattern. Indonesia diversifies when it has to.

This shift is now being articulated explicitly at the level of foreign policy doctrine. In the 2026 Annual Press Statement, the Foreign Minister used the concept to justify Indonesia's simultaneous engagement across BRICS and the OECD track as an approach of "strategic diversification," considered as diplomatic courses consistent with *bebas aktif* – expanding room to manoeuvre by widening Indonesia's portfolio of partners and platforms.

The same instinct is visible in the country's trade and political-economic architecture. Indonesia's activism in ASEAN-led mechanisms, its push for the implementation and entry into force of the Regional Comprehensive Economic Partnership, as well as the expansion of its bilateral free trade agreements, suggest that the more partners and channels there are, the less dependence Indonesia will have on any single relationship. These agreements are themselves acts of diversification, even when they have not been framed that way.

What has been missing is the deliberate layer, a framework that sharpens Indonesia's instinct into a doctrine that anticipates pressure points before they become crises, and ensures that when it happens, it happens coherently.

This report also draws a distinction that matters. We are not against deepening an existing relationship. When concentration is manageable, when exit remains a real option and the gains are clear, deepening makes sense. The problem is not dependence as such. The problem is dependence that has quietly become a trap. When exposure that accumulates gradually until it starts to constrain what Indonesia can say, demand, or walk away from, that's when Indonesia's political and economic autonomy and sovereignty are threatened. The goal is to be clear-eyed about when that line has been crossed, and to have the tools and the institutional agility to act before it is too late.

Diversification, in this report's framework, also extends beyond the question of *with whom* Indonesia trades or receives investment. It includes the diversification of what Indonesia produces and exports, moving from raw commodities toward refined and processed, higher-value manufactured goods. Moreover, it covers discussions on which diplomatic platforms Indonesia should better utilise, and where technological acquisition should be pursued to upgrade Indonesia's competitive position in the supply chain. These widen Indonesia's economic base and reduce its exposure to the price cycles of any single commodity. Partner diversification and product diversification are two sides of the same strategic logic.

A more diversified external economic posture makes Indonesia a more attractive and more open partner, not a more closed one, because it creates genuine competitive space.

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[6] Dimas Waraditya Nugraha, "Airlangga: Indonesia Akan Impor Minyak dari AS," *Kompas*, 2 March 2026, https://www.kompas.id/artikel/redam-risiko-fiskal-impor-minyak-dialihkan-dari-timur-tengah.

Diversification, in this sense, is not a defensive crouch. It is a way of generating leverage through openness, and of ensuring that Indonesia's partnerships are chosen competitively. Strategic diversification may incur short-term adjustment costs, but in the long term it offers broader benefits for security, autonomy, and economic transformation. That is precisely why its adoption must be pursued collectively across all stakeholders.

The Conceptual Argument: Strategic vs. Muddling Through

Conceptual work often gets dismissed in policy circles as too theoretical, too far from the practical questions of cost, benefit, and implementation. That scepticism is understandable. But the absence of a shared conceptual foundation is precisely part of Indonesia's problem. Different agencies pull in different directions, shaped by institutional culture, ministerial personality, and competing priorities. This is not a new observation, it is a structural condition of Indonesian governance that has been well documented across administrations. Simple, well-grounded concepts, understood and owned across government, are what allow those moving parts to work from the same instinct even when formal coordination is imperfect.

Two cases from recent years illustrate the point. The first is structural and recurring. Indonesia's local content requirement framework (TKDN) has long created a visible fault line between the Ministry of Industry, which enforces domestic content thresholds as an instrument of industrial policy, and the Ministry of Investment and Downstream Industry/BKPM, which promotes Indonesia as an open destination for foreign capital. When Apple's iPhone 16 was blocked from sale in late 2024 pending compliance with local content rules, while the same government was simultaneously courting Apple for major investment commitments, the two ministries were pulling in opposite directions on the same company, with lack of shared strategic logic governing which interest should take precedence and when.[7] The second case is more acute. When Indonesia's negotiating team departed for Washington in January 2026 to finalise the reciprocal trade agreement with the United States, *Kemlu's* Director-General for Legal Affairs and International Treaties had just sent a formal letter raising six points of concern, including that the draft imposed unilateral obligations on Indonesia, following an internal *Kemlu* meeting chaired by the Deputy Foreign Minister. The letter arrived too late to meaningfully shape the

[7] Fadhil Haidar Sulaeman, "Local Content Requirement 'a Mistake' for Investment: AmCham," *The Jakarta Post*, 7 December 2022, https://www.thejakartapost.com/business/2022/12/07/local-content-requirement-a-mistake-for-investment-amcham.html; Dylan Butts, "Indonesia's Protectionist Policies Aimed at Attracting Tech Investment May Backfire, Economists Warn," CNBC, 16 December 2024, https://www.cnbc.com/2024/12/17/indonesia-protectionist-policy-to-draw-investment-misguided-economists.html.

negotiating position. A trade agreement with significant long-term implications for Indonesia's economic sovereignty was being finalised by an economic ministry, with the foreign ministry reduced to sending memos rather than sitting at the table.[8]

Not all policies that governments adopt are "strategic." Graham Allison's analysis of the Cuban Missile Crisis distinguishes rational, strategic decisions from those driven by organisational routines or politics.[9] In Allison's Model I (Rational Actor), governments act as unitary, rational actors, evaluating options and deliberately choosing the one that maximises their objectives. This corresponds to strategic policy-making, where a clear goal is pursued through calculated means. By contrast, in Model II (Organisational Process), outcomes are outputs of organisational routines, and each agency simply follows its standard operating procedures. Similarly, Model III (Bureaucratic Politics) sees policy as a resultant of bargaining among competing officials and departments, each with its own interests. These latter modes, II and III, are not "strategic" in the pure sense. They produce fragmented or incremental policies, emerging from inertia or compromise rather than from a unifying vision. Truly strategic diversification requires overcoming silos and turf wars so that policy is driven by rational design rather than by bureaucratic drift.

The central distinction this report draws is between **strategic** and **non-strategic** diversification. The latter is what Charles Lindblom called "muddling through", that is, piecemeal, reactive, incremental adjustments made by individual agencies without coherent ends-means alignment.[10] Indonesia has plenty of this already. What it lacks is the former, purposeful diversification that aligns means to long-term ends under conditions of constraint and uncertainty, what John Lewis Gaddis, writing on grand strategy, describes as the reconciliation of unlimited aspirations with limited means through prudence, proportion, and sequencing.[11]

Bebas aktif, independent and active, has always meant more than non-alignment in security affairs. It means preserving room to manoeuvre, that is, the ability to engage multiple partners, take positions, and act on national interests without being constrained by dependence on any single power. Strategic Diversification is, in this sense, the economic operationalisation of that doctrine. When Indonesia's import exposure to a single country exceeds a threshold that makes diplomatic candour costly, *bebas aktif* has already been compromised in practice, even if not in name.

This report defines Strategic Diversification as the default orientation of Indonesia's foreign economic policy: a proactive strategy for managing global dependencies and

[8] "How Indonesia and the United States Reached an Unequal Trade Deal," *Tempo*, 2 March 2026, https://en.tempo.co/read/2090119/how-indonesia-and-the-united-states-reached-an-unequal-trade-deal.

[9] Graham T. Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (New York: Longman, 1999).

[10] Charles E. Lindblom, "The Science of 'Muddling Through'," *Public Administration Review* 19, no. 2 (1959): 79-88.

[11] John Lewis Gaddis, *On Grand Strategy* (New York: Penguin Press, 2018), 20-23.

shocks, a structural element of policy rather than ad-hoc crisis response, and a vehicle for aligning Indonesia's external engagements with its long-term national goals. It operates diversification across six measurable dimensions, organised into two clusters.

To keep the concept operational, this report separates two questions: what diversification does, and what makes it strategic. The six-dimensional framework below specifies the mechanisms through which diversification reduces dependence risks (substitutability, redundancy, resilience-building, competitive leverage) and the conditions that enable it (capability upgrading, institutional flexibility). What makes diversification strategic is an overlay of governance: (i) clear purpose – explicit national goals, priorities, and thresholds; (ii) learning – routinely converting shocks and exercises into updated assumptions and tools; and (iii) institutionalisation – embedding coordination, data, and decision routines so diversification is not left to ad hoc ministerial preferences.

Strategic diversification therefore has two layers. The first is functional: a fixed set of diversification mechanisms that reduce dependency risks through substitutability, redundancy, resilience-building, and competitive leverage, enabled by capability upgrading and institutional flexibility. The second is strategic: the governance overlay that makes those mechanisms coherent in practice – clear purpose (priorities and thresholds), learning (updating policy from shocks and exercises), and institutionalisation (routines and coordination that survive personalities). The framework below sets out the measurable diversification layer on which the strategic overlay is applied.

Table 1. Strategic Diversification as An Analytical Framework

Category	Dimension	Definition	Indicative Metrics
Core Strategic Mechanisms	**Substitutability**	Availability of alternative partners, sources, or platforms to reduce single-point dependency	Share of imports from top 3 suppliers; supplier concentration index
	Redundancy	Built-in excess capacity or fallback systems to absorb supply shocks	Number of backup suppliers; stockpile levels (food, energy, minerals)
	Resilience-building	Ability to adapt to disruptions and recover system functionality	Time-to-recovery (TTR); domestic value-added in strategic sectors
	Competitive leverage	Use of diversified options to improve bargaining position in global affairs	Diversity of investment partners; ability to re-negotiate agreements
Enabling Conditions	**Capability upgrading**	Development of national technological, industrial, or institutional capabilities to reduce structural dependence	R&D spending in strategic sectors; local content share in manufacturing
	Institutional flexibility	Agility in using bilateral, minilateral, and multilateral channels to operationalise diversification	Participation in sectoral minilateral forums; ability to coordinate across ministries

Source: Authors' formulation based on literature mapping[12]

The four core mechanisms, substitutability, redundancy, resilience-building, and competitive leverage, describe what diversification does. The two enabling conditions, capability upgrading and institutional flexibility, describe what makes those mechanisms possible to build and sustain. Chapter 2 develops each of these in full. What matters here

[12] *We collect some relevant literatures on strategy, foreign policy actions containing (explicitly and implicitly and overlapping with) diversification, as well as some international economic readings. See a more detailed literature overview on Chapter 2.*

is that the framework has operational teeth: each dimension can be measured, monitored, and translated into policy action.

However, this analytical framework of diversification only provides the mechanisms of resilience and flexibility, but only when guided by strategic prioritisation, coordination, and learning does it become a coherent foreign economic policy. "**Strategy"** fundamentally involves connecting lofty ends with the concrete means to achieve them.[13] Strategic thinking demands looking beyond short-term wins to anticipate long-term reversals and trade-offs.[14] A truly strategic policy accepts some paradoxes – balancing decisive action with caution – to avoid self-defeating manoeuvres. Strategic diversification, in particular, must grapple with complex economic data and global trends, which no individual or team can perfectly analyse.

Recognising these cognitive limits urges humility and prioritisation in strategy: policies should build in buffers (for surprises) and focus on key vulnerabilities rather than assume omniscience. Overcoming this requires institutional mechanisms – for example, strong interagency coordination led by a central authority – to enforce strategic consistency. Thus, a key task in *strategic* diversification will be addressing bureaucratic fragmentation, ensuring that policies across trade, energy, technology, etc. serve an integrated national strategy instead of separate agendas. Within such understanding, many countries, including Indonesia, face an ultimate challenge: in practice, it is not the absence of diversification, but it is the absence of a strategic logic governing diversification.

Table 2. Strategic vs. Diversification (Two-Layer Concept)

Component	Strategic	Diversification
Core idea	Purposeful alignment of means to long-term ends under constraint and uncertainty	Reduction of dependency risks via spreading of partnerships, sectors, or inputs
Intellectual contrast	Not bureaucratic politics, not muddling through, not reactive accommodation	Not random expansion, not ad hoc hedging, not overstretched connectivity
Key mechanism	Learning, paradigm shifts, and cognitive anchoring	Substitutability, redundancy, resilience-building, competitive leverage
Resulting direction	A structured diversification agenda embedded in rational policy design and learning institutions	A diversified footprint that aligns with national long-term goals (transformation, security, autonomy)

Source: Authors' formulation based on literature mapping

[13] John Lewis Gaddis, *On Grand Strategy*, 20-23.
[14] Edward N. Luttwak, *Strategy: The Logic of War and Peace*, rev. and enl. ed. (Cambridge, MA: Belknap Press of Harvard University Press, 2001), https://doi.org/10.2307/j.ctv1c7zfsc.

Three Strategic Goals

Strategic Diversification is not an end in itself. It is a means toward three overarching national goals that this research uses as its evaluative anchors. Understanding these goals, and how they relate to each other, is essential to understanding why the report's sectoral recommendations differ in character, not just in content:

1. **Transformation and upgrading,** which refers to moving Indonesia up value chains, deepening domestic industrial capacity, and reducing structural dependence on raw commodity exports. This is the ambition behind downstreaming policy, Making Indonesia 4.0, and the green transition agenda. It requires not just trade diversification but active industrial policy and targeted foreign economic engagement.

2. **Security,** which refers to ensuring security and continuity of supply for goods essential to national welfare, food, energy, and critical inputs, and absorbing the labour force into more stable, formal employment. This is the more defensive register of diversification, reducing exposure to supply disruptions, price volatility, and politically motivated cutoffs.

3. **Autonomy,** which refers to preserving Indonesia's capacity to make independent strategic choices, to act in accordance with its interests rather than under the compulsion of concentrated dependencies. This does not mean autarky. It means measured self-sufficiency in genuinely critical domains, combined with a portfolio approach to external partners that prevents any single relationship from becoming a chokepoint.

It must be noted that these goals are not only evaluative anchors; they constitute the purpose component of strategic diversification. Without explicit prioritisation among them, by sector, time horizon, and shock scenario, diversification initiatives risk becoming additive, reactive, and internally contradictory. At the same time, these three goals are not always aligned. Transformation sometimes requires deepening specific external dependencies in the short term before reducing them. Security can conflict with the efficiency logic of global integration. Autonomy can be in tension with the access and legitimacy that come from institutional embeddedness. Strategic Diversification is the art of navigating these tensions, not resolving them once and for all, but managing them with enough coherence that Indonesia's long-term trajectory is not captured by any single logic.

Operationalising these dimensions requires concrete measurement tools, which could range from import and export concentration indices to track partner exposure over time, investment partner caps or thresholds to flag when any single source of capital becomes

structurally dominant, and a monitoring dashboard that can distinguish strategic diversification from muddling through in real time. In the long-term, the goal is a non-political, clear-eyed tracking system one that follows the logic of Indonesia's own strategic interests rather than the preferences of any particular administration.

Sectoral Scope

This report covers four sectors: food, energy, manufacturing, and technology. These were selected because of their importance to national survival and social stability; their centrality to Indonesia's high-income ambitions; their exposure to external shocks and geopolitical entanglements; and their relevance to both domestic transformation and global engagement. Together, they represent the terrain on which the Strategic Diversification framework must be proven to work.

Crucially, the four sectors are not on the same strategic trajectory. The research identifies three distinct strategic paths, each implying a different policy logic.

Food and energy are primarily *stability sectors*. The goal is continuity, meaning reliable supply, managed price volatility, and prevention of disruptions becoming social or political crises. For food, this means diversifying import sources and investing in domestic production resilience, alongside the longer-term ambition of food system transformation. For energy, it means managing the transition away from fossil dependence while maintaining supply security throughout. In both cases, the benchmark is not transformation but, at minimum, preservation of what works, with incremental evolution toward greater domestic capacity.

Manufacturing is a *leap-forward sector*. Indonesia has the labour base, resource endowments, and market scale to become a meaningful node in global supply chains, but only if it makes deliberate choices about where to upgrade, which partnerships to cultivate, and how to use industrial policy to close capability gaps. The strategic goal here is not stability but ambition. For Indonesia, that means moving up value chains, attracting quality investment, and building productive capacity that structurally transforms the economy.

Technology plays two distinct roles in this report. As a sector, the entry point is Indonesia's ICT dependencies, examining concentration in ICT goods and what those dependencies mean for economic resilience and strategic autonomy. But technology is also an overarching enabling or constraining factor in its own right, if Indonesia’s goal is to transform and leap forward in development. Access to technology and the terms on which it is acquired shape outcomes across food, energy, and manufacturing in ways that

go beyond any single sectoral analysis. Technology diversification is therefore both a standalone policy challenge and a precondition for progress in every other sector.

Understanding these differentiated paths matters for policy. Treating all four sectors with the same instrument mix, the same diversification targets, the same institutional mechanisms, and the same timelines, would be imprudent. The sectoral chapters in this report are designed to reflect this differentiation.

The Important Role of the Ministry of Foreign Affairs

As mentioned above, *Kementerian Luar Negeri Republik Indonesia* (*Kemlu*) – or the Ministry of Foreign Affairs of the Republic of Indonesia, has begun to frame this agenda in strategic terms. In the 2026 Annual Press Statement, the Foreign Minister explicitly linked Indonesia's external economic posture to strategic diversification, and the recent strengthening of *Kemlu's* economic diplomacy function signals an institutional step toward making that posture more coordinated and implementable across government.

This report's implicit argument is not that *Kemlu* currently plays the central coordinating role in Indonesia's foreign economic policy, it does not, at least not fully. The argument is that it should. Foreign economic policy, properly understood, is an arena of external engagement: it is about how Indonesia manages its economic relationships with the world, not just how it manages its domestic economy. That places it squarely within the mandate and comparative advantage of a ministry oriented toward the external environment.

At the same time, the economic issues that constitute foreign economic policy, supply chain resilience, investment screening, trade alignment, and industrial cooperation, span multiple agencies: the Coordinating Ministry for Economic Affairs (CMEA), the Ministry of Trade, the Ministry of Industry, the Ministry of Investment and Downstream Industry/BKPM, and others. *Kemlu's* leadership on the external economic front therefore becomes a question not just of institutional authority but of interagency coordination. This coordination is currently too dependent on the personality of individual ministers and the priorities of each administration, rather than anchored in a durable institutional framework.

There is a further reason why *Kemlu* specifically should anchor this agenda. Indonesia is not the only country diversifying. Major economies are actively reshaping their own supply chains, investment portfolios, and trade relationships, sometimes creating new openings for Indonesia, and sometimes competing with or crowding out its own efforts. Managing this shifting landscape requires more than domestic industrial policy; it requires active diplomatic work to build, maintain, and defend the formal agreements,

investment rules, and multilateral commitments that make diversification durable. Diversification anchored in rules is more resilient than diversification built on bilateral goodwill, precisely because it does not depend on the size, power, or changing priorities of any single partner. When that rules-based scaffolding erodes, everything built on top of it becomes fragile. This is terrain where *Kemlu* has both the mandate and, by track record, the demonstrated capacity to fight for Indonesia's interests, through trade negotiations, economic partnership agreements, and multilateral forum engagement. The argument for *Kemlu's* centrality in strategic diversification is not bureaucratic; it is substantive.

The establishment of Ditjen HEKSP, the Directorate General of Economic Relations and Development Cooperation, formalised through Presidential Regulation No. 150 of 2024, represents a meaningful first step: *Kemlu* once again has a dedicated institutional home for economic diplomacy, reviving a function that had previously existed within the ministry.[15] This report remains open to other arrangements, such as a dedicated unit or focal points both within and outside *Kemlu*, including a potential interagency task force led by *Kemlu*, for strategic foreign economic policy and interagency coordination, depending on what proves most viable. What it argues firmly is that some such arrangement is necessary, and that the absence of one is itself a source of strategic risk.

Methodology

This research was conducted across multiple phases between August 2025 and March 2026. The team began with a conceptual phase: desk research on academic literature, news analysis, and official policy documents, combined with a conceptual workshop and roundtables involving public officials, researchers, and think tanks. This phase produced the Strategic Diversification Framework Paper that underpins Chapter 2.

A multi-stakeholder sectoral assessment followed, where participants from government, business, and academia assessed each sector across four dimensions: top risks, current resilience status, strategic value, government strategies and ambitions, and institutional bottlenecks. This produced the sectoral analysis in Chapter 3.

Field research was conducted in several Indonesian cities, where the team met with selected companies and stakeholders to corroborate findings from the earlier phases of research. These findings also inform Chapter 3.

[15] Kementerian Luar Negeri RI, Pernyataan Pers Tahunan Menteri Luar Negeri (PPTM) 2025, Jakarta, 10 January 2025; Peraturan Presiden Nomor 150 Tahun 2024 tentang Kementerian Luar Negeri, 5 November 2024.

The project concluded with a geopolitical crisis simulation involving representatives from relevant government ministries, agencies, and academics designed to stress-test Indonesia's foreign economic policy architecture under a realistic disruption scenario. The simulation findings, presented in Chapter 4, directly inform the decision rules and interagency coordination recommendations in Chapter 5 and 6.

This report is best read alongside the CSIS Indonesia Strategic Dependency Report (2025), which established the analytical foundation this work builds upon. Where that report mapped Indonesia's dependencies, this one examines how Indonesia is, or should be, responding to them.

Structure of the Report

The report proceeds as follows. Chapter 2 sets out the full conceptual foundation: the definition of Strategic Diversification, the six-dimensional framework, the distinction between strategic and non-strategic approaches, and the institutional logic linking the framework to *Kemlu's* mandate. Chapter 3 presents the sectoral resilience assessment across food, energy, technology, and manufacturing, differentiated by the strategic path of each sector. This chapter also ground the framework in field research and stakeholder consultations, bringing in the perspectives of private enterprises and subnational economic actors. Chapter 4 presents the results of the geopolitical crisis simulation and what it reveals about Indonesia's interagency readiness under pressure. Chapter 5 provides decision rules that translate the adopted framework into a usable tool for prioritisation, partner choice, sequencing, and crisis action. Chapter 6 presents the report's recommendations, addressed primarily to *Kemlu* and the broader foreign economic policy architecture, including concrete proposals on institutional reform and the operational translation of Strategic Diversification into government practice.

Chapter 2. Diversification as Reality vs. Strategic Diversification as Framework

Chapter 2 develops the policy logic in two steps. First, it elaborates the diversification framework: substitutability, redundancy, resilience-building, competitive leverage, and the enabling conditions of capability upgrading and institutional flexibility – showing how each can be measured and monitored. Second, it specifies the strategic overlay – purpose, learning, and institutionalisation – that determines whether the same mechanisms become a coherent national agenda or degenerate into muddling through.

Indonesia already has diversification instincts, BRICS & OECD accession, nickel downstreaming, expanding FTA networks, but these have operated without a shared framework connecting them. The result is what Lindblom called muddling through, the incremental, reactive moves by individual agencies that add up to less than the sum of their parts. This section makes the case for why a conceptual anchor is not an academic luxury but an operational necessity.

It must be noted that "diversification" does not automatically lead to "strategic diversification." Before defining strategic diversification, this paper argues that a strategic policy requires ends-means clarity, learning mechanisms, and awareness of second-order risks, and that Indonesia's current foreign economic policymaking still risks falling short on all three. It means that Indonesia still needs an effective overarching framework that simultaneously covers actor diversity, sectoral depth, supply chain position, measurability, and institutional design, the five things Indonesia needs. This section draws on FGD findings to show that the gap is not theoretical but practical: Indonesia has the instincts and many of the tools, but lacks the conceptual anchor that would allow coordination and coherence across agencies. The Ditjen HEKSP revival points in the right direction, but the architecture needs grounding to work.

Based on the authors' survey of different literature streams across International Relations and Economics literature, this section maps the existing intellectual terrain across two broad streams: IR-oriented frameworks (hedging, strategic autonomy, *bebas aktif*, middle power diplomacy, weaponised interdependence) and economics-oriented frameworks (GVCs, industrial policy, resilience, dependency theory, complex interdependence, minilateralism, embeddedness). Each stream contributes something useful and falls short in ways specific to Indonesia's situation, setting up the synthesis that follows.

After mapping those literature streams, this paper concludes that strategic diversification is anything but decoupling (which severs ties), de-risking (which reduces exposure without building capability), and autarky (which aims at self-sufficiency). Strategic diversification goes beyond diversifying for its own sake (which adds partners without strategic intent). A more diversified posture is not a defensive crouch, it creates genuine competitive space and makes Indonesia a more attractive partner, not a more closed one. Strategic diversification is not confrontation with any partner, nor is it just import substitution or institutional reform, and not unlimited, particularly as some concentration is unavoidable and diminishing returns eventually reassert themselves. It is a continuous orientation requiring monitoring and adaptation, not a one-off policy adjustment.

This paper proposes four core mechanisms of diversification: substitutability, redundancy, resilience-building, and competitive leverage, describe what strategic diversification does. The two enabling conditions, capability upgrading and institutional flexibility, describe what makes it possible to sustain strategic diversification. Each dimension is measurable using indicators such as CR4, economic complexity rankings, and others, which are applied empirically in Chapter 3. This report urges that "strategic" requirement through three concrete commitments: purpose (priorities and thresholds), learning (feedback and adaptation), and institutionalisation (coordination routines and data infrastructure).

Substitutability

Substitutability captures a country's capacity to adjust sourcing patterns under constraint, reflecting how easily it can switch between external partners when disruptions occur. Vulnerability emerges when reliance on foreign sourcing (imports) and external demand (exports) cannot be readily substituted to absorb shocks in international markets.[16] At its core, vulnerability arises not only from exposure to global markets, but also from the inability to reallocate supply quickly and efficiently. In this sense, substitutability is a dynamic concept: it measures the degree to which an economy can respond to shocks, whether geopolitical tensions, trade restrictions, or supply chain disruptions, without incurring significant economic costs. When substitutability is low, countries face structural lock-in, where existing dependencies become difficult to unwind in the short to medium term.

[16] Arvis, Jean-Francois; Burman, Akanksha; Espitia, Alvaro; Maur, Jean-Christophe; Rocha, Nadia; Ulybina, Daria. 2025. Measuring Exposure and Vulnerability to International Trade Shocks. Policy Research Working Paper; 11243. © World Bank. http://hdl.handle.net/10986/43922 License: CC BY 3.0 IGO.

From an exposure perspective, substitutability can be assessed through indicators such as import concentration (e.g., Herfindahl-Hirschman Index) and partner concentration, both of which reveal the extent to which imports are reliant on a narrow set of suppliers or products. High concentration implies that disruptions affecting a single country or sector can have disproportionately large impacts. These indicators therefore help identify partner vulnerabilities, where economic ties are deep but insufficiently diversified.

In Indonesia's case, such exposure is particularly relevant in strategic sectors where inputs are sourced predominantly from a limited number of countries. In 2024, the top five partners of export and import are equal to 53.7% and 50% of total trade, respectively. Four of the five major trading partners overlap in both exports and imports, namely China, United States, Japan and Singapore.

Table 3 and 4 below reflect Indonesia's top partners for export and import in 2024. In total, Indonesia exports 4,671 goods, 'N of Goods' variable indicates how many goods are traded with those partners. The next variable shows the number of commodities where partner X is the primary buyer, followed by the number of goods exclusively sold to partner X. In 2024, Indonesia has 462 commodities exclusively exported to one country only, counted for 2,808.8 million US$ or equal 1.1% of Indonesia's exports. Singapore is the partner with the highest number of exclusive goods (95), with the trade value equal to 2,178.9 million USD or 17.9% out of Indonesia's exports to Singapore.

On the import side, Indonesia imports 5,219 goods; with 270 of it are exclusively imported from one partner only, equal to 668.8 million USD accounting for 0.2% total import in 2024. China shares as a partner with the most exclusive goods (91 goods), along with a very high number of commodities where China is the main supplier (2,784 goods or 53% from total imported commodities).

Table 3. Indonesia's Top Five Export Partners (2024)

Partner	Export in Mn USD	% to Total Export	N of goods	N of goods as top Partner	N of goods as single partner
China	62,439.0	23.6%	3,022	417	51
United States	26,366.5	10.0%	2,541	616	26
Japan	20,705.8	7.8%	2,475	379	29
India	20,335.7	7.7%	1,828	173	10
Singapore	12,198.3	4.6%	3,485	662	95

Source: UN Comtrade (2026)

Table 4. Indonesia's Top Five Import Partners (2024)

Partner	Import in Mn USD	% to Total Import	N of goods	N of goods as top Partner	N of goods as single partner
China	72,729.1	27.5%	4,647	2,784	91
Singapore	21,526.2	8.1%	3,383	151	8
Japan	14,964.9	5.7%	3,976	382	43
United States	11,999.7	4.5%	3,944	221	19
Malaysia	10,919.3	4.1%	3,152	142	6

Source: UN Comtrade (2026)

Beyond exposure, substitutability also depends on the difficulty of switching suppliers, which can be captured through the top supplier share and import demand elasticity. A high share of imports from a dominant partner suggests limited alternative sourcing options, while low import elasticity indicates that substitution is costly or technologically constrained. Together, these measures highlight the degree of structural rigidity in supply chains. When high concentration is coupled with low elasticity, it signals a deeper form of dependence, one that is not easily mitigated through market adjustments alone. This combination ultimately defines the extent of structural lock-in, shaping how constrained a country is in navigating external economic shocks.

For Indonesia, all top-1 supplier's share for every selected commodity in food, energy, manufacturing, and technology sectors comprises more than 25%. Imports of these key commodities also have a CR4 of more than 70%, indicating high dependence on limited suppliers. Looking at the number of partners on Indonesia's imports of these selected key commodities, they actually suggest that there is quite a range of partner options. Hence, in this case, dependence is still present despite the availability of supplier alternatives for Indonesia to switch to.

In the food sector, three out of four selected key commodities have an American country as its top 1 supplier, with high dependency based on CR4 calculations. With a CR4 of 100%, Brazil takes up 64.79% of Indonesia's sugars import. Meanwhile, 89.05% of Indonesia's soya beans import comes from the United States. Indonesia's soya beans import is also in a high dependence state with a CR4 of 99.8%. Interestingly, Indonesia's selected key energy commodities portray how the country relies on Singapore as a hub for its oil supplies.

Indonesia's imports of manufacturing commodities, particularly fabrics in the textile industry, comes mainly from China. Its dependency is apparent in how China comprises more than 40% of imports in product code 600410 and 590320 respectively, while Indonesia's suppliers account for more than 40 countries, also

respectively. Lastly, a closer look into selected key commodities in the technology sector pictures Indonesia's reliance towards China for supplies, mainly in communication apparatus, automatic data processing machines, and excavators.

Redundancy

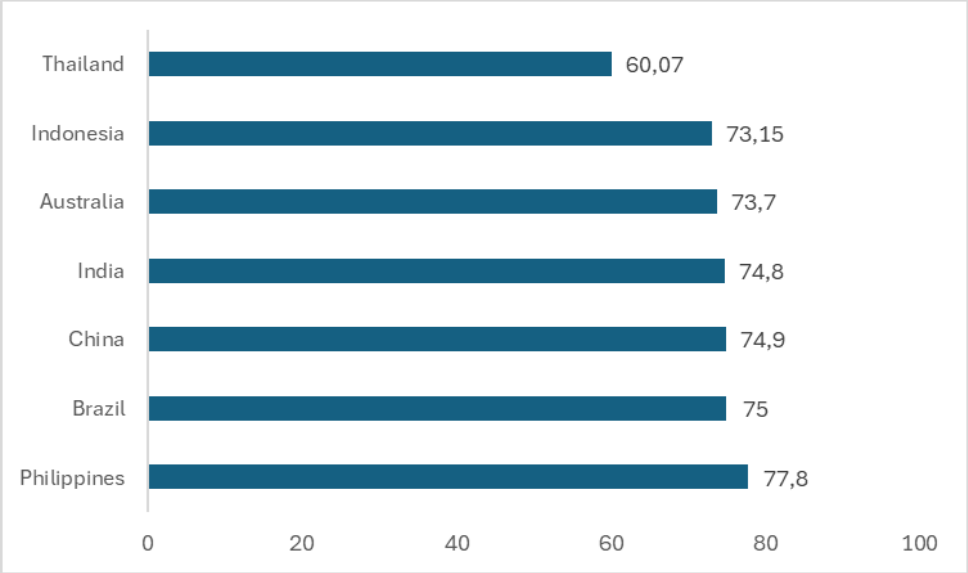
Redundancy refers to the availability of backup options within an economic system, enabling a country to maintain continuity when primary supply channels are disrupted. Unlike substitutability, which focuses on the ability to switch, redundancy emphasises the existence of viable alternatives already in place. It functions as a form of systemic insurance, reducing the likelihood that external shocks translate into domestic crises. In the context of geopolitical tensions and supply chain fragmentation, redundancy becomes critical for ensuring that disruptions, whether from trade restrictions, conflicts, or logistical breakdowns, do not immediately constrain production or consumption.

At the external level, redundancy can be assessed through the number of alternative suppliers that meet required thresholds of scale, reliability, and quality. A higher number of qualified suppliers indicates stronger fallback sourcing capacity, allowing countries to reconfigure supply chains without significant delays or cost escalation. However, not all diversification translates into redundancy; what matters is whether alternative partners are readily deployable under stress conditions. This distinction is important for Indonesia, where diversification efforts must ensure not only breadth of partners but also depth in terms of capability and compatibility.

Domestically, redundancy is reflected in the availability of spare industrial capacity, commonly measured through capacity utilisation rates. Lower utilisation suggests that industries have room to expand output in response to external disruptions, thereby functioning as an internal buffer. However, lower utilisation is not inherently desirable, as it may also indicate weak domestic demand. As such, the relationship is not perfectly linear. Moreover, this indicator does not capture how quickly a country can increase utilisation when needed, as adjustment speeds depend on cost structures, firm capabilities, and broader economic conditions.

Figure 1 illustrates capacity utilisation across countries. Compared to regional peers, Indonesia falls within a relatively moderate range, with utilisation at around 73% in 2025, higher than Thailand (approximately 60%) but lower than the Philippines (nearly 80%). These comparisons suggest that while Indonesia retains some degree of spare capacity, its buffering potential must be interpreted cautiously, taking into account both demand conditions and the flexibility of industrial adjustment.

Figure 1. Capacity Utilisation: Selected Countries (%)

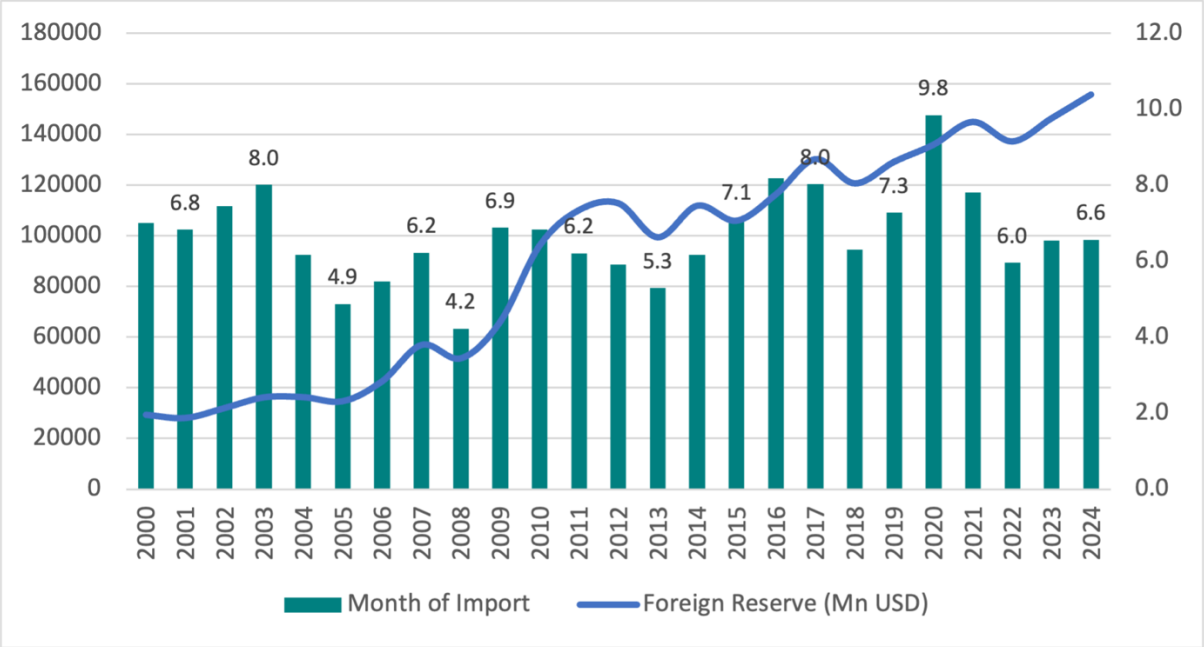


Source: Various sources

Complementing this is the financial dimension of redundancy, captured through foreign exchange reserves adequacy, typically measured in months of import cover. Strong reserve positions enable governments to stabilise imports, manage currency volatility, and absorb external shocks without immediate adjustment pressures. Together, external supply options, domestic buffers, and financial reserves form a layered redundancy system that enhances a country's ability to withstand and manage uncertainty.

In general, data from 2000-2024 captures an increase of Indonesia's foreign reserve include gold, though its value in terms of months of import has fluctuated. The year 2024 saw the highest foreign reserve, reaching as high as almost 160,000 million USD. This foreign reserve could fund 6.6 months of import for Indonesia. Meanwhile, the biggest amount of month of import that Indonesia's foreign reserve could afford was 9.8 months, that was with almost 140,000 million USD of foreign reserve in 2020.

Figure 2. Indonesia's Foreign Reserve (Including gold)



Source: World Bank

Resilience

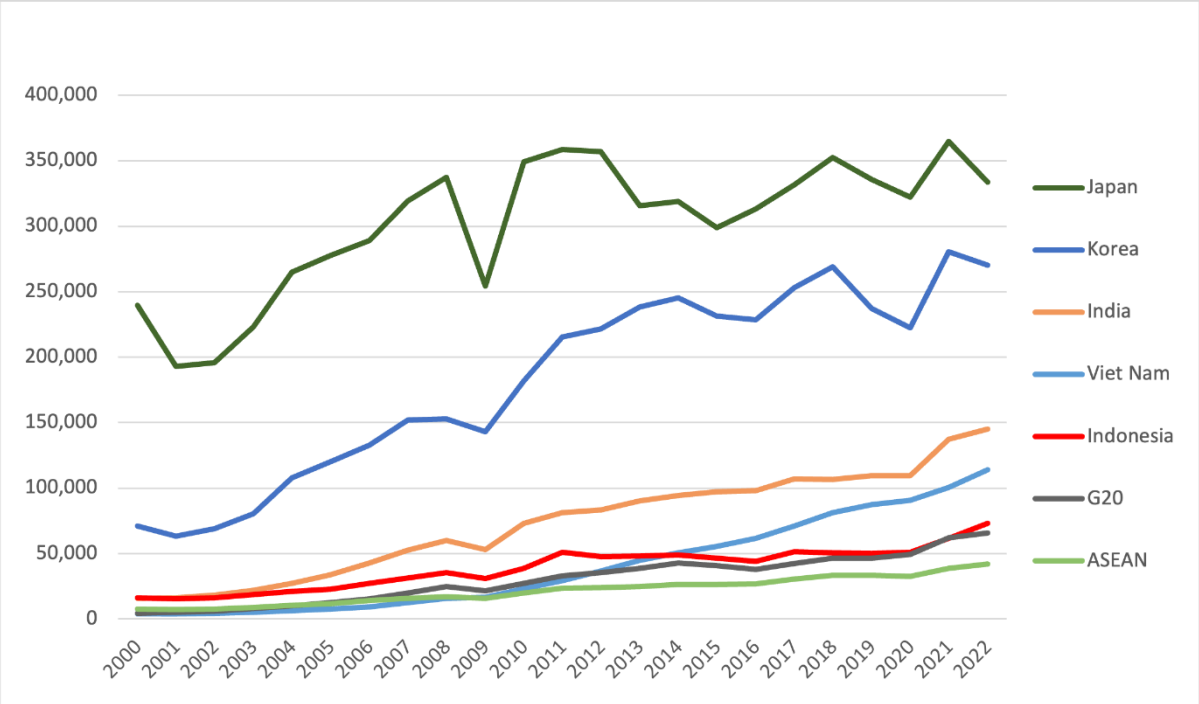
Resilience refers to the capacity of an economy to absorb, adapt to, and recover from external shocks without experiencing prolonged disruption. While substitutability and redundancy focus on adjustment and backup mechanisms, resilience captures the underlying strength and stability of the economic system itself. It reflects whether shocks are transmitted and amplified across the economy or dampened through structural and macroeconomic buffers. In this sense, resilience is less about immediate responses and more about the depth and robustness of domestic economic foundations.

A key dimension of resilience is structural depth, which can be assessed through indicators such as manufacturing value-added as a share of GDP and domestic value-added in exports. A higher share of manufacturing value-added signals a more developed industrial base, enabling the economy to produce a wider range of goods domestically and reduce reliance on external inputs. Similarly, greater domestic value-added in exports indicates a shift from assembly-based activities toward higher value-added production, reflecting deeper integration into value chains. Together, these indicators capture the extent of industrial upgrading, which strengthens an economy's ability to withstand supply disruptions and external demand shocks.

Figure 3 shows domestic value added in the manufacturing sector based on the OECD TiVA database which reflects similar trends across countries, a stable growing trend with several shocks in the crisis period of 2008 and 2020. Indonesia's values and trends are very similar with the average value of G20 members, even with huge differences in value at the initial year. Its value in 2022 grows 3.5-fold compared to the 2000 value. However, it values in 2022 is still far below the top manufacturing countries such as Japan and South Korea.

The growing trend is reflected in the compound annual growth rate (CAGR). Indonesia's value is 6.8%, capturing a relatively low rate of manufacture growth compared to other developing countries such as Vietnam (15.8%), China (12.3%), and India (10.1%). Moreover, the second graph gives a more precise relative condition of the manufacturing sector in every country. The percentage value to the GDP depicts a comparable value with other sectors.

Figure 3. Manufacture Domestic Value Added Final Foreign Demand (MN US$)



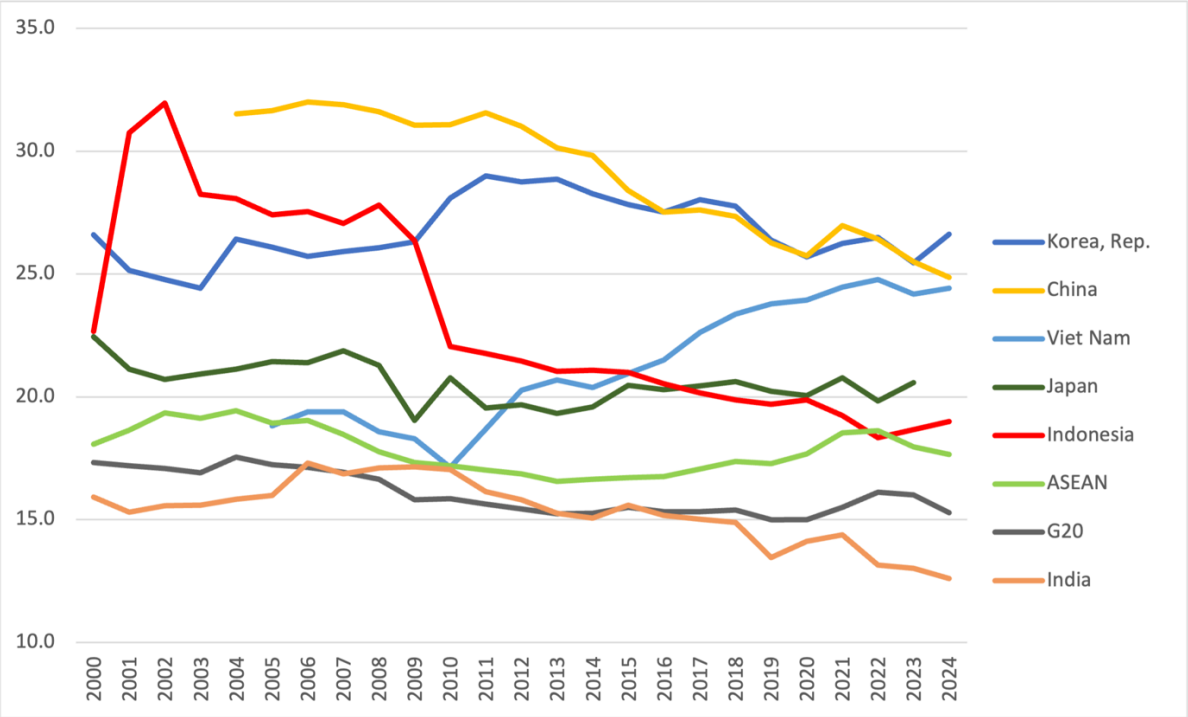
Source: OECD Trade in value-added

Note: G20 and ASEAN are the average value from their members

Based on Figure 4, every country in the graph (except Vietnam) reflects a negative trend of manufacturing shares. In another words, the growth of the manufacturing sector is barely (almost never) higher than the growth of GDP. Indonesia's trend shows a consistent downward trend, except for the post Asian Financial Crises (before 2002). The average growth (-0.7%) is lower than Japan (-0.4) and South Korea (-0.0%) which known as

a country with a mature industrial sector. Specifically, from 2010-2024, Indonesia and Vietnam share a very opposite trend, which Indonesia's annual growth fell by -1.0% while Vietnam's growth rose by an average of 2.4% annually.

Figure 4. Manufacture Share to GDP (%)



Source: World Bank (2026)[17]

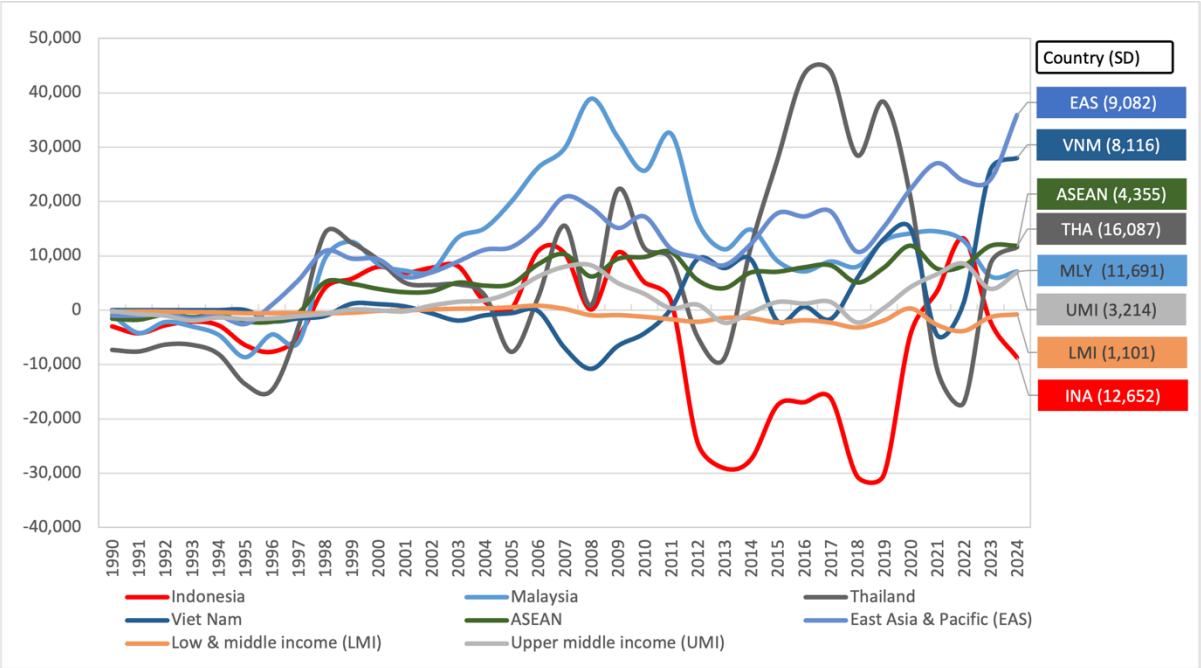
The second dimension is macroeconomic stability, particularly reflected in current account volatility over time. High volatility suggests exposure to fluctuating external conditions, including commodity price swings, capital flow reversals, and demand shocks from key trading partners. Conversely, lower volatility indicates a more stable external position, reducing the risk that shocks translate into balance-of-payments pressures or abrupt policy adjustments. In this regard, resilience is not only about having a strong industrial base, but also about maintaining stable and predictable external balances, ensuring that the economy can navigate uncertainty without significant dislocation.

Current account is the sum net balance of trade in goods and services, income from investments, and transfers such as remittances. The time series change in each country highlights a significant difference between pre and post 2000, which before 2000 all parties showed a similar trend and value, while after 2000 the values and trends varied widely across parties. Standard deviation, the right side of the graph,

[17] World Bank, "Manufacturing, Value Added (% of GDP)," *World Bank,* 2026, https://data.worldbank.org/indicator/NV.IND.MANF.ZS?end=2024&start=2000.

explicitly reflects the volatility level of each party. Indonesia shows a higher volatility compared with other countries, only Malaysia and Thailand have a higher volatility than Indonesia.

Figure 5. Current Account Balance (Mn US$)



Source: Balance of Payments Statistics Yearbook and data files, International Monetary Fund (IMF)

Competitive Leverage

Competitive leverage captures a country's ability not only to manage dependence, but to shape outcomes within interdependent economic systems. Moving beyond defensive strategies such as risk reduction and shock absorption, this dimension emphasises how states can convert their economic position into strategic advantage. In this context, diversification is not merely about spreading risk, but about enhancing bargaining power, securing influence, and positioning the economy in higher-value segments of global production networks. The central question is not whether Indonesia is dependent, but whether it can leverage interdependence asymmetrically to its benefit.

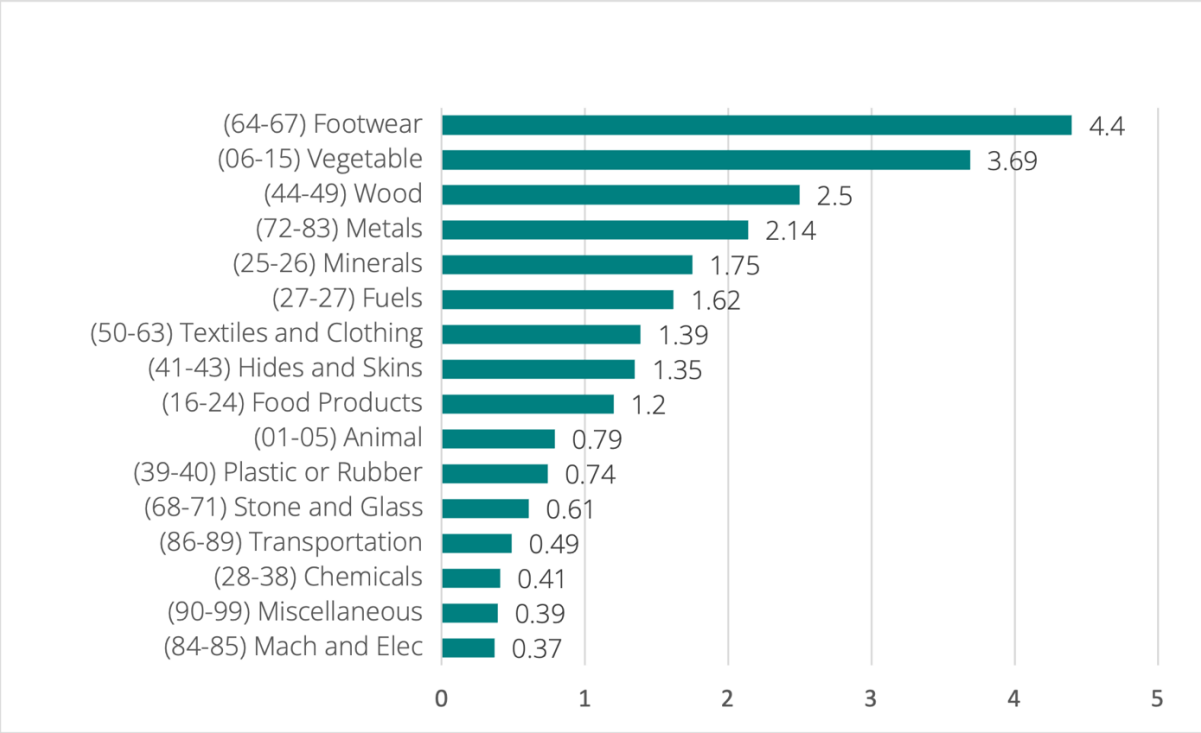
At the core of competitive leverage is market power, which can be assessed through global market share in strategic goods and Revealed Comparative Advantage (RCA). A higher share of global supply increases a country's importance in international markets, strengthening its negotiating position, particularly in sectors such as critical minerals or key manufactured products. RCA further identifies sectors where Indonesia holds export

specialisation and scalability potential, allowing policymakers to prioritise industries with the greatest capacity to generate sustained competitive advantage. Complementing this is the concept of dependency asymmetry, which compares how much Indonesia depends on its partners relative to how much those partners depend on Indonesia. Greater asymmetry, where partners rely more heavily on Indonesia, translates into stronger strategic leverage.

RCA reveals whether a country is relatively more competitive in exporting a product compared to the world average. An RCA value higher than 1 means a comparative advantage, and below 1 suggests a disadvantage. The aggregation grouping based on HS 2-digit code reveals Indonesia's competitive advantage in nine out of 16 categories, with four of it shows a value higher than two (Figure 6).

Indonesia's main competitiveness relies heavily on footwear, vegetables, wood and metals. Reflects Indonesia's comparative advantage in natural resources and low-to-mid value manufacturing. Meanwhile, sectors with higher and more advanced value-added (like chemicals and machinery) are not competitive enough; highlighting the challenge of moving up the value chain. RCA time-series data highlights the dynamics between competitive categories over time. Some of them show a very dynamic-fluctuated change; some others seem stable with consistent growth, while the same other reveals a decreasing trend.

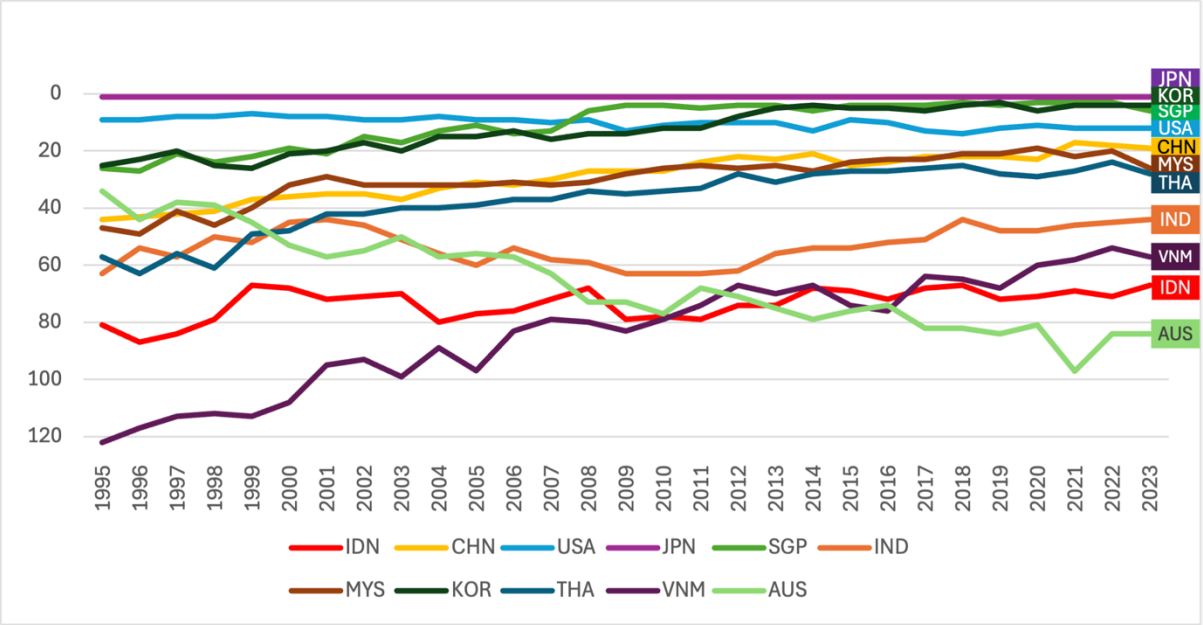
Figure 6. Indonesia's RCA in 2023



Source: World Integrated Trade Solution

Another indicator is the Economic Complexity Index (ECI) measuring the level of diversification and sophistication of a country's exports profile. A country's rank indicates their relative level of ECI compared to all other countries in the world. Indonesia's export complexity level is still in the mid-level, with a bit upgrade to a higher rank compared to the initial rank. Indonesia's level remains low compared to other ASEAN countries, even Vietnam succeeds to pass Indonesia in 2010.

Figure 7. Economic Complexity Rank (1995-2023)



Source: Growth Lab Country & Product Complexity Rankings

Competitive leverage is also shaped by Indonesia's position within global value chains (GVCs) and its progress in industrial upgrading. Indicators such as upstream centrality measure whether Indonesia controls critical nodes in production networks, while the downstream processing ratio reflects the extent to which exports have moved from raw materials to higher value-added products. These structural positions determine whether Indonesia is a price-taker or a rule-shaper in global markets. In addition, the breadth of trade and investment linkages, captured through FTA coverage and FDI diversification, further enhances leverage by expanding market access and reducing reliance on any single source of capital or demand. Together, these elements underscore that strategic diversification, when effectively implemented, can transform interdependence into a source of economic influence and strategic autonomy.

From 2000-2022, Indonesia's domestic industry saw an increasing trend for its value-added. These figures were generally higher than Viet Nam's, though its increasing trend was not as steady. Compared to those of mature industrial countries such as Japan, South Korea, and India, the growing domestic value-added of Indonesia still lags far behind. This

reflects how while industrial upgrading might have taken place, Indonesia still has a long way to go to become a significant player in the global production network. To increase its competitive leverage, Indonesia needs to maintain and enhance this increasing value-added trend, continuously move from exporting raw materials to higher value-added products.

Lastly, competitive leverage also depends on how well Indonesia is positioned within its network of free trade agreements (FTAs), which can serve as a useful proxy for preferential market access and external economic positioning. FTAs enhance a country's competitive leverage by lowering or eliminating tariffs, reducing non-tariff barriers, and providing more predictable and transparent trade rules. This allows domestic firms to access larger markets at lower cost, improve price competitiveness, and integrate more effectively into regional and global value chains. In addition, FTAs can attract foreign direct investment (FDI), as firms often prefer to locate production in countries that offer preferential access to multiple export markets. In this sense, a dense and strategically designed FTA network can expand a country's "economic reach," strengthen its bargaining position, and create opportunities for scale and diversification.

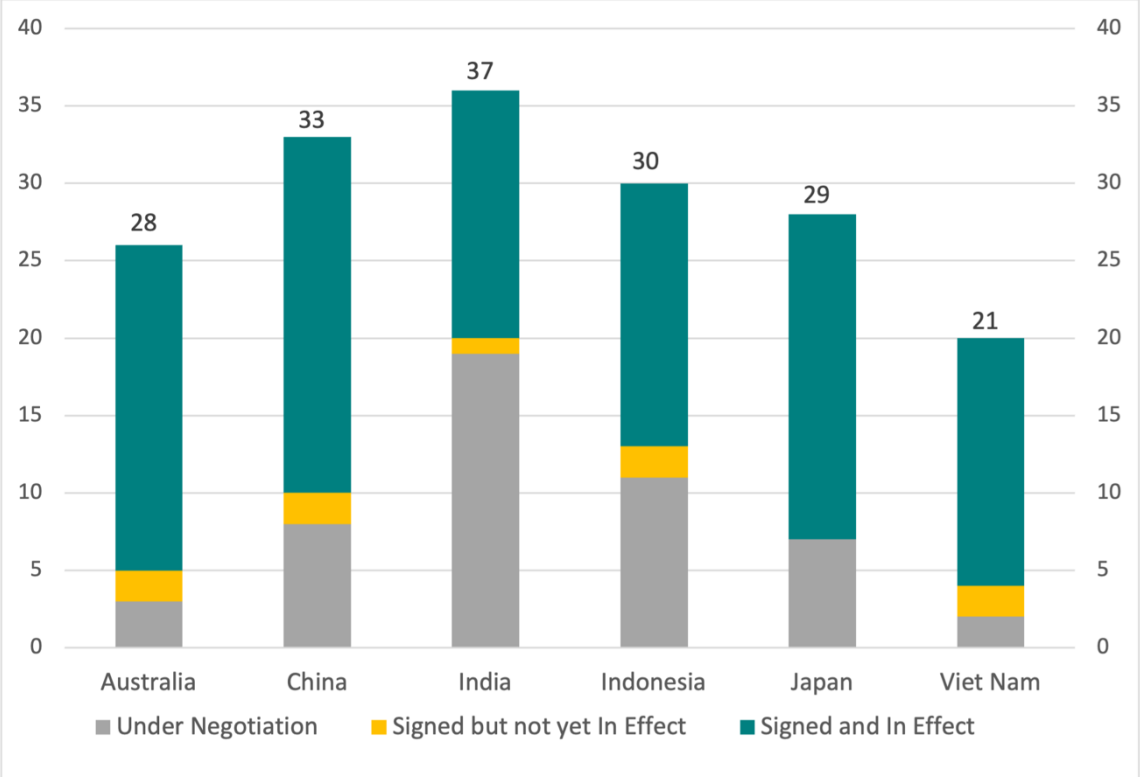
However, this indicator has important limitations. It does not capture the depth or quality of FTAs, which can vary significantly – from traditional agreements focused mainly on trade in goods and tariff liberalisation to more comprehensive arrangements that include provisions on sustainable development, labour standards, investment protection, and digital trade. Deeper agreements tend to generate greater competitive advantages, particularly in sectors that rely on regulatory alignment and services integration. Moreover, the existence of FTAs does not necessarily reflect their actual use by firms. In practice, utilisation rates are often uneven due to limited awareness among businesses, insignificant tariff margins, and complex Rules of Origin (RoO) requirements.

Based on WTO Regional Trade Agreements Database, Indonesia has 30 Free Trade Agreements in total, only three and seven FTAs behind China and India (Figure 8). Among Indonesia's 30 FTAs, as many as 17 of them has been signed and in effect, 2 are not yet in effect, and 11 are still under negotiation. Overall, these numbers are bigger than Viet Nam's FTA figures as a fellow Southeast Asian country. Although the difference between Indonesia's and China's total number of FTAs in total are not large, China has a lot more FTAs that are already signed and in effect. Meanwhile, compared to India, the country with the most FTAs in total, Indonesia still has more signed and in effect FTAs. However, India is currently negotiating more FTAs than Indonesia.

Looking at the figures in general, Indonesia is walking the path towards expanding its market access given that the country is negotiating more than ten FTAs in progress –

eventually adding more to an already notable number of FTAs signed and in effect. This coverage should also be utilised in order to avoid harmful or risky reliance.

Figure 8. Indonesia's Current FTAs Status



Source: WTO Regional Free Trade Agreements

Beyond supply-side capabilities, Indonesia's growing middle class constitutes a form of demand-side competitive leverage by enhancing the country's attractiveness as a market and reducing reliance on external demand. However, this leverage remains conditional, as the middle class is still relatively shallow and vulnerable, limiting its ability to sustain long-term structural transformation.

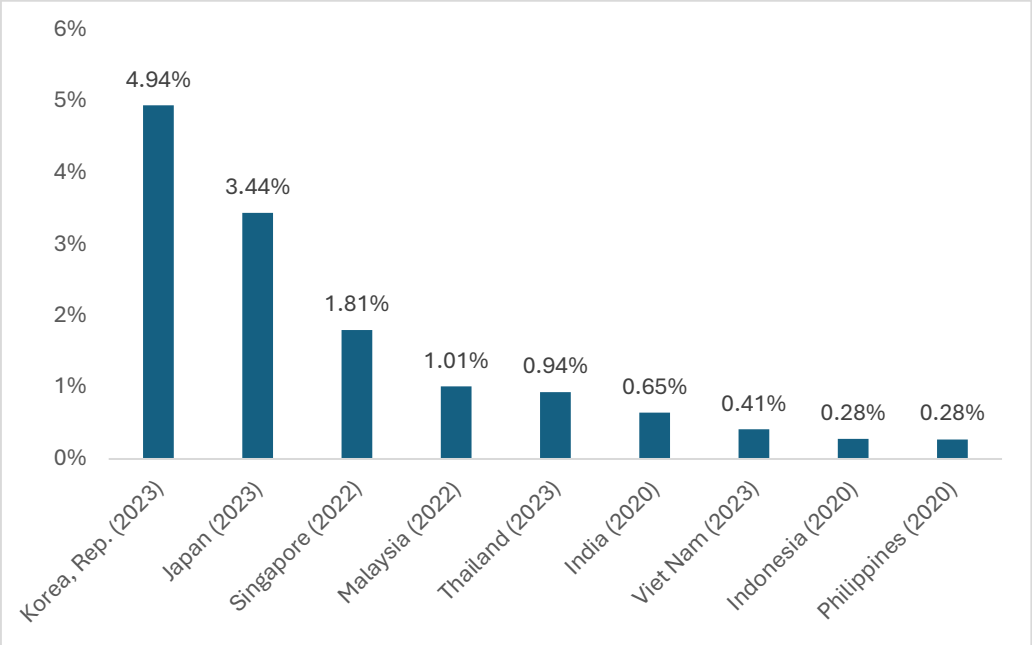
Enabling Conditions: Capability Upgrading and Institutional Flexibility

Our *capability upgrading* variable is, at its core, the condition that makes diversification a realistic option. Opportunities for substitutability, redundancy, and the like may well exist on paper, such as a broader supplier base, storage capacity that can still be built up, or an FTA network that can still be expanded. But if Indonesia cannot activate those opportunities, none of it matters. The crux lies in industrial and technological capability.

Because escaping dependence is not simply a matter of switching partners, it is a question of whether Indonesia has the capacity to produce, process, and source productive inputs independently when conditions deteriorate. As such, capability upgrading refers to the development of national technological, industrial, and institutional capabilities to reduce structural dependence.

Key indicators include the country's innovation climate, the share of R&D in national expenditure (particularly allocations to strategic sectors), and the local content share in manufacturing, among others. As shown in Figure 9, Indonesia's R&D expenditure stands at 0.3% of GDP, compared to 0.4% in Vietnam and 1% in Malaysia in the latest available year. Indonesia aims to increase this figure to 1.5–2% of GDP by 2045 as part of its high-income country aspirations. In other words, strengthening R&D investment is essential to enhancing productivity and enabling economic diversification.

Figure 9. Research and Development Expenditure (% of GDP)

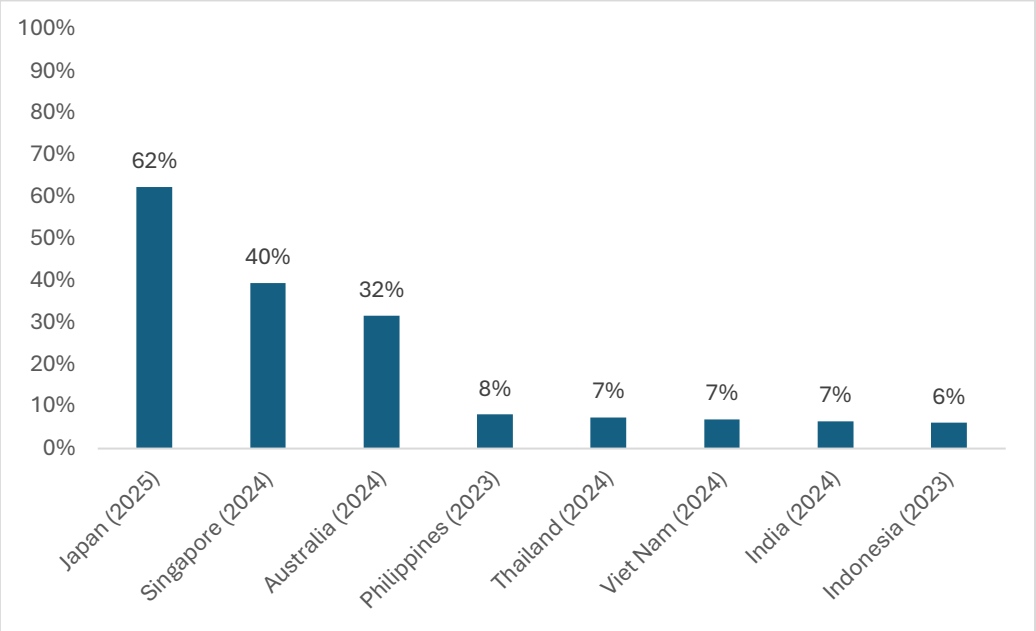


Source: World Bank (2026)

One of the primary pathways is raising domestic value-addedness in strategic sectors, including through downstream industrialisation and genuine capacity building at scale within the country, rather than merely defensive protectionism. R&D investment needs to be directed selectively toward sectors and products where Indonesia holds real competitive leverage. Beyond that, FDI should be conditioned to carry high-technology content that drives knowledge transfer and skills upgrading, not just capital inflows that leave no lasting imprint on national capability.

On the human capital side, workforce quality constitutes a constraint as critical as the availability of financial capital. Indonesia's labour force remains dominated by low-skilled workers, with the majority having only primary or lower secondary education. This structural limitation constrains the country's ability to upgrade its industrial base and move up the value chain. Figure 10 illustrates a cross-country comparison of skilled workers as a share of total employment. Indonesia's share remains relatively low around 6–8%, placing it at a similar level to India, Thailand, and Vietnam. This stands in stark contrast to more advanced economies such as Japan, where skilled workers account for roughly 60% of total employment. The gap highlights the significant challenge Indonesia faces in strengthening its human capital base to support long-term economic transformation.

Figure 10. Skilled Workers (% Total Employment 15+)



Source: Authors' calculation from ILO

In this case, Indonesia needs to continuously upgrade worker competencies through relevant vocational programmes and certification schemes, while also building mechanisms to retain skilled workers in productive and high-potential sectors. Finally, standards and certification infrastructure determine whether access to alternative suppliers and markets is open or closed to Indonesia. Products that fail to meet international safety, sanitary, or sustainability standards will be excluded from global supply chains, regardless of how diversified the available partners may be.

Institutional flexibility refers to the agility and capacity with which bilateral, minilateral, and multilateral channels can be deployed to operationalise diversification, in harmony with national-level policies, especially when it comes to moments where they are needed to

manage and absorb disruption. Key indicators of institutional flexibility can range from the rate of sustained strategic engagement at the international level, including, for instance, the existence of our consistent participation and leverage to activate sectoral minilateral forums in times of need, all the way to capacities related to the function of coordination across different ministries at the national level to ensure that everyone moves at the same pace and towards the same goal.[18]

At the international level, a country with good institutional flexibility should have substantive engagement with regional and bilateral platforms abroad, including the ability to identify situations when it is necessary to join or establish sectoral minilaterals and other ad hoc coalitions. What matters at this level is having enough active options to tap into when needed. At the national level, such a country must ensure there is interagency coherence at home. For Indonesia, mandating diversification of trade flows, investment, and procurement across multiple ministries, including *Kemlu* (Ministry of Foreign Affairs), *Kemenkoekon* (Coordinating Ministry for Economic Affairs), *Kemendag* (Ministry of Trade), and *Kemenperin* (Ministry of Industry), among others, requires these agencies to operate from a shared vision, shared instincts, and pre-established thresholds and standard operating procedures. The goal is to ensure that coordination is not something that begins only when a crisis arrives.

Last but not least, to compliment the institutional capacities and flexibilities at the international and national level is the capacity to adapt for the future: the existence of a solid learning infrastructure. That is the existence of mechanisms that allow SOPs and channels to be renewed over time. This includes feedback loops with the private sector, academic community, the latest of data, as well as sustained engagement with scenario planning and crisis anticipation exercises. The underlying purpose is a continuous learning process that keeps assumptions about the sources and transmission of disruption up to date.

The box below presents comparative country experiences and the key institutional/policy changes that have acted as their institutional flexibility adjustments.

[18] Peter Evans, *Embedded Autonomy: States and Industrial Transformation* (Princeton: Princeton University Press, 1995); John L. Campbell, "Reviewed Work: Embedded Autonomy: States and Industrial Transformation by Peter Evans," *Theory and Society* 27, no. 1 (1998): 103-108.

Box 1. : How Other Countries Have Operationalised Diversification

Indonesia is not alone in confronting the challenge of managing strategic economic dependencies in an era of great-power rivalry. How other countries, particularly those in the Indo-Pacific and Europe, have approached this challenge offers useful comparative reference points, even as Indonesia's distinctive position as a large non-aligned emerging economy limits direct translation.

Korea: Explicit Securitisation

Korea responded to a 2021 export restriction on urea by explicitly securitising key supply chains. Korea's response has included the establishment of a Supply Chain Early Warning System for critical minerals, the creation of a dedicated Center for Economic Security and Foreign Affairs (CESFA) within the Ministry of Foreign Affairs, and a reorientation of trade policy through the logic of friendshoring by prioritising supply chain integration with allied and like-minded partners over pure economic efficiency.[19]

EU: Systematic Derisking

The European Union has moved towards derisking rather than decoupling by building a systematic architecture around its 2023 European Economic Security Strategy, which identifies four risks of critical supply chain dependencies, threats to critical infrastructure and cyber systems, technology leakage, and economic coercion. Several instruments have come out, including the Anti-Coercion Instrument, the Foreign Subsidies Regulation (FSR) – which has been used in 2024 to offset what EU deemed as unfair subsidies from Chinese electric vehicle import surge, and a cross-border investment screening framework.[20]

UK: Proportional, Business-Facing, and Growth-First

The United Kingdom's approach to economic security is distinctive from the EU in three ways: it is deliberately proportional, built around private-sector engagement, and explicitly subordinated to a growth-first rationale. UK economic security governance operates through ministerial discretion, risk-based guidance, and voluntary compliance. The UK's principal investment screening tool is the National Security and Investment Act 2021 (NSI Act), which introduced mandatory notification requirements for acquisitions or changes of control across 17 sensitive sectors. The regime focuses solely on national security, preserves the UK's attractiveness to investors through statutory 30-working-day deadlines and a voluntary notification route; and it is actor-agnostic, with "no whitelist," meaning allied investors must also notify. Alongside investment screening, the UK toolkit

[19] Andrew Mantong, Dandy Rafitrandi, M. Waffaa Kharisma, and Rocky Intan, "Exploring Ideas on Economic Security in the Indo-Pacific: Comparison Between ASEAN and the Republic of Korea," *CSIS Working Paper* (Jakarta: CSIS Indonesia, 2023).
[20] European Commission, "Joint Communication to the European Parliament, the European Council and the Council on 'European Economic Security Strategy'," *European Union*, 20 June 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023JC0020.

covers export controls on dual-use technologies, research security (through the Academic Technology Approval Scheme and the Trusted Research framework), sanctions for malign extraterritorial activity, and supply chain diversification through multilateral partnerships. The broader institutional lesson from the UK experience is less about any single tool and more about governance architecture, suggesting economic security works best when it is coordinated across agencies, grounded in shared intelligence and data, proportional in its interventions, and clear about where the red lines lie. Key is building interagency coherence without securitising the entire economic policymaking process.

Japan: Closest to Decoupling Mindset?

Japan's 2022 Economic Security Promotion Act represents the most alliance-aligned and least ambiguous response among Indo-Pacific middle powers, closer in spirit to decoupling than de-risking. Driven by deep strategic integration with the United States, Japan has not only legislated comprehensively across four pillars (stable supply of critical goods, critical infrastructure resilience, advanced technology development, and sensitive patent confidentiality), but has actively coordinated its export controls on advanced semiconductors with US restrictions and gradually integrated its supply chain policy to the logic of political alignment with like-minded partners. For Japan, the calculus is relatively unambiguous. Its security treaty with the US, its geographic proximity to China and North Korea, and its semiconductor-heavy industrial structure make the costs of strategic ambiguity high. The result is a framework that prioritises technology sovereignty and alliance coherence.

ASEAN: Resisting Securitisation

ASEAN, by contrast, has historically resisted explicit securitisation of economic relations. The ASEAN Outlook on the Indo-Pacific champions inclusivity and the separation of political considerations from economic conduct. From an ASEAN perspective, the primary risk is not supply chain exposure but the imposition of bloc politics that would force countries to choose sides at economic cost. ASEAN's concern is aimed at the geopoliticisation of the economy itself, a concern that has grown sharper as the Trump administration's tariff measures have forced Southeast Asian governments to seek economic alternatives. The establishment of the ASEAN Geoeconomics Task Force (AGTF), as well as its subsequent work on the ASEAN Geoeconomics Report 2025, operationalising the Special ASEAN Economic Ministers' Meeting (AEM) three-pronged strategy on immediate response, building regional resilience, and global governance reform, with full RCEP implementation as the primary mechanism, is a promising development. This opening also creates space for like-minded or like-situated partners, including middle powers, to offer Southeast Asia expanded economic and security cooperation options.

What This Means for Indonesia

Indonesia's position straddles these logics. As ASEAN's largest economy and a country deeply integrated with China across food, manufacturing, and commodity supply chains, Indonesia cannot adopt explicit securitisation without diplomatic cost. It also cannot risks absolute lock-in with one side of the spectrum in the great power competition, to avoid risks of moments when dependencies are turned into pressure. Nor can it simply maintain the ASEAN status quo. The strategic diversification framework proposed here is closest in spirit to those who focus on structural resilience, redundancy, substitutability, capability upgrading, rather than as a geopolitical declaration, with the goal of reducing structural exposure to geopolitical risks. This framing is also more consistent with Indonesia's established diplomatic identity as a non-aligned open economy, while still delivering the substantive resilience that the current strategic environment demands.

Chapter 3. Sectoral Resilience Assessment

Food, energy, technology, and manufacturing represent four distinct transmission channels through which foreign geopolitical and geoeconomic shocks or disruptions could enter and impact Indonesia's sovereignty and economy. The commodities highlighted within each sector in this report are not merely those representing large trade value, but also what we have identified as where concentrations are most likely to create vulnerability. Supply shock in the food sector (HS 1-24, plus HS 31 for fertiliser as representing agricultural input) causes price inflation and has been historically attributed to domestic stability risks. Indonesia heavily imports key commodities such as wheat, sugar, and soybeans, but is also a large exporter of commodities such as palm oil. In the energy sector (HS 26-27, plus HS 72 for nickel as a select product indirectly representing renewable energy), Indonesia's position as both an importer (petroleum) and exporter (coal and nickel) exposes the country to both potential risks should there be supply shocks in oil and/or rising price of it, stressing its balance of payments, as well as potential structural dependency on a narrow set of buyers/markets (revenue lock-in). Energy generation is also tied to the success of computing power in the age of artificial intelligence and quantum computing.[21]

Manufacturing (HS 50-67) is the engine of a growing economy, but in Indonesia's case, it is also made crucial by its employment multiplier, seeing how, for example, textile and apparel/garment combined employ more than 3.5 million workers.[22] Technology (HS 84-85, computers, processors, servers, printers, storage devices and smartphones, semiconductors, integrated circuits, monitors, telecom equipment, cables) is a crosscutting sector on which virtually all other sectors depend, and one that determines long-term productivity leaps, but at the same time, poses a challenge to developing countries like Indonesia in its means to keep up on accumulating sufficient technological complexity in its capacity to produce independently and become meaningful and competitive part of the global supply chain and network, a challenge now compounded by US-China decoupling, which is increasingly fragmenting the global technology

[21] The Economist, "Economic Power is Returning to The Physical Realm," *The Economist*, 10 Mar 2026, https://www.economist.com/by-invitation/2026/03/10/economic-power-is-returning-to-the-physical-realm.

[22] Badan Pusat Statistik, "Proporsi Tenaga Kerja pada Sektor Industri Manufaktur (Persen), 2025," *Badan Pusat Statistik*, 24 February 2026, https://www.bps.go.id/id/statistics-table/2/MTIxNyMy/proporsi-tenaga-kerja-pada-sektor-industri-manufaktur--persen-.html; Arrijal Rachman, "RI Cetak 4,78 Juta Pekerjaan Baru Saat Dilanda Badai PHK Tekstil," *CNBC Indonesia*, 7 January 2025, https://www.cnbcindonesia.com/news/20250107120527-4-601303/ri-cetak-478-juta-pekerjaan-baru-saat-dilanda-badai-phk-tekstil; Tempo, "Kemenperin Beberkan Jumlah Tenaga Kerja di Industri Tekstil Turun 7,5 Persen, Apa Pemicunya?" *Tempo*, 9 August 2024, https://www.tempo.co/ekonomi/kemenperin-beberkan-jumlah-tenaga-kerja-di-industri-tekstil-turun-7-5-persen-apa-pemicunya--28235.

ecosystem and forcing a division that Indonesia is ill-positioned to navigate seeing how it needed both.

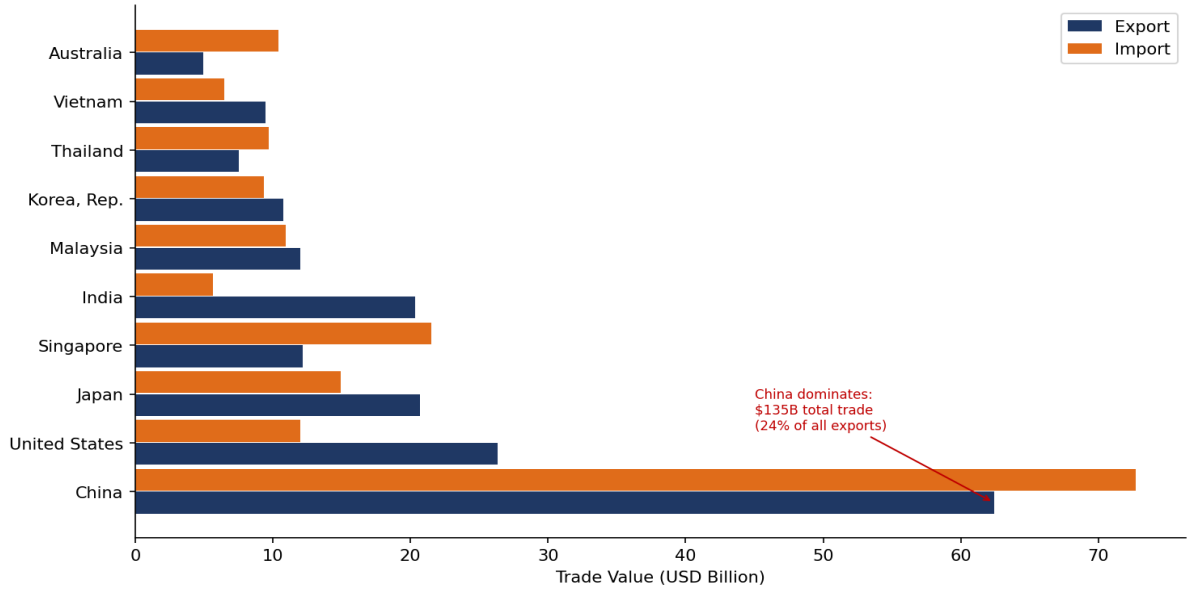
To avoid treating "economic security" as an all-purpose justification, each sector chapter is anchored in real-world stress tests – wars, export controls, shipping disruptions, and supply-chain securitisation – that have already demonstrated how concentrated dependencies transmit into domestic inflation, fiscal pressure, and industrial disruption. These cases are used as diagnostic lenses to clarify which dependencies matter most, and which diversification mechanisms are most urgent.

Cross-Sectoral Overview: Indonesia's Trade Structure and Risk

As a baseline for the sectoral assessment, it is worth revisiting how Indonesia's trade is structured and where its overall exposure lies. As a believer in and beneficiary of open markets, modern-day Indonesia does not see interdependence as an inherent risk. But it is worth being clear-eyed about how concentration, whether deliberate or not, can create vulnerability.

Take Indonesia's positioning in the great power rivalry between the US and China. The figure below illustrates the bind. The pressure to maintain solid economic ties with America in the Trump 2.0 era is real, but it is difficult to assess honestly without accounting for Indonesia's deep integration with China, and how that relationship with the Asian giant could hurt Indonesia far more if it were jeopardised or caught in a future crisis. China has not historically been seen as acting to weaponise its economic interdependence against Indonesia specifically, but we are now in an era where great power behaviour is less constrained, and the incentives for rules-abiding conduct are diminishing. In such a world, the tools for developing countries are not just trust-building, but also preparedness.

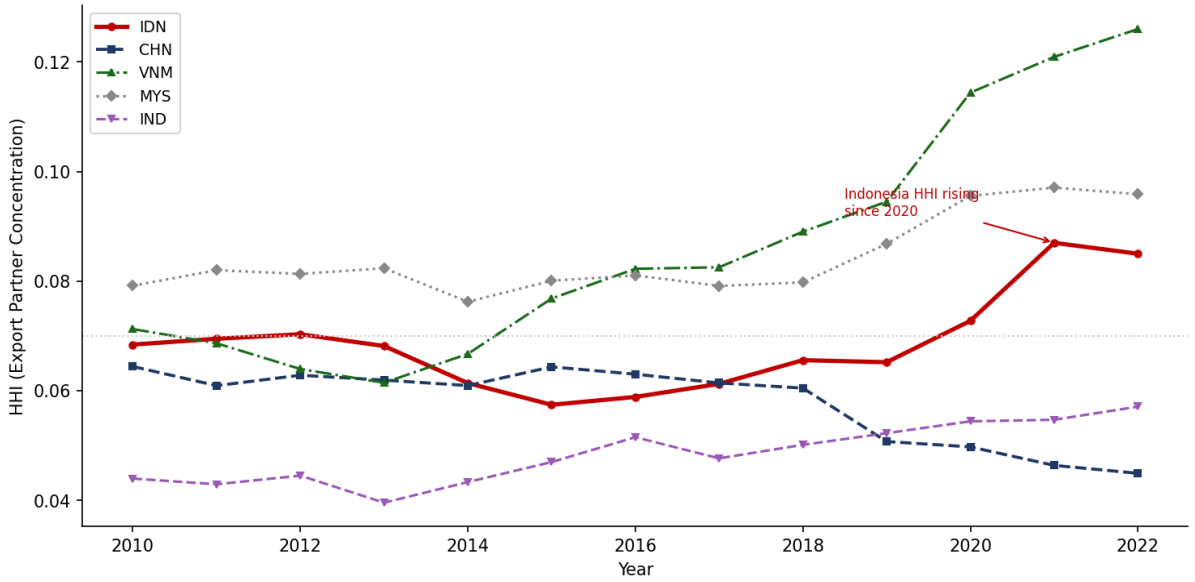
Figure 11. Indonesia's Top 10 Trade Partners (Export and Import), 2024 (Billion USD)



Source: UN Comtrade

Indonesia's top four trading partners, China, the US, Japan, and India, account for around 55% of total trade. China alone accounts for 23.6% of exports and 27.5% of imports, dominant in both directions. The potential asymmetry here, the fact that China matters far more to Indonesia than Indonesia matters to China, is a structural condition that any sober geopolitical analyst would treat with caution. At the same time, Indonesia's Herfindahl-Hirschman Index (HHI) has risen from around 0.058 (2015) to 0.085 (2022), indicating a worsening concentration of Indonesia's export basket, likely a product of COVID-19 trade dynamics. During the same period, peers such as Vietnam and Malaysia show more stable trajectories.

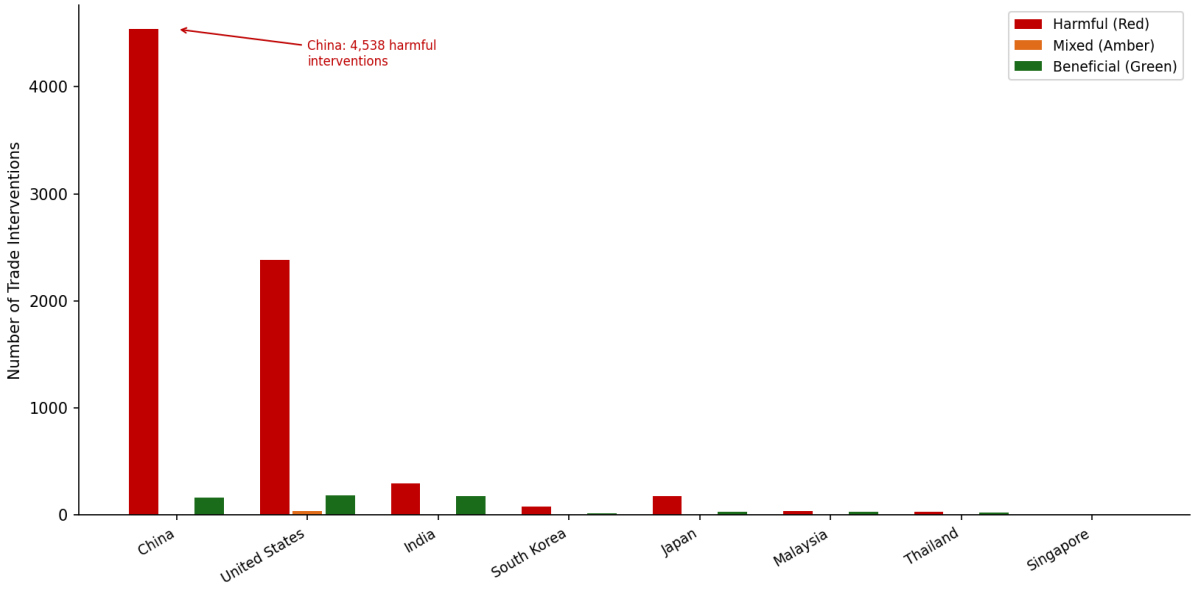
Figure 12. HHI Trade Partner Concentration Trend (2010-2022) of Indonesia and Regional Peers



Source: World Bank

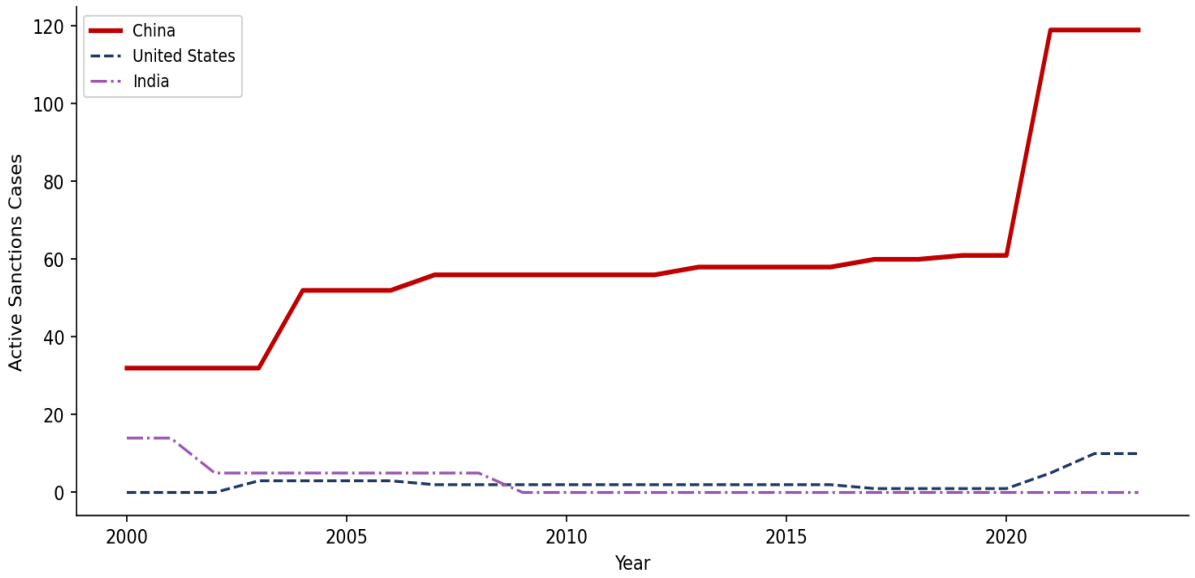
The intensifying geopolitical rivalry between great and major powers is also driving a resurgence of trade interventions, sometimes for protective purposes, but often with either uttered or perceived political/strategic motivation. Two figures are worth noting here. The first figure shows the number of trade interventions flagged by Global Trade Alert as harmful, which shows how China is recorded as the country with the highest amount of such interventions. The second draws from the Global Sanctions Database and shows the trend of how many of Indonesia's partners are currently tracked to be subject to active sanctions cases. China, particularly, has been facing a steady rise of exposure to sanctions. Any Indonesian firms relying on these supply chains, like it or not, will face a more complex world where the economy is increasingly securitised.

Figure 13. Global Trade Alert: Trade Interventions by Key Indonesia Partner (2008-2025)



Source: Global Trade Alert

Figure 14. Global Sanctions Database (GSD) on Active Sanctions on Key Partners (2000–2023)



Source: Global Sanctions Database

A country like Indonesia's first instinct is naturally to push back against the trend of securitising economic relationships. After all, Indonesia is a nation that holds its independent and active foreign policy in the highest regard, friendly with all its partners. But predicting geopolitical dynamics is becoming increasingly difficult. Sustaining that independent and active foreign economic policy position requires not just pro-activism but also preparedness, or in other words not only to keep cooperation and diplomacy going and reassure even rival partners from opposite camps, but also to ensure that when things go wrong, we do not come away so scarred from a particular relationship that we pull out altogether when it is neither necessary nor consistent with Indonesia's principles and national interests. For that reason, resilience and clear national standards in processing foreign economic policy are essential. This includes being sober and honest about the degree of rivalry currently underway, and the tit-for-tat dynamic through which competing powers are increasingly trying to isolate one another.

Sectoral Analysis: Food

The food sector encompasses commodities related to agriculture, including animal products, plant products, fats and oils, processed foods, and agricultural-linked consumption goods. As in last year's report on Strategic Dependency (CSIS Indonesia, 2025), we also categorise fertiliser as an agricultural input within this sector for analytical purposes. Commodities here are relevant on three fronts: food security directly, given that Indonesia is a major importer of wheat, sugar, soybeans, and rice; export revenue, given our position as a major exporter of products such as palm oil; and industrial upgrading potential, should Indonesia succeed in building a competitive agro-industrial base.

As discussed in last year's report, food security carries direct domestic political salience for Indonesia, and defending it against supply shocks is crucial. It is therefore an imperative for Indonesia to gradually broaden its import source base for key commodities in this sector, especially since supply disruptions translate quickly into food price inflation, better coordination between the private sector and government to more effectively secure and compete for – and to make use of existing – market access, alongside the usually more prominent agenda of boosting domestic value-adding production. The dual exposure on both the export and import sides creates an equally dual imperative for more deliberate and future-proof diversification strategies. This is especially pressing in an era of compounding crises.

It is also worth noting that disruptions to these systems come not only from the international system but from nature itself, which means that in certain scenarios (e.g., climate change-induced food emergencies), looking at potential diversifying partners

beyond the immediate neighbourhood becomes a strategic necessity, not just a preference.

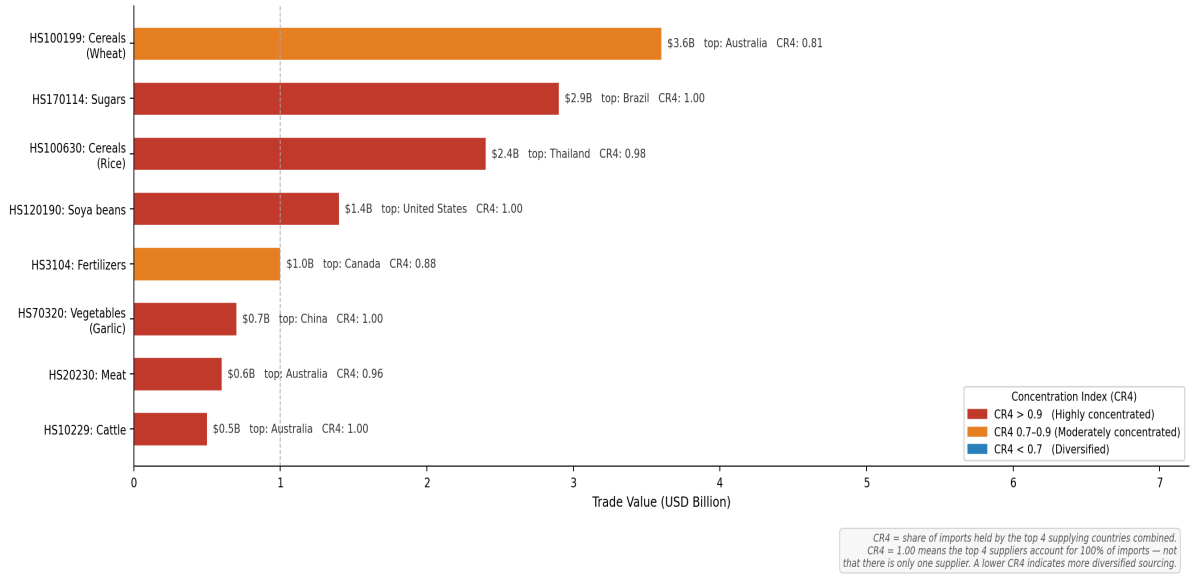
Table 5. Strategic Diversification Framework Assessment: Food Sector

Framework Category	Dimension	Key Evidence	Priority Action
Core Diversification Mechanism	**Substitutability**	Alternative suppliers exist for all key commodities but import permit system and established/dominating importer networks represent a barrier to their activation.	• Reform import quota system. • Pre-approve emergency suppliers (e.g., Uzbekistan, Brazil, Argentina). • Formalise "sourcing MoUs."
	Redundancy	BULOG remains limited largely to rice, and more recently corn; private buffer not nationally coordinated; no dual-supplier mandate; APTERR is underutilised.	• Extend BULOG mandate to wheat, soybeans, sugar (ideally each with60-day reserve target). • Promote dual-supplier sourcing.
	Resilience Building	Post-harvest loss ~20%; cold chain concentrated in Java; rejection-at-destination for exports; climate exposure; no price hedging for smallholder farmers.	• Inter-island cold chain investment. • At least 5 regional QC labs outside Java. • MBG local sourcing rules. • Price stabilisation instruments.
	Competitive Leverage	Indonesia is the biggest producer of palm oil, with massive consumer market, potential from halal certification, and biodiversity present (e.g., spice); but BPJPH recognition gap; value-addition largely absent.	• Hub-market agent strategy (7-8 markets). • BPJPH mutual recognition with GCC. • FTA leverage for tech transfer. • Promote value-adding of key Indonesia-niche products (e.g., spice).

Framework Category	Dimension	Key Evidence	Priority Action
Enabling Condition	**Capability Upgrading**	R&D-to-farm gap; UMKM (MSMEs) compliance gap for export standards; low FTA utilisation; domestic inputs below export-market threshold.	• FTA implementation support units. • UMKM group certification. • Standards harmonisation. • BRIN industry-linked mandates.
	Institutional Flexibility	Functions spread across ministries means coordination challenge exist – the Coordinating Ministry for Food Affairs is relatively new as a coordinating body; lack of strategic foresight mechanism; FTAs underutilisation; RPJPN/RPJMN with lack of implementation roadmap for diversification aware milestones aware of geopolitical risks.	• Inter-ministry food import-export diversification coordination. • Reform to the SPI. • Strengthened FTA utilisation support/monitoring unit. • Strategic foresight function.

These assessments should be read alongside Indonesia's trade concentration data in the CSIS Indonesia study on Indonesia's Strategic Dependency (2025), where we develop a tool to view trade concentration (CR4 = how concentrated trade is with Indonesia's top four partners). Commodities such as sugar, where Brazil accounts for 64.7% of supply; soybeans, where the US accounts for approximately 87–89% of imports; and garlic, where China holds 99.9% of supply, represent cases where substitutability and general "diversifiability" in Indonesia's food import portfolio are visible, provided Indonesia builds the necessary redundancy layers in advance rather than in response to a crisis. The urgency of doing so in peacetime is underscored by the fragility of key trade routes.

Figure 15. Indonesia Top Imports in the Food Sector (HS 1-24 and 31; 2024)



Source: UN Comtrade and CSIS Research on Indonesia Strategic Dependency (2025)

External Dependence and the Nature of Exposure

As mentioned above, Indonesia's food sector is shaped by a concentrated set of import dependencies. A significant share of key staple commodities, such as wheat, soybeans, sugar, garlic, beef, and fertiliser, is sourced from a small number of countries, with several commodities approaching single-supplier concentration. These dependencies, while not always a bad thing, also require Indonesia to recognise more clearly that supply disruptions abroad could quickly lead to domestic food price volatility. On the export side, palm oil anchors Indonesia's food export revenue but faces mounting compliance pressures from international sustainability regulations. Together, these import and export exposures create a dual exposure that requires deliberate management.

On the **substitutability** side, viable alternative suppliers exist for all key import commodities and are known to Indonesian buyers. Our preliminary assessment based on expert workshops and interviews suggests that the problem of substitutability in Indonesia's food sector is not one of market unavailability, but of lack of incentive as well as politico-institutional barriers for activation of such measures. For garlic, China currently supplies close to all of Indonesia's imports, but Uzbekistan also produces high-quality garlic and has been growing its global exports rapidly. However, Indonesian importer networks have not shifted sourcing, reportedly due to established commercial relationships and quota interests.[23]

[23] CSIS Indonesia Workshop on "Sectoral Resilience," Bandung, 6–7 October 2025.

For soybeans, the United States accounts for roughly 87-89% of Indonesia's imports, primarily for tofu and tempeh production. Brazil is an established alternative with competitive pricing, but the shift requires approved-supplier processes and renegotiated logistics.[24] The latest bilateral trade discussions with the United States include structured agricultural purchase commitments, notably for soybeans. While deepening dependency has not always led to a bad situation, in the context of uncertain geopolitics, exploration of emergency measures and options is a necessity, given that such commitments would institutionalise rather than reduce import dependency on a single supplier. Latin American suppliers represent an interesting and potential food diversification partner.

For wheat, for example, Argentina, apart from Australia, offer alternatives to diversify away towards a safer supply chain amidst the ongoing Russia-Ukraine war. Rice remains the most "substitutable" commodity in this sector, with Thailand, Vietnam, Myanmar, and Pakistan all serving as viable suppliers, Indonesia already uses multiple rice sources, making this the sector's most diversified import relationship.

Our discussions with stakeholders within the sector emphasised that some firms typically maintain alternative sourcing arrangements across multiple countries and conduct supplier mapping to identify secondary production locations. These practices allow companies to switch suppliers when disruptions occur in specific regions. However, these practices also have significant practical limitations. Switching suppliers requires logistical adjustments, renegotiation of contracts, and verification of quality standards, which cannot be implemented quickly during crises.

The core barrier, as assessed by field experts, is not the absence of alternatives. It is that the import permit system, which governs who may import and from where, is structured in ways that favour established importer networks, making supplier switching slow and politically difficult. These networks benefit from supply concentration arrangements, creating a political economy dynamic where technically feasible diversification is practically blocked.

On the export side, one enabling condition is Indonesia's **competitive leverage** as the largest palm oil (CPO and derivatives) producer in the world. This, however, faces mounting environmental scrutiny and foreign regulatory pressures, most notably the EU Deforestation Regulation (EUDR), which demand ongoing compliance efforts.

[24] CSIS Indonesia Workshop on "Sectoral Resilience," Bandung, 6–7 October 2025.

Domestic Buffering and Its Structural Limits in Indonesia's Food Sector

A general assessment of the domestic buffer in Indonesia suggests that the country already has basic resilience infrastructure, most notably, BULOG buffer stocks and national food price monitoring. But the buffering architecture is narrowly constructed and leaves significant potential vulnerability gaps that could be exposed by uncertainties at the international system. The private sector maintains some buffer capacity, but this is concentrated among large companies, is not publicly visible, and is not designed with an integrated national food security mandate in mind. The Russia–Ukraine war illustrated the systemic exposure starkly, as when it simultaneously disrupted both wheat and fertiliser supply chains, Indonesia had no strategic reserve for either commodity, meaning the disruption was transmitted directly into input costs and food prices with no domestic absorption capacity.

Our **redundancy** assessments identify several existing conditions. BULOG (Perum Bulog), Indonesia's state food logistics agency, holds strategic reserves primarily for rice and corn, but the buffer mechanism for other inflation-sensitive commodities, such as wheat, flour, soybeans, sugar, and cooking oil, is only just starting.[25] Large private food processors reportedly typically maintain 3–6 months of input stocks as commercial practice, providing some short-term resilience, but this buffer is not yet nationally coordinated, not publicly visible, and not yet designed with an integrated national food security mandate in mind. As a case example, in the cases of soybean import dependency on the US, which is relatively high, and sugar imports, which, while spread across Thailand, Brazil, and Australia, remain concentrated towards Brazil, we have yet to identify government-mandated multiple-supplier requirements. Experts noted that standard private-sector risk management in any equivalent commercial context would mandate at minimum a dual-supplier requirement for concentrated commodities, a logic that, as far as this study identifies, has not yet been applied to Indonesia's strategic food imports.[26]

Two underutilised redundancy instruments deserve attention. First is the regionally available APTERR (ASEAN Plus Three Emergency Rice Reserve) mechanism, where Indonesia participates but whose activation protocols remain weak/underused, which represents a near-term policy option that could be strengthened without requiring new bilateral agreements. Second is Indonesia’s own domestic logistics. Experts that we approached suggested that the Indonesian logistics represent a structural constraint to building redundancy in their own right, where even where domestic production could serve as a buffer, inefficient logistics between production zones, places like East Java, Lombok, and East Kalimantan, and major consumption centres such as the Jakarta–

[25] Metro TV News, "Gak Cuma Beras dan Jagung, Bulog Akan Kelola 9 Bahan Pokok," 9 February 2026, https://www.metrotvnews.com/read/NxGCPO2O-gak-cuma-beras-dan-jagung-bulog-akan-kelola-9-bahan-pokok.
[26] CSIS Indonesia Workshop on "Sectoral Resilience," Bandung, 6–7 October 2025.

Bandung corridor, could prevent domestic supply from substituting effectively during import shocks. Redundancy building therefore requires logistics investment alongside stockpiling, not stockpiling alone.

Relatedly, our assessment of the **resilience-building** aspect suggests that beyond the buffer stock system, Indonesia's food resilience infrastructure has significant quality control and logistics gaps that leave the system vulnerable even when supply is nominally available. Post-harvest loss is a notable constraint, with Indonesia losing an estimated 20% of harvested food – a proportion significantly higher than regional peers – due to inadequate cold storage, poor logistics, and handling, and the concentration of cold chain infrastructure in Java.[27] A related and more immediately addressable problem is what can be described as a rejection-at-destination dynamic. Indonesia currently sends export shipments for quality testing at the destination country, meaning rejection and full shipping cost loss occurs after the product has already left Indonesia. Expert sources have noted how sub-national QC lab infrastructure for food safety testing, mycotoxin, pesticide residue, and contaminant screening would likely intercept failures before export, converting a reactive cost into a preventive investment. Experts mentioned experiences in the export of cinnamon, palm oil derivatives, shrimp, and tuna, all of which have faced compliance-related rejections in foreign markets due to thresholds that are technically manageable with domestic testing infrastructure.[28]

Climate vulnerability compounds these logistics gaps. Domestic food production is highly exposed to El Niño and La Niña cycles, irrigation infrastructure has aged and maintenance funding is insufficient, and climate-smart agriculture adoption remains limited. Farmers also lack access to price hedging instruments, leaving them at the front-end as price-takers in commodity markets. On the opportunity side, the MBG (Makan Bergizi Gratis) government school meals programme represents an untapped demand-side resilience mechanism. If it’s designed to source from local, diversified supply chains, it could build domestic production depth for protein and vegetable crops.

However, discussion with stakeholders also suggest that the food sector has developed some degree of operational resilience. Some firms have adopted standard operating procedures for crisis management, particularly in stock management and logistics planning. These practices are the result of repeated exposure to past disruptions, including financial crises, geopolitical conflicts, and pandemic-related supply chain shocks. Many firms maintain buffer stocks designed to sustain production for three to six months in the event of supply disruptions. This approach allows companies to absorb short-term shocks and maintain continuity of supply, particularly during periods of uncertainty. Additionally, when discussing the possibility of strengthening domestic

[27] World Economic Forum, “4 Ways to Reduce Food Waste in South-East Asia," *World Economic Forum*, 3 July 2023, https://www.weforum.org/stories/2023/07/food-waste-harvest-losses-southeast-asia/.
[28] CSIS Indonesia Workshop on "Sectoral Resilience," Bandung, 6–7 October 2025.

production as a resilience strategy, stakeholders within industry also noted that industrial food processing requires inputs that meet specific technical standards, which differ from consumer-grade agricultural products. For example, industrial sugar must meet precise specifications compatible with automated production systems. Domestic producers often lack the technology, scale, or consistency required to meet these standards. Upgrading domestic production would require significant investment in machinery and processing capacity.

Diversification in the Food Sector: Strategy, Scope and Direction

Indonesia's food sector diversification challenge is asymmetric. On the import side, the primary task is activating known alternatives that are politically blocked; on the export side, it is converting existing natural assets, palm oil, spices, a large halal consumer base, into genuine market leverage. The enabling conditions for both, capable institutions, functioning R&D linkages, and coherent inter-ministry coordination, are currently the binding constraints on realising either agenda.

As mentioned above, Indonesia's **competitive leverage** in the food sector is genuine, but it lacks deliberate conversion to systematic negotiating and competitiveness power. Halal certification represents perhaps the most structurally significant untapped asset. Indonesia has the world's largest Muslim-majority consumer base and a national certification system (BPJPH), yet experts noted that BPJPH is not yet widely recognised in Gulf Cooperation Council markets or other key Muslim-majority destinations. If Indonesian producers can achieve internationally recognised halal compliance, this represents a major diversification opportunity for processed food exports across OIC markets. Spice and cacao biodiversity provides another non-substitutable asset. Indonesia is the world's largest producer of nutmeg and cloves, and a major vanilla and pepper producer, but most are still exported as raw commodities, with processing and margin capture occurring elsewhere. Converting this raw asset into export value requires domestic processing investment before seeking new markets.

Rather than dispersing trade promotion across 50+ markets, one strategy that can be explored, according to one expert in our workshop, is concentrating resources in 7-8 strategic hub markets, hubs such as Singapore, UAE, Hong Kong, Egypt, and others, that serve as regional distribution centres for Indonesian food products. This hub-market approach would allow Indonesia to build market depth in a small number of strategic nodes rather than attempting simultaneous penetration of diverse regulatory environments. Formalising this through dedicated ATDAG/trade attaché resources with market development and compliance support mandates would be a direct operationalisation of the strategy.

Another strategy is to truly invest in Indonesia's **capability-upgrading** capacity. Indonesia lacks the technical and institutional capability infrastructure needed to support food diversification at scale, from farm-level QC to compliance with international standards to applied agricultural R&D. The research-to-farm gap is a persistent structural constraint. Agricultural research institutions produce knowledge that is yet to be fully and immediately functional for farmers, and a functional agri-technology extension service capable of deploying new practices, seeds, or QC tools at scale remains absent. The UMKM competitiveness gap compounds this. Small and medium food businesses cannot individually meet the packaging, labelling, sustainability, and certification requirements of EU, US, or GCC export markets. Only large companies currently export at the required scale of compliance. UMKMs, therefore, will need support such as group certification mechanisms and compliance support infrastructure.

On FTA utilisation, Indonesia's rate of actually using preferential tariff rates under its FTAs is perceived by experts as being relatively low. Indonesian exporters often do not know how to claim FTA benefits, pointing to a structural gap in implementation support infrastructure rather than in the agreements themselves. Vietnam's experience in agricultural exports following the EU–Vietnam Free Trade Agreement offers lessons here.[29] A domestic standards gap further illustrates the capability problem. At least one major Indonesian-branded food product targeting export markets is unable to use Indonesian dairy or protein inputs because those inputs do not yet meet the food safety standards required by destination markets. For this case, the supply chain starts abroad, even for locally branded products, pointing to either a need for standards harmonisation or targeted investment in domestic production upgrades.

Finally, Indonesia would benefit from better **institutional flexibility.** Food sector governance is fragmented across multiple ministries with overlapping mandates, a lack of integrating coordination mechanisms, and documented patterns of regulatory capture by vested commercial interests. Five or more ministries and agencies share food policy jurisdiction, including *Kementan* (agriculture), *Kemendag* (trade/imports), BKPM (investment), *Kemenag*/BPJPH (halal), and *Badan Pangan Nasional* (food security). A coordinating function is held by *Kementerian Koordinator Bidang Pangan* (Coordinating Ministry for Food Affairs). A clear mandate to promote food import-export diversification end-to-end for them, one that is geopolitically and geoeconomically attuned to risks from abroad and driven by boosting product competitiveness, would be a useful addition to the current governance architecture.

The lack of a strategic foresight mechanism compounds this. In publicly available sources, there seems to be a lack of a dedicated government unit that models medium-to-long-

[29] WTC Connect, "Five Years of EVFTA: Vietnam's Agricultural Exports Reap Huge Benefits," 15 July 2025, https://wtcconnect.net/en/five-years-evfta-vietnam-agricultural-exports/.

term food system scenarios covering El Niño cycles, South China Sea disruptions, or global price shocks. Furthermore, with the various FTAs signed in the past decade, there needs to be a dedicated effort to boost utilisation and address the gap between formal agreement and actual business use. At the macro planning level, RPJPN/RPJMN set food security visions but have not yet contained actionable implementation roadmaps with ministerial accountability and time-bound diversification-aware milestones informed by geopolitical and geoeconomic risks.

As a concluding note for this sector, what the expert assessments reveal prominently is that Indonesia's primary constraint is not technical. The more binding limit is domestic political economy, where conditions such as importer cartels that benefit from supply concentration and procurement monopolies might slow supplier switching even when alternatives are commercially available. Within the strategic diversification framework, this is the precise opposite of what an enabling condition should look like. Finally, Indonesia's food export base is large but structurally trapped at the commodity end of the value chain. Addressing the Capability Upgrading gap, through domestic processing investment and compliance infrastructure, is the prerequisite for converting export volume into export value, and for turning Indonesia's agricultural assets into genuine negotiating leverage.

Table 6. Partner Diversification Landscape of Indonesia's Strategic Food Commodities

Commodity	Category	Current Main Supplier	Alternative Suppliers	Diversification Feasibility
Rice	Survival (inflation trigger)	Thailand, Vietnam	Pakistan, Myanmar, India	*HIGH: 4-5 viable suppliers; potential barrier due to domestic regulatory agility or risk of export ban abroad during crisis.*
Corn	Survival (inflation trigger)	Argentina, Brazil	U.S., Pakistan	*MEDIUM: A 7-10% share of lock-in with the U.S. will come from tributary commitment of buying corn in the ART.*
Soybean	Survival (inflation trigger)	U.S.	Brazil, Argentina	*MEDIUM: U.S. 89% share in Indonesia's import of soybean is locked-in with the ART.*
Sugar	Survival (inflation trigger)	Brazil, Thailand, Australia	India	*HIGH: Many suppliers with relatively dependable trade regime; SPI quota system is reportedly the potential barrier*
Garlic	Survival (inflation trigger)	China (monopoly)	Uzbekistan	*MEDIUM: Established import quota arrangements and longstanding commercial relationships among licensed importers create structural inertia that discourages sourcing diversification*
Meat	Survival (inflation trigger)	Australia, India	U.S., Brazil	*HIGH: Brazil offers supply-side predictability: commercially-driven export behaviour, rare use of export bans, and no significant history of geopolitically-motivated supply restrictions, though logistical cost is higher. Halal certification needed; IA-CEPA offers tech transfer opportunity.*

Commodity	Category	Current Main Supplier	Alternative Suppliers	Diversification Feasibility
Wheat	Survival (inflation trigger)	Australia, Canada, Ukraine	Argentina	*HIGH: Has been diversified due to Ukraine war. Argentina/LatAm under-utilised.*
Fertilizer / Phosphate	Agricultural input	Australia, Philippines	Vietnam, Thailand, Morocco (phosphate)	*MEDIUM: Has been diversified due to Russia-Ukraine war. Morocco option underutilised.*
Palm Oil (CPO)	Export (Market)	Pakistan, China	U.S., Bangladesh, India, Egypt, EU, Muslim-majority markets	*MEDIUM: Export market relatively diversified; GCC/OIC markets are potential alternative to boost provided the region's trade routes remains open and stable.*

Sectoral Analysis: Energy

Energy is the hinge sector for Indonesia's economic stability. The energy sector sits at the intersection of Indonesia's short-term stability needs and its long-term transformation agenda. It is a sector of paradox: Indonesia is resource-rich, yet still structurally exposed to external shocks in oil, fuel, and technology. Unlike food, where political sensitivity is tied primarily to inflation and household welfare, or manufacturing, where the main concern is industrial upgrading and employment, the energy sector combines all three pressures at once. At the same time, it is a transition sector: reducing repeated exposure to global oil shocks requires gradual structural change – efficiency, electrification, and cleaner substitution – rather than short-lived crisis fixes.

The current US–Israel–Iran war and rising disruption risk around the Strait of Hormuz provides an immediate stress test for this dual agenda.[30] The current energy shock has illustrated how quickly external crises can translate into domestic pressure through fuel prices, import costs, transport disruption, and fiscal strain. This stress test matters even when Indonesia's direct suppliers are regional hubs rather than Gulf exporters. The key transmission channel is pricing and logistics: when a chokepoint tightens, war-risk premia rise, freight and insurance costs spike, and refined product markets in Asia adjust rapidly. With around 20 million barrels per day shipped through the Strait in 2025 – about 25% of global seaborne oil trade – and limited bypass options, any disruption has global price impact.[31] EIA similarly notes that very few alternatives exist and reports average flows of 20 million barrels per day in 2024, equivalent to about 20% of global petroleum liquids consumption.[32]

However, Indonesia's energy exposure should be framed as **risk transmission channels**, not as blanket securitisation. This is not simply a story of external dependence in the narrow sense of who Indonesia buys from. The more serious issue is that Indonesia's dependencies in the energy sector are layered. They involve not only concentrated suppliers, but also concentrated routes, concentrated supply-chain stages, and concentrated domestic policy burdens. In other words, the vulnerability lies not only in partners, but in the architecture of the energy system itself. The strategic problem is not

[30] Reuters, "U.S. Intelligence Warns Iran Unlikely to Ease Hormuz Strait Chokehold Soon, Sources Say," April 3, 2026, https://www.reuters.com/world/middle-east/us-intelligence-warns-iran-unlikely-ease-hormuz-strait-chokehold-soon-sources-2026-04-03/ https://www.reuters.com/world/middle-east/us-intelligence-warns-iran-unlikely-ease-hormuz-strait-chokehold-soon-sources-2026-04-03/.

[31] International Energy Agency, "Strait of Hormuz," *Oil Security and Emergency Response*, accessed April 5, 2026, https://www.iea.org/about/oil-security-and-emergency-response/strait-of-hormuz.

[32] U.S. Energy Information Administration, "Amid Regional Conflict, the Strait of Hormuz Remains Critical Oil Chokepoint," *Today in Energy*, June 2025, https://www.eia.gov/todayinenergy/detail.php?id=65504.

just dependence on a country, but dependence on specific nodes such as refining hubs, chokepoints, and single-stage import structures.

The energy sector also differs from the other sectors in one further respect: the strategic path is not simply about preserving stability or achieving a leap in industrial upgrading. It is about managing a transition without destabilisation. In the immediate term, Indonesia needs continuity of fuel supply, manageable prices, and fiscal resilience. In the medium to long term, however, the sector cannot remain anchored in the same fossil-fuel dependency structure. Domestic oil production remains far below its historical peak: official Ministry of Energy and Mineral Resources (ESDM) reporting puts Indonesia's 2025 lifting at 605.3 thousand barrels per day, with the 2026 target only modestly higher at 610 thousand barrels per day.[33] At the same time, domestic refining capacity remains insufficient, leaving Indonesia dependent on imported refined fuel. This is no longer just a technical mismatch but a structural dead end economically, geopolitically, and climatically.

This sector is therefore especially important for the logic of strategic diversification. Discussions with academics and experts during our conceptualisation workshop already flagged that Indonesia might appear "perfectly diversified" in terms of energy suppliers, but this can be misleading if diversification is measured only at the level of partner count rather than the structure of the underlying supply chain. A system can have multiple suppliers and still remain highly vulnerable if it depends on the same route, the same refining stage, the same technology provider, or the same fiscal instrument to absorb shocks. The energy sector demonstrates particularly clearly why diversification must be understood in a layered way.

For that reason, the energy chapter should not be framed only as a matter of emergency response. It should also be framed as a test of whether Indonesia can make strategic diversification meaningful in practice. The question is not only how Indonesia can secure more resilient oil and gas supply under conditions of geopolitical fragmentation, but also how it can use the present shock to accelerate a broader transformation of its energy mix, infrastructure, and diplomatic posture. In this sector more than any other, strategic diversification must combine short-term resilience with long-term redirection.

The expert assessments compiled during our research period for this report point to a familiar pattern: alternatives exist on paper, but practical switching capacity is constrained by contracting structures, logistics and storage, refinery performance, and the fiscal burden of price buffering. This reflects a sector in which some external

[33] Kementerian Energi dan Sumber Daya Mineral Republik Indonesia, "Pasang Target Lifting Minyak 610 Ribu Barel di 2026, Ini Jurus Menteri ESDM Hadapi Tantangan Produksi," January 23, 2026, https://www.esdm.go.id/en/media-center/news-archives/pasang-target-lifting-minyak-610-ribu-barel-di-2026-ini-jurus-menteri-esdm-hadapi-tantangan-produksi.

adjustment options exist, but where deeper structural and institutional vulnerabilities remain unresolved.

Table 7. Strategic Diversification Framework Assessment: Energy Sector

Framework Category	Dimension	Key Evidence	Priority Action
Core Diversification Mechanism	**Substitutability**	Heavy reliance on refined imports (HS2710 **US$20.3bn**) vs crude (HS2709 **US$11.1bn**) in 2023; refined share ≈**64.5%** of petroleum oils imports. Indonesia has multiple potential suppliers of crude and LNG, and is not dependent on only one producing country. However, dependence remains high at the refining stage and in fuel import structures, with significant reliance on refined products from regional hubs such as Singapore. Chokepoint exposure, especially through Hormuz, means partner diversification alone does not eliminate vulnerability.	• Diversify not only suppliers but also supply-chain stages. • Expand crude and LNG sourcing beyond traditional Middle Eastern routes. • Pursue fallback G-to-G arrangements and swap mechanisms. • Reduce overreliance on imported refined fuel.
	Redundancy	Indonesia's energy buffers remain thin relative to the scale of potential disruption. Government statements indicate BBM storage capacity is only around 25 days at maximum, even if current reserves are above minimum thresholds. Limited storage, insufficient strategic reserves, and continued reliance on a small number of import routes reduce fallback	• Build layered redundancy: strategic stocks + commercial stock obligations. • Diversify chartering/insurance clauses. • Establish release triggers and distribution prioritisation protocols. • Expand fuel storage and strategic reserve capacity.

Framework Category	Dimension	Key Evidence	Priority Action
		capacity in crisis conditions.[34]	• Build new storage infrastructure. • Develop dual-route and dual-supplier arrangements. • Strengthen emergency logistics for fuel, LNG, LPG, and avtur.
	Resilience Building	High refined fuel exposure implies fast pass-through to logistics and inflation. Indonesia has a number of macro and policy buffers – subsidies, administered prices, biodiesel policy, and some crisis coordination capacity – but these come with fiscal costs and do not resolve structural dependence. Energy shocks are transmitted quickly into inflation, transport costs, and subsidy burdens. The 2026 crisis and earlier subsidy surges show that the system can absorb shocks temporarily, but at significant fiscal and political cost.	• Move from blanket compensation to targeted support. • Maintain fiscal space for essential imports. • Build a managed pricing framework that protects vulnerable groups while preserving scarcity signals. • Improve grid resilience and demand-side efficiency.
	Competitive Leverage	Indonesia's market size and diversified external partnerships can widen options during tight markets; diplomatic capacity can help secure fallback arrangements without partner-targeting. Hormuz disruption impacts pricing globally regardless of destination.[35] Strategic resources – especially nickel	• Use critical minerals, biofuel potential, and domestic market size more deliberately in energy diplomacy. • Tie energy partnerships more closely to downstreaming, technology transfer, and infrastructure development.

[34] Sekretariat Kabinet Republik Indonesia, "Cadangan BBM Nasional Aman, Presiden Prabowo Perintahkan Bangun Storage Baru Perkuat Ketahanan Energi," 4 March 2026, https://setkab.go.id/cadangan-bbm-nasional-aman-presiden-prabowo-perintahkan-bangun-storage-baru-perkuat-ketahanan-energi/.

[35] International Energy Agency, "Strait of Hormuz," Oil Security and Emergency Response, accessed April 10, 2026, https://www.iea.org/about/oil-security-and-emergency-response/strait-of-hormuz.

Framework Category	Dimension	Key Evidence	Priority Action
		and broader critical-mineral potential – can strengthen bargaining power in external energy and industrial negotiations. Yet these assets are not consistently translated into stronger energy security outcomes, and supply diplomacy remains underdeveloped relative to the scale of external risk.	• Broaden energy partnerships through bilateral and minilateral channels. • Specifically, use energy diplomacy to secure swap options and government-to-government fallback understandings. • Strengthen regional logistics cooperation. • Embed reliability clauses in energy MOUs (Competitive Leverage; Substitutability).
Enabling Condition	**Capability Upgrading**	The most serious structural weakness lies in inadequate domestic refining and the slow pace of energy transition capacity-building: structural reliance on imported refined fuels indicates limits in domestic refining and storage performance; sustained volatility compresses fiscal space for upgrading. Official production has recovered only slightly, while refining constraints continue to lock Indonesia into fuel imports. Renewable deployment, EV adoption, storage systems, and grid modernisation remain insufficiently scaled relative to the strategic challenge.	• Prioritise refinery reliability and product-mix upgrades. • Expand storage and port handling. • Invest in grid resilience and transition-enabling infrastructure), treat renewables, EVs, and biofuels as energy resilience assets rather than only climate policy. • Deepen domestic industrial capability in energy technologies.
	Institutional Flexibility	Switching requires procurement and coordination agility that is not yet institutionalised. The sector involves overlapping responsibilities across ESDM, Pertamina, fiscal authorities, economic	• Build a standing inter-agency coordination mechanism for foreign economic resilience in energy.

Framework Category	Dimension	Key Evidence	Priority Action
		ministries, and foreign policy actors. Crisis response is possible, but strategic coordination remains fragmented and often reactive. The energy note and workshop discussions both suggest that foreign policy becomes crucial during crisis, yet it is still too weakly integrated into routine energy governance.	• Integrate supply diplomacy into energy planning. • Institutionalise crisis simulation, scenario planning, and regular review of route, partner, and technology dependencies.

These assessments should be read alongside the structure of Indonesia's energy trade exposure and the global chokepoint reality. The energy sector differs from many others because disruptions transmit primarily through **price and logistics**, not only through physical shortages. This increases the value of pre-positioned options and institutional routines.

Table 8. Indonesia Top Imports in the Energy Sector (HS27; 2024)

Commodity	Total import value	% of total import	N of partner	CR4	Top-1 Supplier	Supplier share
(271012) **Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; light oils and preparations	13,846,969	5.93%	33	87.50%	Singapore	57.01%
(270900) **Oils**; **petroleum oils** and oils obtained from bituminous minerals, **crude**	10,352,976	4.44%	23	74.38%	Nigeria	27.98%
(271019) **Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; **not light oils** and preparations	7,709,092	3.30%	58	83.24%	Singapore	45.52%

Source: Authors' calculation from UN Comtrade

External Dependence and the Nature of Exposure

Within this basket, petroleum oils dominate. In 2024, refined petroleum oils (HS2710) imports were approximately US$21.5 billion, while crude petroleum (HS2709) imports were approximately US$10.3 billion. Refined products therefore represent around 67.6% of petroleum oils imports (HS2710 / (HS2710+HS2709)), indicating that Indonesia is structurally exposed not only to upstream crude markets but also to external refining capacity, refining margins, and product logistics.

This refined-heavy profile shapes the kind of vulnerability Indonesia faces. When refined imports are large, the binding constraint in a shock is often not whether crude exists globally, but whether refined cargoes are available quickly with manageable pricing and shipping conditions. In practice, refined markets can tighten even when crude supply remains available, especially when freight, refinery outages, or policy changes constrain regional hub supply.

Partner concentration reinforces this exposure. For HS2710, Indonesia's imports are heavily concentrated through regional hub nodes: **Singapore supplies about 52.9%** and **Malaysia about 21%** of HS2710 import value, about **73.9% combined**, and the implied **HHI ≈0.33**. This is not a claim about partner reliability; it is a structural indicator that Indonesia's refined import access is shaped by a small set of operational nodes.

Concentration matters because it narrows short-notice switching capacity. If a hub faces refinery outages, price spikes, tight charter availability, or temporary constraints, Indonesia's procurement has limited immediate degrees of freedom unless alternatives and contracting options have been pre-arranged. This is the practical meaning of relatively weak substitutability: alternatives may exist, but they are not *usable at speed* without institutional flexibility. The crucial dependence is on externally sourced fuel and fuel-processing stages. Even though Indonesia still produces oil and gas, domestic production is far below national consumption needs, and refining capacity does not match the structure of domestic demand. This leaves the country exposed not only to crude prices, but to the imported refined-fuel market. Indonesia is resource-rich, yet dependent on imported refined fuel, especially from regional hubs such as Singapore and Malaysia. This is strategically important because dependence on refined products is more rigid than dependence on crude alone. It narrows Indonesia's room for manoeuvre during crises and ties domestic energy security to external industrial infrastructure.

Chokepoints amplify this. The Strait of Hormuz is one of the world's most critical oil transit corridors; International Energy Agency (IEA) estimates around 20 million barrels per day transited in 2025, about 25% of seaborne oil trade, with limited bypass routes.[36] Qatar and the UAE together accounted for almost one-fifth of global LNG trade through the same route. Most of these volumes head to Asia, meaning Asian importers disproportionately bear the risk of disruption.[37] EIA reports average flows of 20 million barrels per day in 2024 and emphasises that very few alternatives exist if it is closed.[38] This matters for Indonesia not because all of its supply is directly sourced from one Gulf producer, but because the entire global price structure and regional supply chain are shaped by that chokepoint. In this sense, Indonesia's vulnerability is systemic rather than simply bilateral.

Even when Indonesian cargoes load from Singapore or Malaysia, these chokepoints still matter because global price formation and insurance premia incorporate disruption risk. A Hormuz-centred shock thus transmits to Indonesia partly through the global price channel and partly through regional refined product availability and freight conditions.

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[36] International Energy Agency, "Strait of Hormuz," Oil Security and Emergency Response, February 2026, https://www.iea.org/about/oil-security-and-emergency-response/strait-of-hormuz.

[37] *Ibid.*

[38] U.S. Energy Information Administration, "Amid Regional Conflict, the Strait of Hormuz Remains a Critical Oil Chokepoint," *Today in Energy*, June 16, 2025, https://www.eia.gov/todayinenergy/detail.php?id=65504.

This is why energy diversification cannot be reduced to counting partners; it must diversify the useable option set under stress.

Crude imports remain significant at US$10.3 billion in 2024.The key policy implication is that crude supply flexibility should be treated as a portfolio capability: while individual suppliers may be stable, tight markets can make switching costly unless alternatives are pre-positioned and contracting is flexible. Where partner concentration for crude is a concern, it should be monitored and managed using the same concentration metrics applied for refined imports.

Another kind of dependence centres around issues of domestic fiscal instruments to preserve political stability. Energy shocks in Indonesia quickly become political because they are filtered through administered fuel prices, subsidy burdens, and transport costs. This makes energy insecurity different from a purely commercial problem. The issue is not only whether Indonesia can obtain fuel, but whether it can do so without destabilising its budget, generating inflation, or forcing abrupt price adjustments on the public. Energy insecurity in Indonesia is therefore less about immediate physical scarcity than about fiscal pressure and domestic political risk. Further, the energy transition itself introduces another layer of complexity. While diversification toward renewable energy is often framed as a pathway to greater resilience, our discussion with experts emphasised that renewable technologies are heavily dependent on imported components, particularly from China. Solar panels, batteries, and other clean energy technologies rely on global supply chains dominated by a small number of manufacturing hubs. For example, in 2022 it was estimated that China's share exceeds 80% across all major solar manufacturing stages, which includes the manufacturing of polysilicon, ingots, wafers, cells, modules.[39] More recently, China installed 360 GW of wind and solar capacity in 2024 alone, which amounted to more than half of global additions, bringing total capacity to roughly one-third of global levels.[40] This strong industrial base has also translated into export dominance. Since 2018 China has shipped nearly $1 trillion worth of clean-energy technologies, including $242 billion in solar components and $330 billion in batteries, mainly to European and Asian markets.[41] For Indonesia, this means that diversification away from fossil fuels towards renewables may reduce dependence on fuel imports but increase dependence on foreign renewable technology providers. This creates a trade-off between decarbonisation and strategic autonomy.

[39] International Energy Agency, *Special Report on Solar PV Global Supply Chains* (Paris: International Energy Agency, 2022), https://iea.blob.core.windows.net/assets/d2ee601d-6b1a-4cd2-a0e8-db02dc64332c/SpecialReportonSolarPVGlobalSupplyChains.pdf.

[40] World Economic Forum, "China Is Adding More Renewables to the Grid than the Rest of the World Combined," World Economic Forum, December 2025, https://www.weforum.org/stories/2025/12/china-adding-more-renewables-to-grid/.

[41] Colleen Howe, "Tracking China's Clean Energy Export Dominance in Seven Charts," *Reuters*, October 9, 2025, https://www.reuters.com/markets/commodities/tracking-chinas-clean-energy-export-dominance-seven-charts-2025-10-09/.

A final point should be stressed. The energy sector is often assumed to be relatively diversified because Indonesia can import from multiple countries. But workshop discussions already identified the need to look more carefully at what kind of diversification is present. If multiple suppliers all depend on the same route, or if the structure of imports remains concentrated in refined products, then apparent diversification may be far less meaningful than it seems. This is precisely why the energy sector is such a useful test case for the broader argument of the report.

Domestic Buffering and Its Structural Limits in Indonesia's Energy Sector

Indonesia's energy exposure becomes domestically consequential because price shocks are often buffered through the state budget. This approach provides stability, but it creates a structural limit: large and repeated subsidy surges compress fiscal space for capability upgrading and longer-term transition investments. Government statements in March 2026 emphasised that BBM reserves remain above national minimum standards, and that the state is accelerating B50 as part of a broader push for energy resilience and independence.[42] These are not insignificant assets. They help explain why Indonesia can often absorb external shocks better than more fully liberalised importers.

This creates a practical trade-off between **stability today** and **structural resilience tomorrow**. Broad price suppression reduces immediate inflation, but weakens price signals and can sustain import demand at precisely the moment when imports are most expensive. It can also delay behavioural adjustment and reduce political room to allocate funds toward storage, distribution infrastructure, and efficiency programmes. Hence, these buffers have clear structural limits. Storage remains thin. Official statements suggest that Indonesia's fuel storage capacity is only around 25 days at maximum.[43] That may be adequate for routine market turbulence, but it is not a comfortable margin in the event of prolonged disruption to a major global route. The current crisis has also shown that international stock releases by IEA members can stabilise markets only temporarily; they do not change Indonesia's own structural position.

In strategic diversification terms, fiscal buffers are part of **Redundancy** and **Resilience Building**, but they need design discipline. Targeting support to vulnerable households and critical logistics functions preserves stability while allowing some price signal to transmit. This makes demand adjustment possible and reduces the likelihood that emergency spending displaces longer-horizon capability upgrading. However, the

[42] Sekretariat Kabinet Republik Indonesia, "Cadangan BBM Nasional Aman, Presiden Prabowo Perintahkan Bangun Storage Baru Perkuat Ketahanan Energi," 4 March 2026, https://setkab.go.id/cadangan-bbm-nasional-aman-presiden-prabowo-perintahkan-bangun-storage-baru-perkuat-ketahanan-energi/.
[43] *Ibid.*

subsidy regime is another double-edged instrument. It protects households and stabilises politics in the short term, but it can also weaken incentives for efficiency and rapidly exhaust fiscal space during prolonged price spikes. The budget cannot be expected to fully insulate consumers forever. A system that suppresses all price signals undermines the behavioral and market adjustments that diversification ultimately requires. In that sense, current buffering mechanisms are useful but incomplete: they absorb shocks, but they do not transform the structure that generates repeated vulnerability.

There are also limits in infrastructure and transition readiness. The energy transition is often discussed in Indonesia as climate policy, industrial policy, or downstreaming policy, but not consistently as a matter of immediate resilience. That is a mistake. Every unit of renewable energy deployed domestically reduces future exposure to imported fossil fuels and unstable maritime routes. Every improvement in grid resilience, storage, and electrified transport reduces the scale of future oil-related vulnerability. Transition is not only environmental policy, but a core pillar of energy security.

Finally, domestic buffering is weakened by institutional fragmentation. Energy security is not handled by one actor. It cuts across ESDM, Pertamina, fiscal authorities, the Coordinating Ministry for the Economy, industrial policy institutions, and – during crisis – foreign policy. As the conceptual discussion repeatedly emphasised, non-strategic diversification emerges when agencies act through routine or fragmented responses rather than through a coherent framework. The energy sector reflects this problem clearly.

Diversification in the Energy Sector: Strategy, Scope and Direction

Energy diversification should be treated as a combined agenda of **stability and transition**, aligned to three horizons. In the immediate horizon, the objective is to prevent external shocks from becoming domestic instability events. In the medium horizon, the objective is to reduce structural exposure – especially dependence on imported refined fuels. In the long horizon, the objective is to sustain the transition path that permanently lowers sensitivity to oil-price shocks.

A first set of actions operationalises **Substitutability** by widening Indonesia's usable sourcing options before shocks occur. This includes diversifying refined fuel suppliers beyond a small hub set, maintaining specification flexibility for key fuel grades, and balancing term and spot procurement to avoid lock-in during volatility (Substitutability; Institutional Flexibility). It also includes diversifying LNG/LPG contracting arrangements and delivery windows to reduce sensitivity to routing and market tightness (Substitutability).

A second set of actions operationalises **Redundancy** through layered buffering that is not solely fiscal. Strategic stocks and distributed storage – combined with commercial stock obligations for key products – create physical and contractual redundancy that can be activated rapidly (Redundancy; Resilience Building). For reference, the IEA notes its member obligation of holding stocks equivalent to at least 90 days of net oil imports, illustrating how stockholding can be institutionalised with flexibility of implementation.[44] Indonesia need not replicate this benchmark mechanically, but it can adapt the principle: clear targets, distributed storage, and explicit release triggers.

Contractual redundancy is equally important. Pre-negotiated chartering and insurance clauses – alternative loading ports, flexible delivery windows, swing volumes, and standing relationships with multiple shippers – reduce friction when markets tighten (Redundancy; Institutional Flexibility). This turns "diversification" into usable optionality rather than ad hoc crisis procurement.

A third set of actions targets **Resilience Building** on the demand and distribution side. Demand-side measures – efficiency standards, public transport support, electrification where feasible, and targeted protection for logistics – reduce import requirements during price spikes and therefore reduce fiscal exposure (Resilience Building). Distribution-side measures – port and terminal coordination, inter-island supply planning, and emergency prioritisation protocols – reduce the risk of localised scarcity (Resilience Building).

A fourth set of actions activates **Competitive Leverage** in a cooperative manner. Indonesia's market scale and regional position can be used to secure swap options, shared contingency planning, and reliability-focused understandings with key partners, without partner-targeting (Competitive Leverage). This can include government-to-government fallback arrangements that facilitate rapid sourcing or logistics support during periods of high uncertainty (Competitive Leverage; Substitutability).

These mechanisms depend on two enabling conditions. **Capability Upgrading** in energy should prioritise practical performance gains: refinery reliability and product-mix improvements, storage expansion, port handling capability, and grid resilience investments that support transition (Capability Upgrading; Resilience Building). The goal is not to chase self-sufficiency, but to reduce the refined import dependence that makes shocks expensive and frequent.

Institutional Flexibility is equally decisive because switching capacity is often blocked by rules and routines, not by physics. Practical steps include multi-supplier framework contracts, pre-cleared contingency procurement templates, standing tender mechanisms for spot cargoes, and an agreed cross-ministerial process to activate emergency sourcing

[44] International Energy Agency, "Oil Security and Emergency Response," https://www.iea.org/about/oil-security-and-emergency-response.

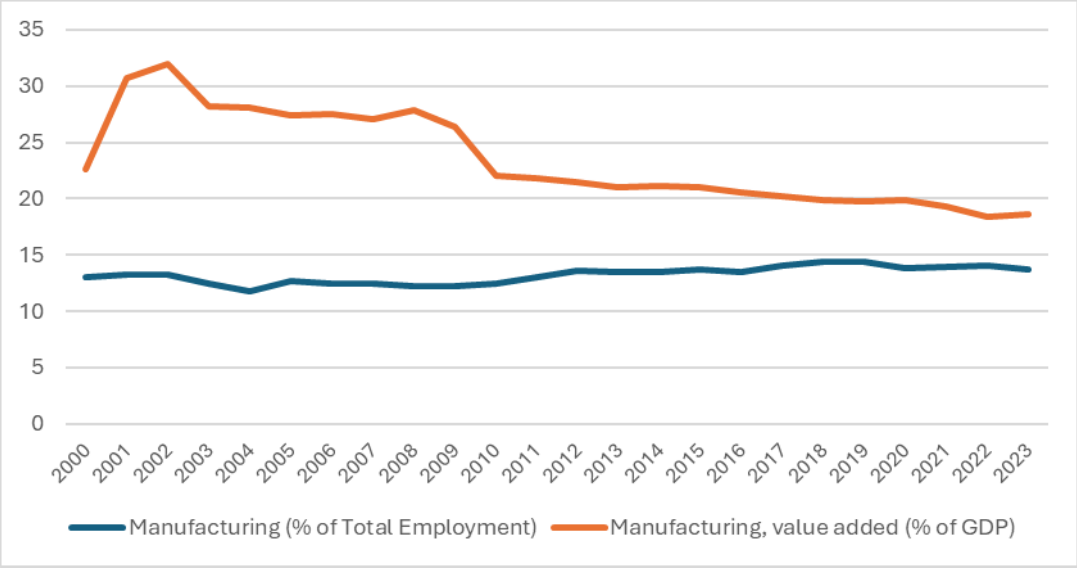
decisions (Institutional Flexibility). Each of these converts mechanisms into implementable tools.

Sectoral Analysis: Manufacturing

Indonesia's manufacturing sector occupies a complex position within the country's broader economic structure. On the one hand, it is central to Indonesia's ambition to move up global value chains (GVCs), deepen domestic industrial capabilities, and reduce structural dependence on key commodity exports. On the other hand, it reflects a paradox common among most middle-income economies: it is sufficiently integrated into the global economy to be exposed to external shocks yet insufficiently embedded to fully capture the benefits of GVC participation.

Two structural challenges emerge from the literature, discussions, and fieldwork in this sector. First, persistent labour market issues, including rigid employment regulations, high severance costs, and uneven job quality, have constrained industrial competitiveness and reduced investment attractiveness. These challenges are particularly pronounced in labour-intensive sectors, such as textiles, where political sensitivity is higher due to the large number of jobs at stake. Figure 16 below shows that employment in manufacturing is stagnated in the last 20 years.

Figure 16. Indonesia's Manufacturing Share in GDP and Total Employment (%)



Source: World Bank (2025)

Second, the quality of the services sector also hampers manufacturing performance; for example, high logistics costs persist due to the lack of high-quality service providers. The recent OECD Services Trade Restrictiveness Index (STRI) shows that Indonesia's score remains above the OECD average and relatively high compared to other countries, indicating persistent barriers in insurance, legal services, telecommunications, and commercial banking remaining.[45]

This section focuses on external vulnerabilities rather than underlying structural constraints. These vulnerabilities are reflected in the sector's broad and heterogeneous composition. Drawing on workshop findings, interviews and fieldwork, this study focuses on three major manufacturing sub-sectors to capture this diversity: (i) labour-intensive industries, such as textiles, garments, and footwear; ii) electrical and electronics products; and (iii) capital-intensive industries, such as aerospace and shipbuilding. Across these subsectors, the findings point to a manufacturing landscape that is unevenly resilient, with vulnerabilities differing significantly in both nature and intensity. These differences are critical for assessing overall sector resilience and for designing diversification strategies tailored to the structural characteristics of each subsector.

Table 9. Strategic Diversification Framework Assessment: Manufacturing Sector

Framework Category	Dimension	Key Evidence	Priority Action
Core Diversification Mechanism	**Substitutability**	Import dependence on China for capital and intermediate goods has tripled (11% in 2006 to 36% in 2025); critical aerospace and shipbuilding components sourced exclusively from US and Europe with no domestic substitutes; even labour-intensive sectors (textiles) rely on imported materials with technical specifications that cannot yet be domestically produced.	• Diversify sourcing toward India, Turkey, and Eastern Europe. • Embed genuine capability transfer requirements in defence and industrial procurement contracts. • Develop domestic component supplier ecosystem for critical intermediate inputs.
	Redundancy	There is a lack of strategic stockpiling mechanism for industrial	• Dual-supplier mandates for critical

[45] OECD. 2024. OECD Services Trade Restrictiveness Index 2024: Indonesia Country Note. Paris: OECD Publishing.

Framework Category	Dimension	Key Evidence	Priority Action
		inputs; even where domestic capacity exists (e.g., steel), quality gaps prevent substitution for higher-end applications; shallow GVC integration offers passive insulation but no active buffer; shipbuilding firms report extended delivery times for key components during periods of geopolitical tension..	manufactured inputs. • Strengthen domestic intermediate industries (compressors, cables, castings) to serve as supply buffers. • Develop industrial estate-linked inventory reserves for strategic inputs.
	Resilience Building	Large domestic market provides demand buffer; fiscal instruments (BLT, PPN DTP) demonstrated shock absorption during COVID; SNI/TKDN offer partial import protection; industrial estates and SEZs underway; but high logistics costs, infrastructure gaps, and skills shortages limit effectiveness.	• Improve logistics and distribution infrastructure. • Upgrade SEZ and industrial estate connectivity. • Invest in vocational training aligned with manufacturing needs.
	Competitive Leverage	Natural resource advantage for downstreaming (nickel to EV battery); large domestic market as leverage for technology transfer; halal economy potential and strategic geopolitical non-alignment; but technology transfer remains surface-level; Batam faces increasing competition from Johor-Singapore SEZ.	• Leverage domestic procurement and market access for genuine technology transfer conditions. • Accelerate nickel-to-EV downstream integration. • Use Indonesia-EU CEPA and Indonesia-Canada CEPA for market diversification.
Enabling Condition	**Capability Upgrading**	Low R&D investment and limited industry-research collaboration; technology transfer	• Strengthen BRIN-industry R&D linkages with

Framework Category	Dimension	Key Evidence	Priority Action
		largely limited to trainings with minimal industrial spillovers; UMKM cannot meet export certification requirements; skilled labour shortage for more advanced manufacturing sectors.	mandatory industry application. • Expand B2B tech transfer beyond training to production embedding. • UMKM group certification for export compliance. • Vocational training reform aligned with Industry 4.0.
	Institutional Flexibility	Inward-looking industrial strategy (full localisation emphasis) constrains strategic GVC integration; regulatory uncertainty and inconsistency discourages long-term investment; limited targeted incentives for component industries; TKDN and SNI need recalibration to avoid excessive protectionism.	• Rebalance industrial policy to support strategic GVC integration alongside localisation. • Reduce regulatory complexity and policy inconsistency. • Strengthen inter-ministerial coordination on trade and industrial policy. • Improve FTA utilisation with dedicated implementation support units.

External Dependence and the Nature of Exposure

At its core, Indonesia's manufacturing sector is shaped by a layered dependence on the global economy. The most immediate and tangible form of this dependence lies in the heavy reliance on imported capital and intermediate goods. The concentration of imports, particularly from China, alongside Japan, Singapore, and the United States, creates a structural vulnerability to disruptions in a narrow set of supply channels. In the last 20 years, China has increased its share of Indonesia's import around three times from 11% in 2006 to 36% in 2025. This external dependence was starkly revealed during the COVID-19 pandemic, when supply chain disruptions led to shortages of inputs, production slowdowns, and a collapse in export performance which happened in all countries.

A common thread across key industries is the continued dependence on imported inputs, although the sophistication and substitutability of those inputs vary considerably. In aerospace manufacturing, critical components such as engines, landing gear, and avionics systems are sourced primarily from the United States and Europe, while domestic firms focus largely on design, integration, and final assembly. Similarly, shipbuilding depends heavily on imported engines, gearboxes, weapons systems, and command-and-control technologies. A significant share of high-value components in naval platforms remains foreign-sourced, particularly for complex systems such as submarines, combat management systems, and propulsion technologies.

Even in textile and footwear manufacturing, where technological barriers are lower, firms still rely on imported materials with specific technical specifications that cannot yet be produced domestically. This shared dependence creates vulnerability to supply disruptions, price shocks, and geopolitical restrictions. At the same time, the **degree of substitutability** differs sharply. Textile inputs are comparatively easier to localise, whereas aerospace and shipbuilding components require long-term technological development, certification, and capital-intensive investment.

Trade routes are also becoming more sensitive towards geopolitical and geoeconomic tensions. The sectoral discussions suggest that geopolitical flashpoints such as a Taiwan Strait conflict may not directly disrupt Indonesia's manufacturing sector unless they escalate into broader regional disruptions, particularly in the South China Sea, where key shipping routes are located.

Our field research also suggests that when tensions arise in the Middle East, the electrical manufacturing industry faces disruption to its distribution route. In such scenarios, the primary transmission channel is not production networks per se, but logistics, specifically shipping disruptions and increased transportation costs. This highlights an important nuance that Indonesia's vulnerability is less about deep integration into fragmented

production networks and more about dependence on trade connectivity and logistics infrastructure.

As the regional-hub, Singapore was also mentioned in the field work in Batam where Singapore as a logistics mega-hub is critical to supply chain certainty and still indispensable factor especially for global value chain-oriented products. While Batam rejuvenating its governance and inviting multi-investors to improve the infrastructure quality, fierce competition coming from the recent Johor-Singapore Special Economic Zone (JS-SEZ) which focusing on high-tech sector such as semiconductors and energy transition projects.[46]

A second dimension of dependence lies in technology and capital. The sector remains reliant on foreign investment and imported technological capabilities, which constrains domestic upgrading. This is particularly evident in sectors such as aerospace, where access to critical technologies is often restricted by geopolitical considerations, limiting Indonesia's ability to move up the value chain. For example, aerospace and shipbuilding industries are characterised by high technological barriers, limited supplier options, and exposure to export controls. These sectors are also closely tied to national defence and geopolitical factors, making them politically sensitive and dependent on government procurement. Diversification in these industries requires sustained industrial policy, technology transfer, and ecosystem development.

In contrast, textile and footwear manufacturing is labour-intensive, less technologically constrained, and more responsive to market conditions. Firms in this sector adapt primarily through market diversification, product innovation, and operational flexibility. While heavy industries face supply-side rigidity, light manufacturing exhibits demand-side volatility but greater adaptability. As a result, **resilience** in heavy manufacturing depends on state-led capability development, whereas **resilience** in light manufacturing depends more on firm-level agility.

Third, the sector is exposed to external demand conditions and policy shifts. The unpredictability of global trade policy, illustrated by sudden tariff changes and protectionist measures, creates a highly uncertain environment for exporters. This uncertainty is compounded by what participants describe as "non-linear" global competition, where market outcomes are increasingly shaped by state intervention, industrial policy, and geopolitical alignment rather than purely economic fundamentals. This is much concerning for the case of Trump's Tariff in 2025 which hampering Indonesia's labour-intensive sectoring such as textile and footwear where the US is the biggest market of these products or counted almost a third of it.

[46] Singapore Economic Development Board (EDB). 2026. Johor-Singapore Special Economic Zone. https://www.edb.gov.sg/en/johor-singapore-special-economic-zone.html.

All three industries also face exposure to global disruptions and geopolitical developments, although the nature of these disruptions varies across subsectors. In aerospace and shipbuilding, risks are primarily supply-side, arising from geopolitical fragmentation, export controls, and the prioritisation of trade among allied countries. Shipbuilding firms, for example, report extended delivery times for key components and a tendency among suppliers to prioritise domestic demand or strategic partners during periods of tension. Aerospace firms face similar constraints, including end-user certification requirements and sanctions risks, which limit export opportunities and create uncertainty in supply relationships.

By contrast, textile manufacturers are more exposed to demand-side shocks and logistics volatility. The decline in export demand following pandemic-related overstocking in Western markets reduced production utilisation and strained cash flow. At the same time, shipping disruptions, rising logistics costs, and longer transit routes, particularly due to geopolitical tensions such as disruptions in the Red Sea, have added further pressure. These differences highlight a key distinction: heavy manufacturing is primarily exposed to geopolitical supply risks, while light manufacturing is more vulnerable to demand fluctuations and logistics disruptions.

From Figure 17 & 18, Indonesia's export and import profiles of medium- and high-technology goods reveal a clear structural imbalance. While its export share remains low, only gradually rising to just above 30%, its import share is relatively high and stable at around 55–60%, indicating continued reliance on technologically advanced inputs from abroad. In contrast, peers such as Vietnam and Thailand show stronger upgrading, with higher and rising shares in high-tech exports. This gap suggests that Indonesia remains positioned in lower value-added segments of global value chains, which ultimately constrains its industrial upgrading and competitive leverage.

Figure 17. Imports of medium- and high-technology manufactured (% manufactured goods)

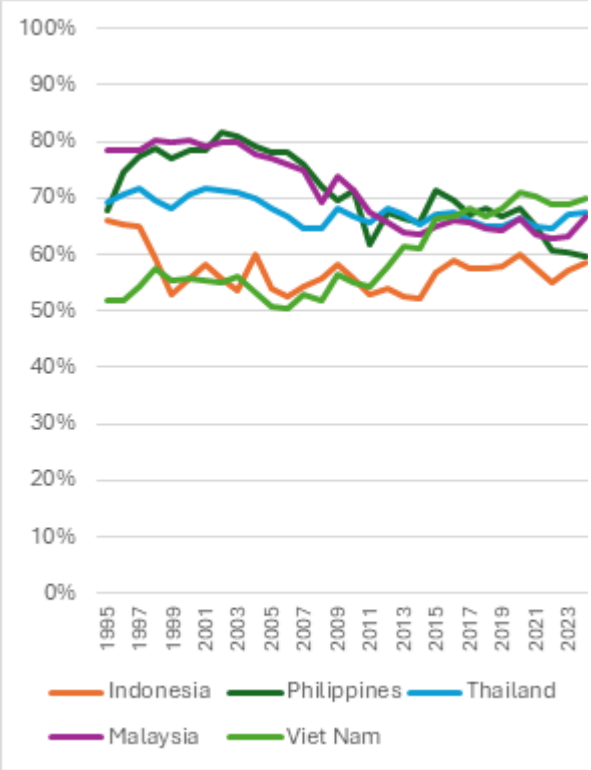
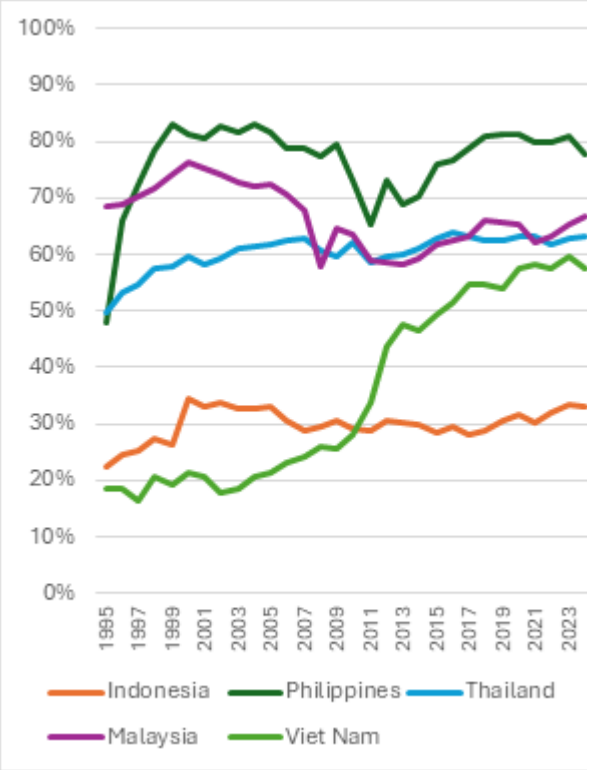


Figure 18. Exports of medium- and high-technology manufactured (% manufactured goods)



Source: UNIDO Annual Manufacturing Trade Database (2026)

Domestic Buffering and Its Structural Limits in Indonesia's Manufacturing Sector

A central pillar of Indonesia's resilience lies in the size of its domestic market. As one of the largest consumer bases in Southeast Asia, domestic demand functions as a critical shock absorber during periods of global downturn. When export markets weaken, firms, particularly in sectors such as textiles and basic consumer goods, can pivot toward domestic consumption, allowing production to be partially sustained. This demand buffer is further reinforced by government fiscal interventions. During crises such as the COVID-19 pandemic, instruments such as cash transfers (BLT) and tax incentives (e.g., VAT borne by the government, *PPN DTP*) helped maintain purchasing power and stabilise aggregate demand. In parallel, import substitution programs have sought to anchor domestic demand within national supply chains, generating multiplier effects across industries.

Beyond demand-side resilience, Indonesia also benefits from its relatively shallow integration into GVCs. Compared to highly export-oriented economies such as Vietnam or Singapore, its manufacturing sector is less dependent on complex cross-border production networks. While this limits opportunities for scale and technological upgrading, it also reduces exposure to cascading disruptions in global supply chains. In periods of global fragmentation or logistical breakdowns, this lower level of integration can therefore act as a form of passive insulation.

However, this relative insulation is closely linked to Indonesia's position within GVC governance structures, which often remain shallow and, in some cases, captive. In such arrangements, local firms are typically confined to lower value-added activities with limited scope for learning and upgrading. Moreover, the GVC framework, often underestimates the agency of local firms in the learning process. At the same time, prevailing governance structures within these value chains can actively constrain the ability of domestic producers to build capabilities and move into higher value-added segments.[47]

Escaping these constraints requires specific domestic conditions, most notably, a well-functioning innovation system capable of absorbing, adapting, and diffusing new technologies.[48] As highlighted in the literature, such conditions were present in economies like South Korea and Taiwan during their industrial transformation, but are often lacking in many developing countries today, including Indonesia.[49] As a result, while limited GVC integration may reduce external vulnerability, it also reflects, and reinforces, structural barriers to technological upgrading and long-term industrial competitiveness.

These market-based buffers are complemented by a set of policy-driven instruments designed to strengthen domestic industrial capacity. Regulatory tools such as *Standar Nasional Indonesia* (SNI) and *Tingkat Komponen Dalam Negeri* (TKDN) function as protective mechanisms, encouraging the use of local inputs and reducing excessive reliance on imports. Similarly, export restrictions on raw materials, most notably nickel and bauxite, serve as defensive buffers aimed at securing domestic input availability while advancing downstream industrialisation. The broader strategy of industrial downstreaming (*hilirisasi*) reflects a deliberate effort to restructure the economy toward higher value-added activities and reduce exposure to volatile global commodity cycles.

At the production level, there are also emerging signs of supply-side buffering. Certain domestic industries, notably in automotive, steel, and electronics, have the potential to

[47] Kadarusman, Yohanes, and Khalid Nadvi. 2013. "Competitiveness and Technological Upgrading in Global Value Chains: Evidence from the Indonesian Electronics and Garment Sectors." European Planning Studies 21 (7): 1007–28. doi:10.1080/09654313.2013.733850.
[48] Pietrobelli, C., & Rabellotti, R. (2011). Global value chains meet innovation systems: Are there learning opportunities for developing countries? *World Development*, 39, 1261–1269.
[49] Pahl, Stefan, and Marcel P. Timmer. 2020. "Do Global Value Chains Enhance Economic Upgrading? A Long View." *The Journal of Development Studies* 56 (9): 1683–1705. doi:10.1080/00220388.2019.1702159.

serve as intermediate suppliers within broader manufacturing ecosystems. Cross-sector collaboration, including partnerships between assemblers and local component producers, could, in principle, strengthen domestic linkages and reduce import dependence. The development of industrial estates and special economic zones (SEZs), alongside ongoing investments in logistics and energy infrastructure, further aims to enhance the reliability and scalability of domestic production systems.

Box 2. Why is the Electronics Sector in Indonesia Lagging Behind? Lesson Learned from Batam SEZ

Being one of the fastest growth sectors in 1980s and early 1990s, Indonesia's electronics industry still lags behind its regional peers due to a combination of structural, institutional, and technological constraints that limit its ability to integrate into and upgrade within GVCs, especially after 1998 Asian Financial Crisis. While neighbouring economies such as Malaysia, Vietnam, and Singapore have successfully positioned themselves as key nodes in electronics production networks, Indonesia remains largely confined to lower-value segments, with limited progress toward higher value-added activities.

A key structural issue lies in the underdevelopment of the domestic components and semiconductor ecosystem. Indonesia's electronics sector is heavily dependent on foreign direct investment (FDI), primarily from Japanese and other multinational corporations, whose operations in the country are typically limited to low-technology segments such as assembly, testing, and packaging. These activities require relatively lower skill levels and generate minimal technological spillovers. Critically, higher-value functions, such as chip design, wafer fabrication, and advanced R&D, are almost entirely absent. Compared to regional peers, Indonesia lacks the institutional and industrial infrastructure necessary to support innovation-driven activities, resulting in weak domestic capability in core electronics technologies.

This limitation is further compounded by weak linkages within domestic value chains. Many electronics manufacturers in Indonesia rely heavily on imported intermediate inputs due to the absence of local suppliers for critical components such as compressors, motors, and advanced semiconductors. As a result, even final goods manufacturing, such as refrigerators and air conditioners, faces cost inefficiencies and production delays. Poor logistics and infrastructure further exacerbate these challenges, increasing the cost of imported inputs and reducing overall competitiveness. Without a robust base of intermediate industries, Indonesia struggles to achieve the economies of scale and efficiency required to compete in more advanced electronics segments.

This is also due to increasing protectionism and aversion toward imports, which are heavily needed for our electronic industries.[50] The number of various non-tariff measures and import-restricting policies has increased in the last few years, under the subtle public sentiment that imports are bad for the economy and therefore need to be avoided in general. This is also implied by government's import-substituting strategy, targeting increased domestic electronics production which unfortunately did not happen.

Labour and human capital constraints also play a significant role. Although Indonesia offers a large labour force, the availability of high-skilled labour required for advanced electronics manufacturing remains limited. This becomes a critical bottleneck for firms seeking to move into more sophisticated production processes, such as precision assembly for smartphones or semiconductor manufacturing. In contrast, countries like Vietnam and Malaysia have made more substantial investments in technical education and workforce development aligned with industry needs, making them more attractive destinations for high-tech manufacturing investment.

In addition, regulatory and policy-related factors have undermined Indonesia's attractiveness as a GVC hub. Historically, areas such as Batam developed as export-oriented electronics clusters due to their proximity to Singapore. However, over time, labour disputes, regulatory uncertainty, and rising costs reduced their competitiveness, prompting many firms to relocate to alternative locations in Southeast Asia. More recently, Indonesia's industrial strategy has tended toward a relatively inward-looking approach, emphasising full localisation rather than strategic integration into global production networks. This has been accompanied by limited targeted incentives for the development of component industries, further discouraging investment in higher-value segments.

Technological upgrading has also been slow, reinforcing Indonesia's position in declining product segments. The country has not successfully transitioned from lower-technology electronics, such as DVD players, radios, and CRT televisions, toward high-growth products like advanced smartphones, tablets, and semiconductor components. This stagnation reflects both supply-side constraints (limited innovation capacity and R&D investment) and demand-side challenges (inability to meet global quality and specification standards). As a result, Indonesia risks experiencing a "hollowing-out" effect, where even existing manufacturing activities relocate to more competitive countries offering better infrastructure, skilled labour, and policy support.

[50] A. Patunru & S. Rahardja (2015) "Trade protectionism in Indonesia: Bad times and Bad Policy" Lowy Analysis, Lowy Institute for International Policy, July.

Ultimately, Indonesia's low participation in electronics GVCs reflects the interaction of multiple reinforcing factors: weak domestic industrial depth, limited technological capabilities, inadequate human capital, and misaligned policy frameworks. Without significant improvements in these areas, the country will continue to face difficulties in upgrading its electronics industry and capturing greater value within global production networks.

Another shared challenge across these subsectors is the limited depth of Indonesia's domestic industrial ecosystem. Aerospace and shipbuilding firms emphasise that while Indonesia possesses engineering talent and assembly capabilities, it lacks a sufficiently robust ecosystem to retain and fully utilise that talent domestically. Shipbuilding firms also highlight the need to consolidate domestic shipyards and increase government support for local industries to reduce import dependence. Aerospace firms similarly note that local content requirements remain difficult to implement for major components due to limited domestic scale and certification capacity. Textile firms face analogous constraints at a lower technological level: production machinery is typically imported, maintenance often requires foreign technicians, and domestic suppliers for specialised materials remain limited.

More fundamentally, the structure of Indonesia's manufacturing sector reveals a pattern of dual pressure. Upstream industries are often concentrated among a limited number of players, leading to price distortions, limited competition, and inefficiencies in input markets. Downstream, domestic producers face intense competition from imported finished goods, compressing margins and weakening incentives for investment and upgrading. This structural squeeze limits the ability of firms to fully leverage domestic demand as a reliable buffer.

In addition, several systemic constraints continue to undermine adaptive capacity. Weak infrastructure and high logistics costs reduce competitiveness and limit supply chain integration. The availability of skilled labour and technical expertise remains insufficient to support industrial upgrading. Low levels of research and development (R&D) investment constrain innovation, while fragmentation across firms, sectors, and institutions inhibits coordination and scale. Regulatory complexity and policy inconsistency further add to uncertainty, discouraging long-term investment.

Even in sectors where domestic industrial capacity exists, quality and capability gaps persist. For example, while Indonesia has a significant steel industry, domestic producers have not consistently met the specifications required for higher-end industrial applications, necessitating continued reliance on imported inputs. This illustrates a broader challenge which is the domestic supply buffers existence although they are not yet robust enough to fully substitute for global dependencies.

Taken together, these dynamics suggest that Indonesia's resilience is largely reactive rather than proactive. It relies heavily on market size, temporary policy interventions, and partial insulation from global integration, rather than on deeply embedded structural strengths. While domestic buffering provides short-term stability, it does not automatically translate into **long-term competitiveness** or upward movement in GVCs.

The policy challenge, therefore, is not merely to preserve these buffers, but to transform them into the foundations of systemic resilience, where domestic demand, industrial capacity, and policy frameworks are aligned to support sustained upgrading, innovation, and integration on more favourable terms.

Diversification in Manufacturing Sector: Strategy, Scope and Direction

Against the backdrop of increasing global fragmentation, supply chain disruptions, and shifting geopolitical alignments, diversification has emerged for Indonesia not merely as a policy option, but as a structural necessity. However, diversification must be understood as a multidimensional and state-coordinated process, one that spans production structures, markets, partnerships, and institutional capacity.

At its core, diversification operates along three interconnected dimensions. First, upstream diversification seeks to reduce dependence on a narrow set of foreign suppliers by expanding sourcing options while simultaneously building domestic production capacity for critical inputs. This aligns closely with Indonesia's ongoing emphasis on *hilirisasi* (downstreaming) and domestic content policies (TKDN), which aim to strengthen industrial self-sufficiency without resorting to full autarky. However, achieving this requires moving beyond basic processing toward deeper industrial upgrading, from Industry 2.0 levels of efficiency and automation to more advanced Industry 3.0 and 4.0 capabilities. There is no shortcut.

Second, diversification must take place at the level of industrial structure. This involves both vertical and horizontal transformation. Vertically, Indonesia faces persistent gaps in intermediate industries, particularly in strategic sectors such as the nickel-to-battery-electric vehicle value chain, where upstream extraction has advanced more rapidly than downstream integration. Filling these gaps is critical to building a more complete and resilient domestic value chain. Horizontally, diversification requires expanding into new sectors driven by technological change, digitalisation, and higher value-added activities. Yet, many of these opportunities remain underdeveloped not due to lack of awareness, but because they are perceived as high-risk and unattractive to private investors. High entry barriers, stemming from capital intensity, technological requirements, and scale constraints, limit participation, often concentrating investment among large conglomerates.

Third, market diversification is essential in the context of rising protectionism and demand uncertainty. Indonesia must expand beyond traditional export destinations by engaging non-traditional markets in regions such as Africa, the Middle East, and Eastern Europe, while maintaining and upgrading its position in established markets. Strategic economic diplomacy plays a key role here, not only in reducing trade barriers but also in ensuring that partnerships are complementary, matching external demand structures with domestic production capabilities. At the same time, diversification of partners, such as exploring closer ties with countries like Turkey, offers opportunities to navigate geopolitical rivalries, though it must be carefully managed to avoid tensions with traditional partners such as the United States.

Despite its strategic importance, the implementation of diversification is constrained by a complex political economy. One major challenge is the high cost of transition. Building new industries, upgrading technology, and diversifying suppliers requires substantial investment, long time horizons, and often entail short-term efficiency losses. These costs are compounded by institutional fragmentation, where weak coordination across government agencies and misalignment between public policy and private sector needs to create bottlenecks in financing, regulation, and capability development.

More fundamentally, diversification efforts are shaped by structural capability constraints. Indonesia's innovation ecosystem remains underdeveloped, with low levels of R&D investment and limited collaboration between industry and research institutions. Human capital gaps further constrain progress, particularly in high-skill sectors that require advanced technical expertise. Experiences such as the B2B collaboration between Indonesia and the US company illustrate both the potential and the limits of technology transfer: while local capabilities can improve, high entry barriers, such as certification requirements, safety standards, and licensing costs, remain difficult to overcome without sustained investment and long-term policy commitment.

In addition to domestic constraints, diversification also introduces new risks. One key concern is the emergence of new dependencies. For example, while downstreaming policies in sectors like nickel have increased value-added exports, they have also created reliance on imported machinery, chemicals, and processing technologies. This suggests that diversification does not automatically eliminate vulnerability but can instead shift its form.

Geopolitical risks further complicate the landscape. Expanding into new markets and partnerships may trigger reactions from existing partners, including potential trade retaliation or diplomatic pressure. In an increasingly polarised global environment, Indonesia must carefully balance its diversification strategy to maintain its *"bebas dan aktif"* (free and active) foreign policy stance. This requires not only strategic alignment but

also contingency planning, developing alternative pathways to mitigate potential disruptions.

There are also risks of overexposure and uneven development. Increased foreign investment in downstream sectors, if not accompanied by effective technology transfer and domestic capability building, may lead to external dominance over strategic industries. Similarly, excessive reliance on export markets, even diversified ones, can leave the economy vulnerable to global demand fluctuations.

Given these challenges, diversification cannot rely solely on market mechanisms. It requires a shift toward strategic and coordinated state intervention. Industrial policy emerges as the central instrument in this process. The government must play an active role in reducing entry barriers, particularly in intermediate industries, through targeted financing facilities, investment incentives, and partnerships between state-owned enterprises and private firms. Strengthening domestic demand through stabilisation policies is equally important, ensuring that industries have a reliable market base during external shocks.

At the same time, investments in enabling factors are critical. This includes improving logistics and distribution systems to enhance supply chain efficiency, reforming regulatory frameworks to reduce uncertainty and improve coherence, and investing in human capital through vocational training and stronger industry linkages. Strengthening the national innovation system, through increased R&D spending and collaboration, is essential to support both vertical and horizontal diversification.

Finally, economic diplomacy and trade agreements constitute another key pillar. Strategic agreements, which go beyond the traditional market access FTAs, such as the Indonesia–EU CEPA and Indonesia–Canada CEPA can serve as instruments for market diversification, while also embedding higher standards in sustainability and industrial practices. Beyond market access, diplomacy must also support the development of strategic sectors, facilitate technology transfer, and secure Indonesia's position within evolving global and regional supply chains. Regional integration, particularly within ASEAN, offers a pathway to build more resilient and diversified production networks. By deepening economic cooperation and aligning industrial strategies, Indonesia can leverage regional markets both as a buffer against global shocks and as a platform for scaling its industrial capabilities.

Sectoral Analysis: Technology

Like manufacturing, technology is a prerequisite for Indonesia to leapfrog and transform its economy. However, the structural challenges it presents are distinct. Two stand out. The first is the international structure of technology products, where supply chains are highly concentrated and barriers to entry steep. As a result, Indonesia's position is likely more as a consumer than a high-tech producer. The second is the absence of a national innovation ecosystem capable of capturing technology transfers and converting them into domestic productive capacity.

This section extends its focus beyond conventional manufacturing. It expands on the electronics sector while covering high-tech manufacturing, with semiconductors as the central case, and beyond-manufacturing technologies. The 2021-2022 global chip shortage, noted in CSIS Indonesia's Strategic Dependence Report, serves as a useful entry point: its effects on Indonesia's electronics and telecommunications industry exposed dependencies that had been latent and sharpened the case for treating technology as a priority. Throughout this section, technology is understood as both an arena and an instrument of strategic diversification.

Table 10. Strategic Diversification Framework Assessment: Technology Sector

Framework Category	Dimension	Key Evidence	Priority Action
Core Diversification Mechanism	**Substitutability**	Import dependence on China for the majority of top ICT export products and digital infrastructure presents significant substitutability question. Many ICT components are also traded via air transport, making them susceptible to logistical disruptions. The COVID-19 pandemic, which led to the closure of Changi Airport, and the ongoing Middle East crisis have both caused delays and increased the cost of trade in high-technology goods.	• Provide accessible capital for technology firms to explore alternative foreign suppliers • Facilitate academia-industry research network focused on substitute intermediate products in ICT exports of highest value to Indonesia and greatest import dependence • Renew strategic partnership with other countries to include clauses on supply chain & logistics in times of crisis

Framework Category	Dimension	Key Evidence	Priority Action
	Redundancy	Semiconductor inventory buffering is typically undertaken through frontloading by private technology companies, rather than facilitated by the state. Given the complex temperature controls, security requirements, and specialised nature of the storage facilities involved, the associated costs are substantial. This bears similarity to the stockpiling of chemicals, which face analogous challenges of costly storage conditions and limited shelf life.	• Incentivize existing foreign semiconductor firms to deepen their operations • Initiate discussion on the viability of regional semiconductor buffer stockpile arrangements through ASEAN • Institutionalize a supply chain monitoring function that tracks import dependence thresholds, sharing intelligence with technology industry through a structured mechanism
	Resilience Building	The domestic market for semiconductors remains limited, as high-tech components are consumed primarily by the automotive, electronics, and defence industries, with few linkages among them. As evident during the 2022 chip shortage, no credible government contingency plan was observed.	• Designate a lead inter-agency body responsible for ICT supply chain contingency coordination • Institutionalize regular whole-of-government simulation exercises covering worst-case supply disruption scenarios involving technology firms I. Strengthen cross-sectoral linkages among the automotive, electronics, and defence industries to enable inter-industry substitution during supply shocks
	Competitive Leverage	natural resource advantage that could support downstream semiconductor development, through its rare earth element (REEs) potential and silica deposits for wafer production. This is	• Leverage domestic procurement and market access for genuine technology transfer conditions. • Offer time-bound import duty waivers on capital equipment and intermediate inputs to

Framework Category	Dimension	Key Evidence	Priority Action
		complemented by the emergence of national champions with established linkages to diverse multinational technology companies.	measurable investment in REE exploration and silica processing • Create a standing inter-agency review panel that audits every active agreement for unexercised technology transfer entitlements
Enabling Condition	**Capability Upgrading**	Low research and development investment and limited industry-research linkages remain significant constraints. State research agencies are not connected to prototype production capacity, and there is no regular review mechanism to assess local content contribution to national champions or technological innovation	• Scale IC design talent through sustained funding for ICDEC with specific target number of professionals • Connect graduating IC designers to actual firms with prototype demand • Increase R&D spending allocation specifically to applied microelectronics research within existing universities
	Institutional Flexibility	The country's avoidance of minilateral technology forums, such as those affiliated with the Quad or the Critical Minerals Ministerial, and its continued reliance on United Nations mechanisms, limits its engagement with emerging technology governance architectures. Inter-agency coordination linking critical mineral policy to emerging technology development is absent.	• Selectively engage minilateral technology forums as a non-aligned observer • Initiate bilateral technology dialogues with tech-dependent economies by deploying joint techno-diplomatic delegations • Commission an independent technology dependency audit visible to foreign investors and partner governments

External Dependence and the Nature of Exposure

Indonesia's Strategic Dependence Report (2025) already captures the broad contours of the country's technological exposure. This section builds on that foundation. The starting point is that Indonesia's exposure is not primarily a domestic capacity problem. It is, to a significant degree, a byproduct of the international structure of technology supply. Over the past two decades, China has moved well beyond replicating products from developed countries. Through sustained investment in domestic innovation, subsidies, education, productivity, and automation, and accelerated by its post-WTO accession in the 2000s, China has become an inventor of technology in its own right. It has overtaken Japan and the United States as the primary source of low- and mid-technology inputs for many developing countries, offering scale, speed, and price that few can match. The supplier landscape is therefore gradually concentrated but not monopolistic. China dominates across a wide range of technology, from smartphones to electric vehicles. Advanced economies even treat it as an efficient node in their supply chains whether willingly or not. Though, China does not yet possess the cutting-edge capacity to produce the smallest chips like NVIDIA or indispensable lithography tools like ASML, its reach across HS 84 and HS 85 product categories is substantial.

This situation has created two types of external strategic dependence for Indonesia. The first looks at the perspective of developing economies like Indonesia with no capacity to produce high-technology goods, but which still have an export-oriented industrial base in certain electronics goods and automotive products. There is a strong and rational urge to simply import inputs from China rather than sourcing from local counterparts, let alone pushing to develop an autonomous supporting input industry. China's products are often cheap with acceptable precision and with complementary services that appeal to domestic businesses conscious of cost margins. This is why, during a field visit to Batam, the research team encountered a perception that China's cost competitiveness likely poses a structural challenge for Batam's labour-intensive electronics industries. Indonesian manufacturers find it difficult to compete against Chinese products and Chinese technological advancement, whether in third markets or domestically. However, this dependency also has a catch: if Chinese input prices rise, the cost of Indonesian electronics exports will also increase, reducing competitiveness in downstream markets. A further reflection from a field visit to the Indonesia Morowali Industrial Park (IMIP) for a separate study is that Chinese labour tends to have less freedom of union and fewer holidays compared to labour of other nationalities, which sits uneasily with Indonesia's democratic governance. As a result, this situation is neither something to be normalised nor unique to Indonesia's case. Import data for HS 84 and HS 85 show a continuing concentration. China's inputs remain pervasive in Indonesia's electronics exports because no other country can offer similarly cost-friendly alternative sources.

Table 11. Top Indonesia's ICT Imports (HS Code 84-85)

Commodity - product desc	Suppliers	% to total trade	Total trade value	% of total Indonesia's export	CR4	N of partner
851779 (Communication apparatus; parts, other than aerials and aerial reflectors of all kinds)	China	69.1%	2,864,104.0	1.23%	95.5%	63
	Korea, Rep.	13.4%				
	Hong Kong, China	7.1%				
	Vietnam	5.9%				
854290 (Parts of electronic integrated circuits)	Taiwan, China	27.6%	2,412,045.0	1.03%	82.0%	76
	China	23.3%				
	Philippines	16.2%				
	Korea, Rep.	14.9%				
851713 (Telephone sets; smartphones for cellular or other wireless networks)	China	99.9%	1,944,397.0	0.83%	100.0%	55
	United States	0.0%				
	Germany	0.0%				
	Singapore	0.0%				
851762 (Communication apparatus (excluding telephone sets or base stations); machines)	China	50.0%	1,479,913.0	0.63%	79.4%	77
	Singapore	13.2%				
	United States	11.0%				
	Malaysia	5.2%				
847130 (Automatic data processing machines; portable, weighing not more than 10kg, consisting of at least a central processing unit, a keyboard and a display)	China	99.1%	1,381,736.0	0.59%	99.8%	49
	Vietnam	0.4%				
	Taiwan, China	0.2%				
	Korea, Rep.	0.1%				

Source: Authors' calculation from UN Comtrade

Moreover, China's technology is embedded in Indonesia's not only as an input of its electronics export but also for digital infrastructure. Drawing on a PRIO-CSIS Indonesia research report, Chinese firms have largely contributed to the growing cloud computing business in Indonesia, gained a first-mover advantage in data centres, and invested in the Palapa Ring Project.[51] Indonesia has also imported submarine fibre optic cables from China and prevailed Chinese suppliers for base transmission stations (BTS) in its 4G development project.[52] This form of dependence differs from commodity dependency. Whereas commodity dependency is visible, measurable, and politically legible, technology dependence is more diffuse, more deeply embedded in industrial and digital processes, and consequently harder to address through conventional policy instruments. In this sense, Indonesia is largely an end-user of the Chinese technology products it consumes, and its approach has been neither systematic nor strategically coherent compared to regional peers. Indonesia's electronics industry has largely functioned as an assembly and packaging hub, or operating like a tailor: assembling, packaging, and re-exporting without meaningful value-added contribution. The country has not yet entered real semiconductor manufacturing ecosystem. Its current involvement is limited to consultancy and solutions provision with relatively few actors even at that level. Sat Nusapersada is one of them with capability of assembling products for Huawei, Xiaomi, and HP across different production lines. This segment, however, is likely prone to be displaced by advances in operational technology or lower-cost labour elsewhere, particularly when compared to the higher-value design end of the chain.

The second concerns the perspective of developed economies. They have generally been preoccupied with the competitiveness of their advanced industries, particularly following the 9/11 incident and China's rise as a manufacturer of lower- and mid-technology goods. This concern has driven the gradual evolution of economic security as a policy framework over the past few years. Previously, restrictions were placed primarily to ensure that designated state and non-state actors were prohibited from accessing semiconductors under international export control regimes. Indonesia was affected during this earlier period, and due to the 2002 Bali bombing where the perpetrator used integrated circuit in the cell phone,[53] it had to introduce a restricted import list (*larangan terbatas*) which included semiconductor component. However, developed countries are now more focused on maintaining their technological edge. This includes securing raw materials from mineral-rich countries, diversifying manufacturing bases beyond regional flashpoints, and imposing economic statecraft on trade and investment flows in cutting-

[51] Fitriani, Muhammad Habib Abiyan Dzakwan, Clarins Shieryl, "Understanding Contested Norms on Indonesia's Digital Technology," (Jakarta: CSIS Indonesia Research Report, 2024).
[52] Fitriani, Muhammad Habib Abiyan Dzakwan, Ilaria Carrozza, "The Politics of Subsea Cables in Indonesia: Navigating Great Power Competition," PRIO Policy Brief, 15. Oslo: PRIO.
[53] "Cell phones used to detonate Bali bombs," Al Jazeera (Reuters), 9 July 2003, https://www.aljazeera.com/news/2003/7/9/cell-phones-used-to-detonate-bali-bombs. The information is also supplemented by interview with one of the resource persons in Batam.

edge technologies, dual-use and advanced manufacturing goods. A key vulnerability developed countries identified is that fundamental semiconductor inputs are sourced predominantly from China and with virtually no viable alternative sourcing. China has already demonstrated a willingness to restrict export licences for these materials,[54] not merely to end-market countries but to intermediate producers whose outputs flow into U.S. defence supply chains.

Table 12. Spectrum of U.S.-China Economic Statecraft

Spectrum of U.S. Economic Statecraft on Technology									
Export Restriction	Export Ban	Import Restriction	Import Ban	Inbound Foreign Investment Screening	Inbound Foreign Investment Ban	Outbound Investment Control	Outbound Investment Ban	International Financial Transaction Prohibition	International Asset Takeover
Spectrum of China's Economic Statecraft on Technology									

Source: CSIS Indonesia Policy Paper on Navigating Great Power Technological Competition (2024)

Even in the absence of geopolitical rivalry, a functional semiconductor or high-tech ecosystem is already knowledge-based, brain-intensive, and capital-intensive. The nature of technology itself means that barriers to entry are exceptionally high: investment requirements are extreme, payback periods are long, and the pace of technological change makes catching up structurally difficult. In the current climate of geopolitical competition, Indonesia could suffer collateral damage from the technological rivalry between developed countries and China, as enforcement mechanisms against supply chain coercion and transshipment hubs expand. The US-Indonesia Agreement on Reciprocal Trade is a case in point, where Indonesia is not permanently forced to choose sides but is expected to consult, as stipulated in Section 5.[55] This poses challenges not only to Indonesia's non-aligned foreign policy but also to its credibility as a neutral destination for investment in the technology sector. The dilemma frequently surfaces in practical terms: securing access to the US market, Indonesia's largest export destination, requires placing origin restrictions on products with Chinese affiliations in their input chains, while at the same time Indonesian industrial upgrading and manufactured exports remain reliant on accessible Chinese technology.

[54] Ma Jingjing, "China announces export control measures on technologies related to rare earths," Global Times, 9 October 2025, https://www.globaltimes.cn/page/202510/1345279.shtml.
[55] "AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND THE REPUBLIC OF INDONESIA ON RECIPROCAL TRADE," United States Trade Representative, https://ustr.gov/sites/default/files/files/Press/Releases/2026/02.19.26%20US-IDN%20ART%20Full%20Agreement%20-%20US%20Final%20for%20Website%20sanitized.pdf.

Table 13. Top Indonesia's ICT Exports (HS Code 84-85)

Commodity	Destination	% to total trade	Total trade (1000 US$)	% to total Indonesia's export	CR4	N of partner
851762 (Communication apparatus (excluding telephone sets or base stations); machines)	United States	57.32%	1,563,072.0	0.59%	72.9%	72
	United Kingdom	6.13%				
	Singapore	4.95%				
	Australia	4.45%				
854370 (Electrical machines and apparatus; not specified or included elsewhere in this chapter)	United States	66.46%	1,453,978.0	0.55%	83.6%	73
	Japan	9.37%				
	Singapore	4.11%				
	Canada	3.63%				
852872 (Reception apparatus for television)	Korea, Rep.	29.45%	1,142,870.0	0.43%	59.4%	68
	Australia	13.71%				
	Vietnam	10.28%				
	United Arab Emirates	5.98%				
844331 (Printing, copying, and facsimile machines)	United States	26.38%	1,095,386.0	0.41%	75.1%	36
	Germany	24.14%				
	Japan	18.47%				
	China	6.06%				
854430 (Insulated electric conductors; ignition wiring sets and other wiring sets of a kind used in vehicles, aircraft or ships)	Japan	75.64%	1,000,575.0	0.38%	94.1%	53
	United States	11.66%				
	Vietnam	3.64%				
	Canada	3.15%				
8541 (Semiconductor devices;	United States	75.59%	812,526.2	0.31%	88.6%	50

Commodity	Destination	% to total trade	Total trade (1000 US$)	% to total Indonesia's export	CR4	N of partner
including photovoltaic cells assembled or not in modules or panels, light-emitting diodes (LED) assembled with other LEDs or not, mounted piezo-electric crystals)	Japan	5.32%				
	Hong Kong, China	4.64%				
	Vietnam	3.06%				

Source: Authors' calculation from UN Comtrade

In this competitive environment, developing economies are often required to have a strategic trade management framework aligned with the United States should they want to pursue a path of high-technology manufacturing. Indonesia, however, does not have such a framework, leaving it exposed to technology access restrictions that are applied not through targeted sanctions but through compliance requirements it cannot currently meet. Indonesia's lack of a domestic export control law means it cannot credibly participate in the trusted trade partner frameworks that govern access to the most strategically sensitive technologies. Among neighbouring countries, Malaysia and Singapore have already put such frameworks in place. The recently established Johor-Singapore special economic corridor,[56] with better connectivity, clearer land tenure, and more reliable infrastructure, presents an emerging competitive pressure and raises questions about the full impact on Indonesia as it seeks to attract more investment through complementarity with Singapore, on which Batam is dependent.

Geopolitical trends pose challenges beyond rivalry alone. The conflict in Iran has created additional difficulties for technology development in Indonesia. Gulf countries that could have served as potential financiers are now focused on managing post-war reconstruction in their own region rather than investing in capital-intensive sectors like technology elsewhere. Meanwhile, developed countries, which generally provide financing for semiconductor and high-tech development and on which Indonesia is externally dependent, may also pose patent and Intellectual Property (IP) capture risks. For Indonesian technology sectors, the risk of IP ownership being transferred as a condition of financing is concrete and illustrates how capital dependency can produce IP dependency regardless of where the technology is actually developed. For Indonesian

[56] "What you need to know about the: Johor-Singapore Special Economic Zone (JS-SEZ)," EDB Singapore, https://www.edb.gov.sg/en/johor-singapore-special-economic-zone.html.

technology start-ups at the design stage seeking to raise capital, early funding from American investors has often required the establishment of a US-based entity as a condition of investment. U.S. money often is required to flow to US companies, meaning IP is legally owned by the US entity, with patents registered internationally but belonging to the American corporate structure. This is a rational consequence of global venture capital structures, but its implications for Indonesia's technological depdenency are significant.

Domestic Buffering and Its Structural Limits in Indonesia's Technology Sector

Indonesia's limited utilisation of high-technology sectors[57] presents a dilemma. In the short term, it provides domestic buffer to the disruptions exposure reshaping global technology supply chains. In the longer term, it represents a structural gap that must be closed if the country is serious about leapfrogging. The upstream raw material dimension illustrates this tension well. Indonesia may hold significant rare earth element (REE) potential in Bangka, Papua, and other regions, though this remains unconfirmed. The deeper problem is that even assessing that potential requires technology Indonesia does not yet possess. The country lacks the detection technology to evaluate its own subsurface resources with confidence. As a result, rare earth tailings from existing mining operations are being discarded without extraction, representing a permanent loss of strategic value, and the REE content embedded in sands currently being sold abroad has not been fully recognised. The Prabowo administration has begun to respond. The Mineral Industry Agency has been established with a two-year mandate to complete exploration and exploitation preparations, working alongside the National Research and Innovation Agency to revitealise a prototype facility at Tanjung Ular, Bangka. Perminas, a newly established state-owned enterprise, has been created to explore commercialisation prospects. Danantara has attempted to provide budgetary support.

A second potential domestic buffer lies in the rise of national champions and their networks. These actors are modest in number but meaningful in positioning. Nicslab, for instance, operates at the higher-value design stage. Its development of photonic chip design capability places it at a genuine technological frontier in an area not yet commercially mature, and it has already secured leading clients including NVIDIA and NASA. Batam Polytechnic has built IC packaging specialisation over a decade,[58] and ITB leads the ICDEC IC design consortium.[59] Semiconductor curricula are only beginning to

[57] Please revisit the data of top ICT export and import Indonesia as provided above.
[58] "Teaching Factory Ready to Produce IC Packaging and PCB up to 6 Layers," Polibatam, 21 June 2022, https://www.polibatam.ac.id/en/teaching-factory-ready-to-produce-ic-packaging-and-pcb-up-to-6-layers/.
[59] "Indonesia Chip Design Collaborative Center "Pioneering Innovation"," ICDEC, https://www.icdec.or.id.

emerge at Indonesian universities, with the first such programme at Universitas Indonesia supported by a major European semiconductor company. Yet these actors are not receiving state support commensurate with their strategic value, and the barriers they face are practical and immediate. For technology start-ups, customs procedures present a recurring obstacle. Sending products abroad for customer testing and reimporting them for modification currently triggers deposit requirements equivalent to invoice value, processed through systems designed for conventional goods rather than research instruments. For educational institutions, the constraint is often employment rigidity. Universities working on technology need to absorb industry professionals as faculty, pursue team teaching with the private sector, and bring in foreign expertise, arrangements that current regulations do not easily accommodate. Brain drain remains a latent risk if Indonesia cannot offer sufficient laboratory facilities, career pathways, research funding, and industry linkages to retain its talent domestically. For consortia, the binding constraint is often tool access. Electronic design automation software required for chip design is expensive and proprietary, with licensing structures that are prohibitive for small firms and research institutions. Co-financial guarantees and targeted subsidies at this level would represent a high-leverage point for government intervention. Indeed, there is no single solution that fits all of these actors. But the commonality across cases is that the barriers are not primarily about ambition or capability.

Indonesia faces the challenge of aligning previous efforts under a coherent state vision rather than leaving strategic direction to the priorities of successive administrations. Technology development requires consistency and long-term predictability that electoral cycles alone cannot provide. The contrast with earlier periods is instructive. Under President Soeharto, the REPELITA framework embedded technology planning within a broader development architecture. Under President Habibie, science, technology, and strategic industries were treated as national priorities with institutional backing. Current policy lacks that coherence. The agenda is widely perceived as inconsistent, reactive, and personality-dependent. As discussed during a roundtable[60] with the Centre for Technology and Innovation Studies (CTIS), Indonesia's institutional architecture was once more conducive to technological advancement. The head of BPPT simultaneously served as Director of Strategic Industries, creating continuity across research, technology development, and industrial production. State-owned enterprises were assessed on their national strategic functions rather than evaluated solely on profit and loss. Over time, that architecture has fragmented. The research function has been reduced largely to academic output, detached from prototype development and industry linkage. The consequences are visible in practice. The high-speed rail project proceeded without any evident technology masterplan, and the degree to which PT LEN and PT INKA obtained

[60] "Dari Tambang ke Geopolitik: Strategi Indonesia Mengelola Logam Tanah Jarang," CTIS, March 2026, https://ctis.id/2026/03/.

meaningful train manufacturing technology transfer from their Chinese partner remains questionable. This pattern raises legitimate doubts about whether newer initiatives will fare differently. The Coordinating Ministry for Economic Affairs' semiconductor task force[61] and the talent programme in electronics assembly developed in partnership with ARM[62] are promising on their face, but it remains unclear whether they will address the valley of death problem, where technology development stalls between research and commercialisation and never reaches industrial application, or whether they will confront the more fundamental absence of a technology tree. Indonesia currently has a product tree (*pohon produk industri*) but not a technology tree. This is a distinction that matters enormously for building indigenous capability rather than simply assembling imported components.

The regulatory and governance context complicate this structural challenges. As noted above, Indonesia lacks a dedicated export control law, which is a fundamental prerequisite for participation in the global semiconductor ecosystem. Export controls cannot be adequately addressed through presidential or government regulations alone. Countries serious about becoming semiconductor players must have such a law in place. Given that semiconductors and other high-technology sectors are inherently geopolitical, the Ministry of Foreign Affairs cannot be excluded from the development of such regulation, yet its role in this space remains limited. A related problem is the absence of coordination between those managing critical minerals and those managing ICT and semiconductor policy. The Ministry of Energy and Mineral Resources' grand design for energy and critical minerals[63] does not substantively address how those minerals connect to emerging technology manufacturing. Similarly, the Artificial Intelligence (AI) action plan[64] does not address the raw materials and intermediate product on which AI hardware depends. These reflect a broader fragmentation of the policy architecture governing technology. Conventional economic nationalism in regulation is also likely hampering technological advancement. Domestic content requirements (TKDN) are not always straightforwardly beneficial when domestic components are often more expensive and of lower quality, making compliance a competitive disadvantage rather than an industrial stimulus. A more productive framing of technological sovereignty would centre on productivity, integration into global supply chains, and securing the quality of Indonesia's final output rather than controlling inputs. Nationalism cannot be measured from inputs alone. The focus must be on making chips and working backward

[61] "Kick-off Meeting Satgas Penyiapan Ekossitem Semikonduktor: Awal dari Era Baru Industrialisasi di Indonesia," Coordinating Ministry for Economic Affairs, 28 March 2024, https://www.ekon.go.id/publikasi/detail/5700/kick-off-meeting-satgas-penyiapan-ekosistem-semikonduktor-awal-dari-era-baru-industrialisasi-di-indonesia.
[62] "Pemerintah Siapkan SDM Unggul untuk Masuki Industri Semikonduktor Global," Coordinating Ministry for Economic Affairs, 6 March 2023, https://www.ekon.go.id/publikasi/detail/6843/pemerintah-siapkan-sdm-unggul-untuk-masuki-industri-semikonduktor-global.
[63] "Grand Strategy Mineral dan Batubara," Ministry of Energy and Mineral Resources, n.d. https://www.esdm.go.id/assets/media/content/content-buku-grand-strategy-komoditas-minerba.pdf.
[64] "White Paper: Roadmap for National Artificial Intelligence," Ministry of Communication and Digital (2025).

from that objective. Indonesian National Standards (SNI) for technology products are in most cases neither sufficiently specific nor compatible with international standards, creating friction for domestic producers trying to access global markets while offering insufficient protection against low-quality imports. Emerging technologies such as photonic chips exist in a regulatory vacuum where customs officials and compliance officers do not know how to classify or treat them. At the same time, technology cooperation joint statements, whether in economic comprehensive agreements or defence agreements at the bilateral level, frequently do not translate into operational technology transfer at the working level, producing what amounts to diplomatic engagement without industrial substance.

Diversification in Technology Sector: Strategy, Scope and Direction

Technology is an area where developing countries[65] like Indonesia have historically operated under asymmetric dependency toward Western partners and their multinational companies, shaped by path dependency and cost structures that are difficult to break. Yet strategic diversification is not off the table. It cannot, however, be pursued meaningfully without Indonesia first defining its ultimate ends. In technology, diversification must be anchored in interoperability and commercial feasibility that genuinely facilitates economic transformation. This requires several preconditions: a competitive ecosystem capable of absorbing new partners, sufficient capital to pursue alternative arrangements, and the market intelligence to identify where genuine opportunities exist. Without these, diversification aspirations remain declaratory rather than operational.

Indonesia must resist the temptation to simply replicate others. It has its own context as an emerging low-technology supplier and consumer, a mineral-rich country, and a state with a non-aligned foreign policy doctrine. Supply chain diversification away from China cannot be pursued wholesale. The more productive approach is to find ways to complement the existing regional technology ecosystem, particularly Singapore's, by capturing industrial spillover rather than positioning as a competitor. The Indonesia-Philippines experience in nickel offers a useful analogy: complementarity emerged once Indonesia focused on nickel intermediate products such as nickel pig iron and ferroalloys, allowing a better regional integration where the Philippines supplies nickel ore to Indonesia rather than compete with it directly. A similar logic could apply in other technology products.

[65] J. Hills, Dependency Theory and Its Relevance Today: International Institutions in Telecommunications and Structural Power. Review of International Studies, (1994), 169-186.

Manufacturing semiconductors does not have to be the primary goal. What matters more is identifying and building Indonesia's niche within the supply chain. Taiwan's and the Netherlands' global indispensability rests not on end-to-end semiconductor production but on unparalleled concentration in specific segments: advanced node fabrication in Taiwan's case, and a single category of semiconductor equipment in the Netherlands'. Lower-barrier, higher-flexibility entry points may therefore represent a more realistic pathway for Indonesia, including ICT product maintenance, repair and overhaul, and digital services. Advanced materials deserve particular attention in this regard, carrying a backward linkage multiplier of five times in added value, making them among the most strategically significant industrial entry points available to Indonesia.

Diversification of international technology partnership matters. The Minister of Science and Technology has already signalled a strategic decision to diversify technology partners, drawing from multiple sources rather than relying on a single country for REE processing. This reflects a broader imperative: Indonesia must develop its own capacity, as external dependency let alone on one partner is no longer a viable long-term strategy. Several models offer reference points for what technology-inclusive diplomacy looks like in practice, including the US-UK Technology for Prosperity Partnership and the EU-US Technology Council as structured frameworks for technology-intensive production sharing. These stand in contrast to Indonesia's existing bilateral working groups on science, technology, and higher education, which have tended to be less operationally focused.

Such technology partnership must not be limited to bilateral level, it needs to go beyond that. Indonesia has an interest in actively participating in shaping international norms around technology governance, particularly those that affect how developing and commodity-rich countries are positioned within global technology value chains. Indonesia pursued a version of this argument through the New International Economic Order in 1970s in the context of commodity value addition. The question now is what an equivalent intellectual contribution might look like specifically for the technology sector, and how Indonesia might advance it within multilateral and regional forums.

What matters more is how Indonesia facilitates technology firms in adopting strategic diversification. If the government sees participation in the semiconductor supply chain as a pathway to diversify away from commodity export dependence and assembly-stage reliance, the most immediate and concrete entry point is absolute compliance with industry requirements, particularly anti-corruption. This culture of zero-compromise compliance is a defining characteristic of the sector, internalised through multi-layered verification across vendor assessment, stockpiling, and beyond. This is not, however, an entirely glass-half-empty picture. The Quick-Response Code Indonesia Standard (QRIS) offers a rare domestic success, representing a genuine convergence between

government and business in diversifying payment technology beyond cash and credit cards. As it gains applicability in other countries, QRIS is also becoming a technological instrument for reducing dependence on the dollar in trade and pursuing local currency settlement. The challenge is how to transfer the conditions that made QRIS work, its anti-corruption foundations and technocratic discipline, to the broader technology sector, where the stakes are higher and the path considerably less straightforward.

Chapter 4. Institutional Readiness Under Pressure: Findings from the Crisis Simulation Exercise

The previous chapters of this report assessed Indonesia's structural exposure to external shocks and the extent of resilience across four strategic sectors, food, energy, manufacturing, and technology, and examined the concept of Strategic Diversification as a proactive framework for Indonesia's foreign economic policy. These analyses highlight that Indonesia's vulnerabilities are not confined to individual sectors, but arise from cross-sector interdependencies, external supply risks, and institutional coordination challenges. While sectoral analysis identifies where vulnerabilities exist, the state of resilience for each sector and the extent to which diversification has been pursued and how it may be pursued in the future, it has not yet captured how government institutions would respond when multiple pressures emerge simultaneously. The crisis simulation exercise was therefore designed to complement the analyses presented above by examining how Indonesia's policy institutions coordinate and make decisions under conditions of escalating geopolitical and economic disruption.

This simulation exercise represents the final phase of the broader Strategic Diversification project, which aims to move from diagnosis to operationalisation. Earlier phases of the project focused on conceptualising strategic diversification as a foreign economic policy framework, identifying sectoral vulnerabilities and resilience, conducting field research with industry stakeholders, and examining comparative practices. The simulation exercise builds on these earlier findings by stress-testing how Indonesia's institutions would respond to a crisis affecting multiple strategic sectors simultaneously. In this sense, the simulation functions as an applied test of whether Strategic Diversification can operate not only as a conceptual framework, but as a practical guide for interagency coordination and decision-making.

Beyond stress-testing, the simulation is also a deliberate learning instrument. In strategic diversification terms, it converts episodic crisis experience into institutional memory: clarifying trade-offs, surfacing coordination bottlenecks, and generating an evidence base for updating triggers, protocols, and decision dashboards. Without such learning routines, diversification risks remaining reactive even when the right tools exist.

The Strategic Diversification project is premised on the idea that Indonesia's economic resilience depends not only on reducing sectoral dependencies and having a strategic approach to diversification itself, but also on improving coordination across ministries

responsible for foreign economic policy. The simulation exercise was therefore designed to assess how institutions responsible for trade, investment, energy, food security, and diplomacy interact when confronted with a geopolitical disruption affecting supply chains and external economic relations. By observing these interactions, the exercise aims to identify whether existing institutional arrangements are sufficient to support a proactive diversification strategy.

The exercise was conducted as a 1.5-day scenario-based simulation involving representatives from relevant ministries, government agencies, and policy stakeholders. Participants were asked to respond to a series of escalating injects designed to simulate a geopolitical disruption affecting Indonesia's external economic relations. The scenario incorporated elements identified in earlier phases of the project, including supply chain disruptions, trade restrictions, energy price volatility, and pressures on critical imports. By grounding the scenario in empirically identified vulnerabilities, the simulation connects directly to the Strategic Diversification framework developed in this report.

The findings from this simulation therefore provide a bridge between conceptual analysis and policy implementation. While earlier chapters identify where Indonesia is vulnerable and how diversification could strengthen resilience, the simulation reveals how institutions behave when these vulnerabilities are activated. The results help assess whether Indonesia's current policy architecture supports proactive diversification or whether responses remain reactive, fragmented, and sector-specific. In doing so, the exercise contributes directly to the project's broader goal of developing Strategic Diversification as a coherent foreign economic policy framework and identifying pathways for strengthening interagency coordination in times of crisis.

Objective and Design of the Simulation Exercise

Objective

The simulation exercise was designed as a policy stress-test to assess how Indonesian government institutions would respond to a rapidly escalating geopolitical and geo-economic crisis. The goal was not to evaluate the final policy positions that arose as a result of the exercise, but rather the exercise sought to observe institutional instincts, coordination dynamics, and decision-making behaviour under conditions of uncertainty and time pressure. The primary objective was therefore to stress-test the default responses, or "go-to moves", of Indonesian governmental institutions when confronted with simultaneous economic, diplomatic, and security pressures. This included examining how ministries prioritised competing objectives, whether participants defaulted to

existing policy frameworks, and how quickly they shifted from reactive measures to strategic planning.

A second objective was to observe interagency coordination during a scenario of continued crisis escalation. The exercise focused on how different institutions interacted, how information was shared, and whether participants converged on a coherent national response. Because the scenario introduced trade disruptions, financial volatility, diplomatic pressure, and supply chain shocks simultaneously, participants were required to coordinate across economic, diplomatic, security, and other sectoral portfolios. The simulation therefore aimed to assess whether coordination mechanisms emerged organically, whether decision-making became centralised, and how disagreements or silos between institutions were managed. These dynamics were central to understanding not only the content of policy responses but also the institutional processes through which crisis decisions are made.

The simulation also sought to identify whether institutions relied on existing instruments or improvised new policy tools. Participants were confronted with dilemmas involving stockpile releases, fiscal volatility, diplomatic and military signalling, and supply chain shocks. These decisions required weighing trade-offs between economic stability, geopolitical positioning, and domestic political constraints. The objective was not to determine optimal policy outcomes, but to observe whether participants demonstrated policy instincts and whether relevant instruments were available and understood across institutions. The findings therefore emphasise behavioural patterns and institutional reflexes rather than definitive policy prescriptions.

Why Simulation Exercise as a Methodology

Simulation exercises, scenario-based policy games, and wargames have long been used as tools for examining decision-making under conditions of uncertainty, competition, and time pressure. Although they are often associated with military planning, the methodology has evolved well beyond operational combat analysis. Contemporary research and policy institutions now use simulation exercises to study escalation dynamics, interagency coordination, economic coercion, crisis management, and policy trade-offs in situations where real-world experimentation is either impossible or prohibitively costly. In this sense, simulation is best understood not as prediction, but as a structured method for generating insight into behaviour, institutional interaction, and decision processes under stress.

For example, a previously held economic wargame on trade conflict examined how governments would respond to tariff escalation and whether they would retaliate,

negotiate, or de-escalate under pressure, emphasising that the exercise was designed to "illuminate the various factors that could drive government decision-making" rather than produce predictive results.[66] Similarly, simulation-based studies of regional crises have emphasised the importance of testing coordination mechanisms and institutional readiness. Another simulation exercise observed Southeast Asia's crisis-response architecture, and its findings highlighted the lack of systematic crisis planning and the need to assess domestic coordination capacity before crises occur.[67] These studies underscore that simulation exercises provide insights into crisis literacy, experience, consensus, and capacity through direct interaction with track 1 and track 2 representatives, factors that are difficult to measure through other methods of analysis. Further, previously held policy wargames on specific conflict scenarios such as a Taiwan contingency similarly demonstrate the value of simulation as a methodology for exploring escalation dynamics and decision trade-offs during times of conflict. One previously held exercise used structured scenarios, escalation ladders, and repeated game iterations to examine how actors respond under uncertainty and pressure, allowing the organisers to identify patterns in behaviour and policy choices.[68]

The value of our simulation exercise lies in the fact that it was held between government institutions, ministries and agencies within a single state, rather than observing how different states would interact with each other in a given scenario. Our exercise therefore observed the interactive dynamics between institutions, and whether institutional instincts exist and where relevant policy instruments are available. The exercise does not capture the full range of government capabilities, nor does it provide definitive conclusions about Indonesia's crisis response. However, it generates insights that cannot be obtained through secondary data alone. Traditional qualitative and quantitative methods can identify policy documents, institutional mandates, and economic vulnerabilities, but they cannot observe how institutions interact in real time, how decisions are negotiated, or how trade-offs are prioritised under pressure. Simulation exercises therefore provide a unique methodological advantage by revealing behavioural patterns and coordination dynamics that remain invisible in documentary analysis.

[66] Emily Kilcrease and Geoffrey Gertz, *Game Over? How the United States Could Have Won the Trade Wars* (Washington, DC: Center for a New American Security, August 2025).
[67] Evan A. Laksmana and Morgan Michaels, *Building Blocks: Enhancing Southeast Asia's Crisis-response Architecture* (London: The International Institute for Strategic Studies, March 2026).
[68] Mark F. Cancian, Matthew F. Cancian, and Eric Heginbotham, *Lights Out? Wargaming a Chinese Blockade of Taiwan* (Washington, DC: Center for Strategic and International Studies, July 2025).

How the Exercise Was Designed and What Was Observed

The simulation was conducted as a 1.5-day exercise structured around three sequential scenarios, each representing escalating stages of a geopolitical and geo-economic crisis. Time was compressed so that approximately one and a half days of gameplay represented several months of real-world developments. Participants operated within institutional roles and were required to make decisions without consulting external authorities. The exercise emphasised decision-making rather than extended analytical discussion, and facilitator-driven injects introduced new developments that required participants to adapt their responses. These rules ensured that the exercise simulated the pressures and constraints of real-world crisis management.

Participants were selected to represent key government actors, which included the presidency, cabinet secretary, foreign affairs, macroeconomic coordination, finance, trade, industry, energy, agriculture, investment, defence, and the private sector. Each participant role played as the institution as assigned by the facilitating team. Participants were encouraged to advance policy positions according to the mandate, incentive and constraints of their institution, although it was also emphasised that participants were not 'representing' their institutions per se, but merely providing insight as to how their institution might make decisions in the scenarios provided to them. This structure allowed the simulation to replicate interagency coordination dynamics and observe how different institutions interacted when confronted with overlapping policy challenges.

The scenario design followed an escalation logic. The initial phase introduced early stress signals, including export controls, supply chain disruptions, and rising logistical costs. Subsequent phases introduced coercive economic measures, diplomatic pressure, financial volatility, and disruptions to strategic commodities. The final phase simulated severe regional instability, including maritime disruptions and cyber incidents, pushing participants to coordinate across economic, diplomatic, and security domains. The scenario therefore evolved from manageable uncertainty to systemic crisis, forcing participants to adjust their responses as the situation deteriorated.

Each scenario contained structured injects that introduced new information and forced decision points. These injections included further supply chain disruptions, commodity price spikes, diplomatic pressure from major powers, and domestic socio-political and economic volatility. Participants were required to respond within compressed timelines, often with incomplete information, with information delivered to participants in select and different manners, such as through private briefings, diplomatic cables or breaking news announcements. The inject-based design allowed facilitators to test how institutions adapted to new developments, whether or not and how new developments

were shared amongst participants when facilitators delivered injections only to a select few, and whether coordination improved or deteriorated over time.

The exercise focused on observing several dimensions of behaviour. First, interactions between participants were observed to assess whether coordination mechanisms emerged organically or required facilitation. Second, decision-making processes were examined to determine whether responses were centralised, fragmented, or negotiated across institutions. Third, the exercise observed how ministries balanced sectoral priorities, including economic stability, foreign policy positioning, and domestic welfare considerations. Fourth, the simulation examined whether participants relied on existing policy instruments or improvised new measures. These observations provided insight into institutional instincts and crisis response behaviour.

Overall, the simulation was designed to replicate decision-making under uncertainty, interagency coordination pressures, and escalating geopolitical constraints. By structuring the exercise around sequential scenarios and inject-driven developments, the simulation provided a controlled environment for observing institutional behaviour. The findings therefore grant some insight into how Indonesian governmental institutions interact, prioritise, and respond when confronted with sustained crises.

Key Themes and Findings

The central findings of the simulation exercise are as follows:

II. Shared Threat Awareness but Weak Strategic Coherence

A central finding of the simulation is that participants demonstrated strong awareness of the scale and multidimensional nature of the crisis. Across institutions, there was rapid recognition that the scenario involved simultaneous disruptions to trade flows, financial stability, energy supply, food security, and geopolitical positioning. Participants also understood that Indonesia faced structural pressure from major power rivalry, particularly in the form of economic coercion, supply chain fragmentation, and demands to align with competing blocs. This shared threat perception enabled ministries to quickly identify vulnerabilities and propose policy responses across their respective sectors.

However, despite this broad consensus on risks, the simulation revealed limited strategic coherence in translating awareness into unified national direction. Ministries tended to propose responses anchored in their own mandates, such as trade diversification, fiscal stabilisation, diplomatic outreach, or defence readiness, without consistently linking these measures into a single policy framework. As a result, discussions often remained

reactive rather than strategic, with institutions outlining parallel responses instead of converging on a coordinated national approach. Reflection discussions noted that deliberations frequently remained at the brainstorming stage rather than progressing toward strategic decisions anchored in a shared set of priorities.

This pattern suggests that Indonesia's interagency system possesses strong analytical capacity but limited mechanisms for strategic consolidation. Institutions understand the risks posed by geopolitical crises, yet the translation of risk assessment into unified decision-making remains underdeveloped. In practice, this creates a situation where multiple policy options coexist without clear prioritisation, potentially slowing response time in real crises.

III. Persistent Interagency Silos in Crisis Decision-Making

The simulation also highlighted the persistence of interagency silos, even under high-pressure conditions. Ministries approached the crisis through their institutional mandates, resulting in fragmented discussions across economic, diplomatic, and security domains. Economic actors focused on stabilising markets and diversifying trade, foreign policy actors emphasised hedging and diplomatic engagement, and defence actors concentrated on preparedness and contingency planning. While each response was individually coherent, they were not consistently integrated into a whole-of-government strategy.

Participants noted that fragmentation was particularly evident in cross-cutting areas such as food security, energy resilience, and supply chains, where responsibilities are distributed across multiple institutions. Overlapping mandates complicated coordination, and discussions often shifted between sectoral perspectives without a mechanism for consolidation. Reflection sessions emphasised that siloed thinking remained visible throughout the exercise and that institutions needed to step beyond their respective mandates to identify national-level priorities.

Another manifestation of these silos was the gap between policy proposals and implementation clarity. In several instances, participants proposed decisions but did not specify which institutions would execute them, how coordination would occur, or what timeline would apply. This resulted in decisions that remained conceptual rather than operational. The simulation therefore revealed that while Indonesia's interagency system can generate policy ideas quickly, it faces challenges in translating those ideas into coordinated action.

IV. Slower Decision-Making when faced with Escalation

The simulation further showed that decision-making slowed as the crisis intensified. In early phases, participants moved relatively quickly to identify risks and outline possible responses. However, as escalation increased through developments and scenario injects such as sanctions, currency depreciation, supply disruptions, and military signalling, discussions became more deliberative and less decisive. Institutions debated multiple options without selecting clear courses of action, and policy decisions were not always used as the basis for subsequent responses.

Reflection discussions identified the absence of predefined escalation thresholds and crisis triggers as a key factor contributing to slower decision-making. Without agreed benchmarks for when to shift from monitoring to intervention, institutions struggled to determine when stronger policy measures were required. Participants also noted the need for tiered crisis levels, each linked to specific policy responses.

This finding suggests that Indonesia's crisis response capacity is analytically strong but procedurally weak. Institutions are capable of identifying risks and proposing responses, yet the absence of predefined decision protocols limits the ability to move quickly under pressure. In real-world crises, such delays could increase economic and political costs.

V. Bebas Aktif as the Default Strategic Response

Another consistent pattern throughout the simulation was Indonesia's reliance on the *bebas aktif* policy doctrine as the default strategic response. Participants repeatedly emphasised maintaining a *bebas aktif* posture, avoiding alignment with either major power, and diversifying partnerships across multiple regions. This approach evolved into proposals for sector-based alignment, whereby Indonesia would cooperate with different partners in different domains, such as technology, manufacturing, or energy. Parallel diplomatic engagement with multiple partners, diversification of trade agreements, and expanded multilateral engagement also emerged as preferred options.

This convergence reflects the strong institutionalisation of strategic autonomy within Indonesia's foreign policy thinking. However, while it emerged as a consensus strategy, discussions revealed limited clarity regarding implementation. Participants debated how sector-based alignment would be operationalised, how retaliation risks would be managed, and how domestic industries would adapt to shifting partnerships, particularly during times of crisis, where the space to conduct political and economic manoeuvring is much more limited compared to peacetime contexts. The simulation therefore highlighted a gap between strategic doctrine and operational planning. *Bebas aktif* was widely supported as a guiding principle, but mechanisms for implementing it during crisis conditions remained unclear.

VI. Domestic Stability as the Primary Crisis Priority

Despite coordination challenges, participants gradually converged on a set of immediate crisis priorities centred on domestic political and economic stabilisation. These included maintaining currency stability, securing food and energy supplies, preventing financial contagion, and managing public communication. The simulation also led to proposals for forming a cross-ministerial crisis task force, coordinating fiscal and monetary interventions, and accelerating supply chain diversification.

This convergence suggests that Indonesia's interagency system prioritises domestic stability as the foundation for broader crisis management. Even as geopolitical tensions escalated, discussions repeatedly returned to social stability and occurrence of public demonstration, inflation control, currency stabilisation, and supply chain security. This emphasis reflects the central role of economic resilience in maintaining political and social stability during external shocks.

VII. Crisis Communication: Recognised but Underdeveloped

The simulation also highlighted the importance of crisis communication while revealing gaps in preparedness. Participants emphasised the need for unified messaging, market reassurance, and coordinated public communication. Proposals included centralised communication through appointed spokespersons, regular briefings, and a unified policy approach.

However, discussions revealed uncertainty regarding communication authority, coordination mechanisms, and timing. Ministries were unclear about who should communicate decisions and how messaging should evolve as the crisis escalated. This suggests that while crisis communication is recognised as critical, it remains insufficiently institutionalised.

Towards a More Comprehensive National Crisis Response Framework?

Taken together, the simulation provides a nuanced assessment of Indonesia's interagency readiness under geopolitical pressure. On the one hand, the exercise revealed important institutional strengths. Participants across ministries demonstrated a high level of awareness of geopolitical risk, an understanding of Indonesia's structural economic vulnerabilities, and a strong commitment to preserving strategic autonomy. There was also a shared instinct to prioritise domestic stabilisation, particularly currency stability, food and energy supply, and financial resilience, as the foundation for broader

crisis management. Diplomatic responses were generally agile, with participants quickly proposing de-escalation initiatives, diversification strategies, and engagement with regional and extra-regional partners. These patterns suggest that Indonesia's policy community has internalised the risks associated with great power rivalry and recognises the need for flexible, multi-aligned responses.

At the same time, the simulation highlighted several structural weaknesses in interagency coordination and crisis decision-making. The persistence of ministerial silos limited the ability to translate shared threat perception into coherent national strategy. Discussions frequently remained sector-specific, with economic and political-security discussions evolving in parallel rather than as part of a unified policy framework. The exercise also revealed uncertainty over institutional roles during crisis conditions. While participants proposed a range of policy measures, implementation responsibilities and coordination mechanisms were not always clearly defined.

Further, the absence of predefined escalation thresholds, crisis levels, and decision triggers contributed to slower decision-making. This dynamic is particularly significant in geo-economic crises, where delays in response can amplify market volatility, supply disruptions, and political uncertainty. The simulation therefore underscores the importance of developing clearer crisis protocols, including tiered response frameworks and predefined coordination mechanisms across ministries.

Beyond identifying strengths and weaknesses, the exercise also revealed areas where interagency coordination could be improved. First, there is a need for clearer whole-of-government crisis leadership structures. While participants discussed forming cross-ministerial task forces, the simulation showed that leadership authority and decision hierarchies remain ambiguous. Establishing predefined coordination structures, activated automatically during crises, could improve decision-making speed and policy coherence. Second, institutional roles should be clarified in advance, particularly in cross-cutting areas such as food security, energy resilience, and industrial supply chains. Predefined responsibilities would reduce duplication and improve implementation. Third, crisis communication mechanisms should be institutionalised. The simulation highlighted the importance of unified messaging, but also revealed uncertainty regarding communication authority and coordination. Developing a standing crisis communication framework would enhance public confidence and market stability.

The simulation also demonstrates the value of scenario-based exercises as a methodology for policy research and planning. Unlike traditional analytical approaches, simulations allow policymakers and researchers to observe decision-making dynamics in real time, including coordination challenges, institutional behaviour, and trade-offs between competing priorities. The exercise revealed patterns, such as slowing decision-

making under escalation and persistence of institutional silos, that may not be visible in conventional policy discussions. By compressing time and introducing uncertainty, simulations expose procedural weaknesses and coordination gaps that become critical during real crises.

At the governmental level, simulations can serve as tools for contingency planning and institutional learning. By rehearsing crisis scenarios, ministries can clarify roles, test coordination mechanisms, and identify bottlenecks before real crises occur. The exercise also highlights the importance of repeated simulations. Several participants noted that familiarity with crisis coordination improves through practice, suggesting that regular scenario-based exercises could strengthen institutional preparedness. Over time, such exercises could contribute to the development of shared crisis playbooks, clearer escalation thresholds, and more integrated interagency responses.

Ultimately, the simulation reveals that Indonesia's interagency system is conceptually prepared for geopolitical crises but operationally uneven. Institutions share a common understanding of risks and demonstrate strong commitment to strategic autonomy, yet coordination mechanisms remain fragmented and decision-making slows under pressure. Strengthening whole-of-government planning, clarifying institutional roles, and institutionalising crisis communication would improve readiness. At the same time, the exercise itself demonstrates the utility of simulation-based research as a tool for identifying policy gaps, improving coordination, and supporting evidence-based policy planning. In an increasingly fragmented geopolitical environment, such approaches offer a practical means of enhancing both analytical understanding and operational preparedness.

Chapter 5. Operationalising Strategic Diversification: Decision Rules for Policy

Strategic diversification becomes meaningful only when it changes how policy choices are made under constraint. This section provides **decision rules** that translate the adopted framework into a usable tool for prioritisation, partner choice, sequencing, and crisis action. The rules work under the assumption that overarching securitisation of the economy should be avoided. It also reflects the Foreign Minister's articulation of *strategic diversification* as a *bebas aktif* approach to navigating multiple platforms without "choosing sides."[69]

These rules elaborate further the fixed diversification mechanisms (substitutability, redundancy, resilience-building, competitive leverage) and enabling conditions (capability upgrading, institutional flexibility). The "strategic" element is the overlay: for a diversification framework to be strategic, it needs purpose (clear priorities and thresholds), learning (feedback and adaptation), and institutionalisation (routines, data, coordination)**.** Hence, such rules are set for normal mode and crisis mode.

Rule 1 – Purpose First: Decide Why Before Deciding How

Decision rule no.1 is that

"*a diversification action is strategic only if it is explicitly tied to a stated purpose and time horizon***.**"

This may include:

- **Stability purpose (0–24 months):** prevent disruption from becoming inflation, fiscal stress, or continuity failure.
- **Transformation purpose (2–7 years):** reduce structural bottlenecks, upgrade capability, move up value chains.
- **Autonomy purpose (continuous):** preserve room to maneuver by avoiding exclusive dependencies and retaining option value.

[69] Kementerian Luar Negeri Republik Indonesia, "Transkrip Pernyataan Pers Tahunan Menteri Luar Negeri RI Tahun 2026," January 2026, https://kemlu.go.id/publikasi/pidato/pidato-menteri/transkrip-pernyataan-pers-tahunan-menteri-luar-negeri-ri-tahun-2026?type=publication.

Across discussions, the main failure mode was not lack of options but unclear priorities under constraint, producing additive initiatives and delayed decisions ("muddling through"). The crisis simulation further highlighted that, under pressure, participants converged on *domestic stability* as the overriding priority while struggling to articulate pre-agreed trade-offs.

Checklist for purpose under normal mode can include several elements. First, for each sector, policymakers must declare the dominant purpose for the next 12–24 months (stability vs. transformation emphasis). Second, policymakers must identify what trade-off is acceptable, for example cost vs. speed, resilience vs. efficiency, short-term buffering vs. longer-term upgrading. Third, in relations to Rule 2, policymakers may require that any Tier 1 action (see below) names a purpose and a horizon.

Rule 2 – Triage Dependencies with Thresholds: Tier 1 / Tier 2 / Tier 3

Here, policymakers should

"*classify dependencies using measurable thresholds*."

A dependency is **Tier 1 (strategically material)** if it passes **two or more** of the following tests:

1) **Essentiality test:** critical to welfare/stability or to priority upgrading;
2) **Concentration test: Top-1 partner share ≥ 50%**, or **CR4 ≥ 75%**, or **HHI ≥ 0.25**;
3) **Transmission test:** fast pass-through to inflation, fiscal stress, or industrial stoppage;
4) **Substitutability test:** switching is slow/costly (qualification, standards lock-in, long lead times);
5) **Jobs test:** high or regionally concentrated employment exposure, which requires a complete dataset of jobs dependency;
6) **Rule-volatility test:** high exposure to licensing, export restrictions, interventions, or sanctions regimes, which requires a systematic dataset on policy risk layers.

The example made in this report is in the energy sector. Indonesia's 2024 HS27 imports are **US$36.5 billion**, with **HS2710 refined fuels US$21.5 billion** and **HS2709 crude US$10.3 billion**; refined fuels are ~**67.6%** of petroleum oils imports. HS2710 is concentrated this way: Singapore **52.9%**, Malaysia **21%** (**73.9%** combined), with **HHI =**

0.332; more concentrated than 2023 (Singapore Malaysia combined for ~72% with HHI ≈ 0.30). This meets the essentiality, concentration, and transmission tests and should be treated as Tier 1 even when partners like Singapore and Malaysia are friendly, because the exposure is structural and systemic.

A checklist for purpose under normal mode requires tiering. For each sector basket, an effective agency under Foreign Ministry, working in relation with other relevant stakeholders that can provide data and information, shall continuously compute and regularly update Top-1, CR4, and HHI by HS6 using reliable dataset of export-import. Indonesian government working in effective multiagency coordination hence must continuously create and publish a Tier list, that includes Tier 1 – critical, Tier 2 – watchlist, and Tier 3 – routine governance. Such function also requires a mechanism plan (Rule 3) for every Tier 1 dependency within one quarterly cycle.

Rule 3 – Match the Mechanism Mix to the Constraint; Do Not Default to "Add Partners"

Under this rule, policymakers should

"*choose mechanisms by* constraint type*."*

Constraint types include:

- **High concentration + viable substitutes exists:** prioritise **substitutability** (pre-qualified suppliers, specification flexibility, standards compatibility).
- **Substitutes exist but cannot be activated quickly:** prioritise **institutional flexibility** (multi-supplier framework contracts, pre-approved contingency clauses, fast procurement rules).
- **Fast transmission to prices/fiscal stability:** prioritise **redundancy + resilience-building** (stocks, buffers, continuity planning, targeted fiscal stabilisers).
- **Structural capability gap:** prioritise **capability upgrading** (domestic processing, logistics, skills, technology acquisition) and use **redundancy** as interim protection.
- **Where Indonesia has bargaining potential:** use **competitive leverage** to widen options and improve terms without exclusivity.

The simulation done under this research repeatedly demonstrated that "having many partners" is not the same as "having options": when contracting templates, logistics arrangements, and inter-agency routines are not pre-positioned, substitutability cannot be activated in the first 72 hours of crisis.

Rule 4 – Sector Differentiation: Apply Different Sequencing Logic

Under this decision rule,

"sector pathways determine sequencing."

There are different pathways in sectors we have observed:

- For **stability sectors** such as **food and energy:** sequence **redundancy** → **resilience-building** → **substitutability**, with **capability upgrading** as structural relief.
- For **leap-forward sector** such as **manufacturing:** tolerate some concentration if it accelerates upgrading, but impose conditionality through **capability upgrading** and **competitive leverage** while at the same time use **redundancy** for critical bottlenecks.
- For **enabling sector** such as **technology:** avoid lock-ins by combining **substitutability + institutional flexibility + capability upgrading**, supported by rule-anchored partnerships. This is where foreign policy strategy must precede diplomatic action.

In stability sectors, there are indicative thresholds to trigger "fast sequencing." If Tier 1 import line has **HHI ≥ 0.25** and "shock transmission" is rapid, redundancy plans are required within 90 days and pre-positioned substitutability within 180 days.

Rule 5 – Partner Selection is Portfolio Management, Not Alignment

Adopting such decision rule, for Indonesia it means

"partner choice should expand option value consistent with bebas aktif principle and avoid exclusivity."

There are three portfolio principles that can be applied:

1) **Non-exclusivity:** avoid arrangements that foreclose alternatives unless exit routes remain credible.
2) **Option value:** prioritise partners that expand usable options (swap capacity, logistics access, standards interoperability, technology pathways).

3) **Rule anchoring:** prefer diversification embedded in rules and standards, not discretionary goodwill.

The following key questions can be asked in partner screening.

1) Does this relationship increase **substitutability** (i.e. qualified alternative supplier)?
2) Does it increase **redundancy** (including stocks, storage, finance, logistics)?
3) Does it support **capability upgrading** (including skills, domestic value-added, technology access)?
4) Does it improve **institutional flexibility** (i.e. faster approvals, mutual recognition, crisis protocols)?
5) Does it preserve room to manoeuvre (i.e. no exclusivity, no single-platform dependence)?

Rule 6 – Distinct Governance Modes: Build Options (Normal) vs. Use Options (Crisis)

Here,

"*strategic diversification requires two operating modes with explicit triggers*."

Explicit triggers occur in different mode:

1) **Normal mode (quarterly):** build capability, diversify contracts, institutionalise dashboards, reduce Tier 1 concentration.
2) **Crisis mode (activation):** prevent cascade effects using redundancy and rapid coordination while activating pre-positioned substitutability.

Here are some relevant indicative crisis triggers:

- **Concentration trigger:** Tier 1 line has **Top-1 ≥ 60%** and the top supplier/hub is disrupted, which need a good and reliable dataset on trade.
- **Chokepoint/price trigger (energy):** confirmed chokepoint disruption signal plus sharp price/freight/insurance movement.
- **Policy trigger (manufacturing):** export restriction/licensing affecting Tier 1 input (export restrictions have risen sharply in recent years, increasing volatility).

- **Fiscal trigger (energy):** subsidy/compensation projections surge in ways that crowd out upgrading; benchmark reference, for example fuel subsidies and compensation rose to **Rp502.4 trillion** in 2022.[70]

Table 14. Data-to-decision mapping: how indicators feed the rules

Indicator (what it measures)	Used for	Which rule(s) it informs	Necessary Data Set
Top-1 share / CR4 / HHI (concentration)	Tiering; trigger thresholds; partner portfolio risk	Rules 2, 5, 6	Export import data including product code, partner name, trade flow name, and trade value also, map dependencies
ECI / capability metrics (structural competitiveness)	Identify structural gaps vs marketable substitutions; set upgrading priority	Rules 1, 3, 4	ECI annex dataset
TiVA exposure (foreign value added; input dependence)	Detect supply-chain depth and fragility; choose resilience vs upgrading	Rules 2, 3, 4	TiVA annex dataset
Job dependency (employment exposure to specific dependencies)	Prioritise buffering and sequencing; avoid abrupt switching that triggers instability	Rules 1, 2, 4	Jobs dependency datasets
Rule-volatility indicators (interventions/sanctions exposure)	Elevate policy-risk test; prioritise rule-anchored diversification	Rules 2, 5, 6	Policy-risk datasets

To adopt such rules, the government needs governance protocols that combines institutionalising purpose, learning, and coordination. Under normal mode review, these rules and dataset must be observed regularly. Under *Kemlu* leadership, especially the newly established Ditjen HEKSP, the government shall convene the external portfolio review, so all partners, corridors, agreements, standards are consistent with the Minister's framing of resilience and strategic diversification as a *bebas aktif*. *Kemlu's* internal research unit must develop and maintain such data set and review results, ideally under *Badan Strategi Kebijakan Luar Negeri* (BSKLN). However, sector ministries retain mandates (ESDM for energy; Industry for manufacturing; Trade; Finance; etc.). *Kemlu* does not displace them; it aligns external choices with national priorities and ensures options are pre-positioned.

[70] Sekretariat Kabinet Republik Indonesia, "Press Statement of President of the Republic of Indonesia Regarding Reallocation of Fuel Subsidy Funds, at Merdeka Palace, Jakarta, September 3, 2022," https://setkab.go.id/en/press-statement-of-president-of-the-republic-of-indonesia-regarding-reallocation-of-fuel-subsidy-funds-at-merdeka-palace-jakarta-september-3-2022/.

Here, establishing a dashboard, shared "Strategic Diversification Dashboard" is essential. Such dashboard combines Tier list, concentration metrics (Top-1/CR4/HHI), TiVA/ECI/job exposure indicators, and rule-volatility signals. Core trade baseline must always be maintained, updated, and available for public scrutiny.

Implicit in such line of thought is that economic security is the context; strategic diversification is the governance-led response – targeted risk management that sustains openness where it builds welfare and capability, and intervenes where concentrated dependencies create unacceptable volatility. A crisis activation protocol can be activated if necessary. It can happen when there is trigger confirmation (≤6 hours), i.e. when dashboard check + sector ministry verification; declare crisis mode for relevant Tier 1 items.

If such a protocol is activated:

First decision meeting (≤24 hours): chaired by relevant coordinating authority; *Kemlu* leads external options stream (fallback arrangements, supplier outreach, corridor facilitation), while sector ministry leads operational stream (stocks, procurement, distribution, fiscal measures).

Decision package (≤72 hours): (i) redundancy measures; (ii) substitutability actions; (iii) unified communication plan (our simulation exercise highlighted this as recognised but under-institutionalised); (iv) diplomatic tasks; (v) next review timeline.

After-action review (≤30 days): codify lessons; update thresholds, templates, tier list (Learning; Institutionalisation).

Chapter 6. Conclusion and Policy Recommendations

From Exposure to Strategic Agency

Indonesia's foreign economic policy is entering a period where the conditions that once underpinned openness are no longer stable. Interdependence now operates under stress. Supply chains are increasingly shaped by geopolitical rivalry, trade instruments are used for strategic purposes, and disruptions – whether in the Middle East, global shipping routes, or technology networks – travel faster and with greater intensity than before. In such an environment, the central challenge is not whether Indonesia should remain integrated into the global economy, but how that integration can be governed in ways that preserve stability, enable transformation, and protect autonomy.

This report has addressed that challenge by introducing **Strategic Diversification** as both a conceptual and policy framework. It does not advocate withdrawal from global markets, nor does it assume that openness will remain benign. Instead, it recognises that interdependence must be actively managed. Diversification, in this sense, is not new to Indonesia. The country has long engaged multiple partners, signed agreements across regions, and explored alternative markets. Yet, as the analysis has demonstrated, these efforts often remain fragmented and reactive. The central problem is therefore not the absence of diversification, but the absence of **a strategic logic that governs it**.

The framework developed in this report makes this distinction explicit. At the functional level, diversification operates through substitutability, redundancy, resilience-building, and competitive leverage, supported by capability upgrading and institutional flexibility. These dimensions explain how exposure can be reduced and options expanded. However, they only become meaningful when embedded within a strategic layer – one defined by purpose, sustained learning, and institutionalisation. It is this layer that transforms diversification from a collection of instruments into a coherent policy approach.

Across sectors, a consistent pattern emerges. Indonesia possesses options, but struggles to activate them effectively. In food, supply alternatives exist but are constrained by regulatory structures and entrenched networks. In energy, diversification of suppliers masks deeper concentration in refining stages and transport routes. In manufacturing, upgrading ambitions are limited by capability gaps and uneven policy alignment. In each case, vulnerability persists not because diversification is impossible, but because it is not organised strategically.

At the same time, Indonesia retains a degree of strategic space. Its economic structure is not yet fully locked into rigid dependency patterns. Its resource base, domestic market size, and expanding diplomatic engagement provide room to act. This creates a critical policy window: Indonesia can still shape its diversification pathway deliberately, rather than being forced into reactive adjustments under crisis conditions.

The report has evaluated sectoral dynamics through three overarching strategic purposes – **transformation, security, and autonomy**. These are not automatically aligned. Policies that prioritise industrial upgrading may deepen short-term dependencies; measures to ensure supply security may impose fiscal or efficiency costs; efforts to preserve autonomy may constrain external opportunities. Strategic Diversification does not eliminate these trade-offs, but it requires that they be managed consciously. The key shift is from implicit trade-offs, shaped by institutional inertia, to explicit prioritisation, guided by national objectives.

The findings also highlight that Indonesia's exposure is fundamentally institutional. The constraints lie less in the absence of alternatives than in the fragmentation of decision-making, the weakness of coordination, and the lack of systematic learning. The simulation exercise is particularly revealing in this regard. It shows that vulnerabilities emerge not only from external shocks, but from internal limitations: fragmented data, unclear institutional roles, and delayed coordination. Conversely, it also demonstrates that outcomes improve significantly when fallback options, communication channels, and decision frameworks are pre-positioned. This reinforces a central conclusion of the report: **resilience is not built during crisis, but before it**.

In this context, the role of the Ministry of Foreign Affairs becomes more clearly defined. Rather than acting solely as a diplomatic actor, *Kemlu* is positioned as a coordinator of Indonesia's external economic engagement. Its comparative advantage lies in managing partner portfolios, negotiating fallback arrangements, and linking external opportunities with domestic priorities. This does not imply centralisation of all economic policy within *Kemlu,* but rather the establishment of a strategic interface through which Indonesia's external relations can be aligned with its diversification objectives.

Policy Recommendations: From Framework to Action

The transition from concept to implementation requires translating Strategic Diversification into a set of actionable priorities. Rather than presenting an exhaustive list, this section consolidates key recommendations into a structured matrix that reflects the logic of the framework and the findings across sectors.

Table 15. Strategic Layer of Key Recommendations

Strategic Layer	Policy Direction	Key Actions	Institutional Anchor
Purpose	Define clear prioritisation across sectors	Identify critical sectors (food, energy), transformation sectors (manufacturing), and enabling sectors (technology); establish acceptable dependency thresholds	*Kemlu* + other relevant government planning agencies
Learning	Institutionalise adaptation and feedback	Conduct regular crisis simulations; integrate FGD and simulation insights into policy review; develop early warning systems	*Kemlu* + sectoral ministries
Institutionalisation	Strengthen coordination and execution	Establish inter-agency coordination mechanism for foreign economic policy; align domestic and external policy instruments	*Kemlu* (coordinating role)

This strategic layer must be supported by operational measures across the core diversification mechanisms.

Table 16. Diversification Mechanisms Operational Measures

Dimension	Policy Focus	Illustrative Actions
Substitutability	Enable switching across suppliers and inputs	Expand supplier base; remove regulatory bottlenecks; develop fallback agreements
Redundancy	Build buffers and alternative channels	Increase reserves; diversify logistics routes; strengthen storage capacity
Resilience-building	Strengthen system absorption capacity	Improve fiscal management; enhance infrastructure; support domestic production
Competitive Leverage	Use assets strategically	Leverage critical minerals; align trade and industrial policy; focus on key markets

While these measures apply across the economy, their implementation must be differentiated by sector. Food requires stability and price control; energy requires both short-term resilience and long-term transition; manufacturing requires upgrading and integration into higher-value chains; and technology acts as a cross-cutting constraint and enabler. This differentiation ensures that diversification does not become a uniform policy applied indiscriminately, but a tailored strategy aligned with sectoral realities.

A Strategic Code for Policy Navigation

To guide implementation without overcomplicating execution, the report proposes a set of simple but durable principles:

- Diversification should be pursued **before crisis, not during it**
- Dependencies should be assessed **across systems, not only partners**
- Openness should be preserved, but **exposure must be governed**
- Capabilities must accompany diversification, or dependence will persist
- Coordination is not optional – it is the condition for strategy

Final Reflection

Strategic Diversification is not a temporary adjustment to a turbulent moment. It is a long-term orientation for navigating a world where economic relations are increasingly shaped by power, uncertainty, and disruption. For Indonesia, the challenge is not to retreat from this world, but to engage with it on more deliberate terms.

If successfully implemented, Strategic Diversification allows Indonesia to transform its position – from a passive recipient of external shocks to an active manager of its external economic relations. It ensures that openness remains a source of opportunity rather than vulnerability, and that autonomy is grounded not in isolation, but in the capacity to choose.

The alternative is not the absence of diversification, but its continuation in fragmented and reactive forms. In a global environment that is becoming less forgiving, that is a risk Indonesia can no longer afford.

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Appendix

Top Commodity - Export

Product Code	Desc	Trade Value (Mn USD)	% to Total Export	N of Partner	CR4	Biggest Destination	Market Share
270119	**Coal**; (other than anthracite and bituminous)	22,518.26	8.5%	22	65.3%	India	27.7%
151190	**Vegetable oils; palm oil**, other than crude, whether or not refined,	17,302.22	6.5%	144	44.8%	Pakistan	16.0%
720260	**Ferro-alloys**; ferro-nickel	14,061.46	5.3%	11	98.9%	China	94.3%
260300	**Copper ores** and concentrates	7,969.17	3.0%	14	82.1%	China	32.9%
270112	**Coal**; **bituminous**, whether or not pulverised, but not agglomerated	7,838.72	3.0%	18	85.6%	Japan	37.5%
270210	**Lignite**; but not agglomerated, excluding jet	7,341.10	2.8%	11	99.4%	China	97.7%
271111	**Petroleum gases** and other gaseous hydrocarbons; liquefied, natural gas	6,741.19	2.5%	12	89.4%	China	30.2%
711319	**Jewellery**; of precious metal (excluding silver) whether or not plated or clad with precious metal, and parts thereof	5,154.70	1.9%	40	75.5%	Switzerland	27.6%
750120	**Nickel**; and other intermediate products of nickel metallurgy	3,946.56	1.5%	5	100.0%	China	99.5%
870322	**Vehicles**; with only internal combustion piston engine, capacity 1000 -1500cc	3,810.73	1.4%	92	72.6%	Philippines	31.0%

Top Commodity - Import

Product Code	Desc	Trade Value (Mn USD)	% to Total Import	N of Partner	CR4	Biggest Supplier	Market Share
271012	**Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; light oils and preparations	13,846.97	5.9%	33	87.5%	Singapore	57.0%
270900	**Oils**; petroleum oils and oils obtained from bituminous minerals, crude	10,352.98	4.4%	23	74.4%	Nigeria	28.0%
271019	**Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; **not light oils** and preparations	7,709.09	3.3%	58	83.2%	Singapore	45.5%
710812	**Metals**; gold, non-monetary, unwrought (but not powder)	4,579.18	2.0%	17	84.4%	Australia	34.8%
100199	Cereals; **wheat and meslin**, other than durum wheat, other than seed	3,634.61	1.6%	20	80.5%	Australia	26.1%
170114	**Sugars**; cane sugar, raw, in solid form, not containing added flavouring or colouring matter	2,911.73	1.2%	8	100.0%	Brazil	64.8%
851779	**Communication apparatus**; parts, other than aerials and aerial reflectors	2,864.10	1.2%	63	95.5%	China	69.1%
270112	**Coal**; **bituminous**, whether or not pulverised, but not agglomerated	2,757.22	1.2%	13	99.1%	Australia	62.1%
230400	**Oil-cake** and other solid residues, resulting from the extraction of soya-bean oil	2,566.52	1.1%	13	99.5%	Brazil	73.7%

100630	Cereals; **rice**, semi-milled or wholly milled, whether or not polished or glazed	2,437.59	1.0%	19	98.1%	Thailand	32.5%

Top 1 Supplier Share in Selected Key Food Commodities (2024)

Commodity	Total import value	% of total import	N of partner	CR4	Top-1 Supplier	Supplier share
(100199) Cereals; **wheat and meslin**, other than durum wheat, other than seed	3,634,611	1.56%	20	80.5%	Australia	26.08%
(170114) Sugars; cane sugar, raw, in solid form, not containing added flavouring or colouring matter	2,911,728	1.25%	8	100.0%	Brazil	64.79%
(120190) Soya beans; other than seed, whether or not broken	1,402,569	0.60%	15	99.8%	United States	89.05%
(**3104) Fertilizers**; mineral or chemical, potassic	1,022,778	0.44%	29	88.4%	Canada	35.8%

Top 1 Supplier Share in Selected Key Energy Commodities (2024)

Commodity	Total import value	% of total import	N of partner	CR4	Top-1 Supplier	Supplier share
(271012) **Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; light oils and preparations	13,846,969	5.91%	33	87.50%	Singapore	57.01%
(270900) **Oils**; **petroleum oils** and oils obtained from bituminous minerals, **crude**	10,352,976	4.46%	23	74.38%	Nigeria	27.98%
(271019) **Petroleum oils** and oils from bituminous minerals, not biodiesel, not crude, not waste oils; **not light oils** and preparations	7,709,092	3.30%	58	83.24%	Singapore	45.52%

Top 1 Supplier Share in Key Manufacturing Commodities (2024)

Commodity	Total import value	% of total import	N of partner	CR4	Top-1 Supplier	Supplier share
(520100) **Cotton**; not carded or combed	811,283	0.35%	43	89.08%	Brazil	38.34%
(600410) Fabrics; **knitted or crocheted fabrics** of a width exceeding 30 cm,	494,874	0.21%	51	89.80%	China	48.17%
(590320) **Textile fabrics**; impregnated, coated, covered or laminated with polyurethane)	296,455	0.13%	47	89.00%	China	41.38%
(640690) **Footwear; parts**, n.e.c. in heading 6406	251,333	0.11%	55	94.81%	Vietnam	37.34%

Top 1 Supplier Share in Selected Key Technology Commodities (2024)

Commodity	Total import value	% of total import	N of partner	CR4	Top-1 Supplier	Supplier share
(851779) **Communication apparatus**; parts, other than aerials and aerial reflectors	2,864,104.0	1.23%	63	95.51%	China	69.08%
(854290) **Parts of electronic integrated circuits**	2,412,045.0	1.03%	76	82.02%	Taiwan, China	27.55%
(847130) Automatic **data processing machines**; portable, weighing not more than 10kg,	1,381,736.0	0.59%	49	99.76%	China	99.10%
(842952) Mechanical shovels, **excavators** and shovel loaders;	1,246,280.0	0.53%	16	95.43%	China	74.57%


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