Malaysia: Climbing the Chip Ladder from the Assembly Bench

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MacroLens Research | Case study for Sri Lanka | Prepared 7 October 2026 Evidence standard: every number comes from a Malaysian government body, the central bank, or a Sri Lankan official/statutory body, with URL, unit and date. "[Desk calc]" = our arithmetic on those numbers. "[Hypothesis]" = our reading, not established by the sources. Sources were read on 7 Oct 2026 and some are drafted from 2024-25 vintages (noted).

Abstract

Malaysia moved from commodities toward manufactured exports over several decades, with foreign electronics firms forming an important part of the documented cluster. Electrical and electronics rose to 61.7 per cent of gross exports in 2000 and was still 40.3 per cent in 2023, with 614,051 jobs and a wage premium over manufacturing as a whole. Malaysia now holds about 13 per cent of global assembly, testing and packaging, but that stage generates a small share of global value added. Officials therefore launched a National Semiconductor Strategy in 2024 (RM25 billion, targets for design firms and engineers). The case documents what the sources show, what they do not show, and what transfers to Sri Lanka. The main lesson is conditional: an enclave export platform can create jobs and skills, but it does not by itself create domestic champions. Sri Lanka's electronics base is small, so the relevant lesson is sequencing and institutions, not copying scale.

Opening hook

In 1972 a young Intel opened its first plant outside the United States on what had been a paddy field in Penang. Malaysia's own strategy document says it cost USD 1.6 million, and that future Intel CEO Andy Grove's car got stuck in the monsoon mud on a visit (MITI, National Semiconductor Strategy, Oct 2024). Fifty-two years later, electrical and electronic (E&E) products were RM575.5 billion, or 40.3 per cent, of everything Malaysia exported (DOSM, 2023). The surprising part of the Malaysian story is not how big the electronics business got. It is that after five decades Malaysia's own central bank and ministry describe an "entrenched presence in the back-end" (assembly and test) with only "some presence" in the front-end, and that its response in 2024 was to commit at least RM25 billion to climb higher.

1. Context and problem

Malaysia before the bet. The Bank Negara Malaysia (BNM) history of the export mix says exports moved from agricultural and mining products in the 1960s to manufactured goods in the 1980s, with manufacturing dominant by the late 1990s (BNM, "Greater diversification in the composition of export products", https://www.bnm.gov.my/documents/20124/830197/cp01_003_whitebox.pdf, undated, data to 2010).

The problem Malaysia was solving. A small open economy dependent on rubber, tin and later oil and palm needed jobs and foreign exchange that did not move with a single commodity price, and had little domestic

capital or technology for advanced manufacturing. [Hypothesis: this framing is our summary; the sources above describe the shift, not the policy motive.]

The problem Sri Lanka has. In 2023 Sri Lanka's merchandise exports were US$11,911 million, down 9.1 per cent on 2022, with the fall led by garments (CBSL, External Sector Performance December 2023, 31 Jan 2024, https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20240131_external_sector_performance_2023_december_e.pdf). The Export Development Board (EDB) puts Apparel & Textiles at 32 per cent of the 2023 export snapshot (merchandise and services) and Electrical & Electronics at 3 per cent (EDB, Export Performance Indicators of Sri Lanka 2023, https://www.srilankabusiness.com/ebooks/export-performance-indicators-of-sri-lanka-2023.pdf). Concentration in one product family exposed to Western retail demand is the shared feature that makes Malaysia worth studying.

2. What was done and when

Year	Action	Source
1972	Intel opens its first overseas production facility in Malaysia; USD 1.6 million; Penang.	MITI NSS, https://www.miti.gov.my/miti/resources/NSS_141024.pdf
1989	Penang Skills Development Centre (PSDC) founded as a tripartite, industry-led training centre by the state government, firms and Universiti Sains Malaysia. Founder members include Intel and Bosch.	https://www.psdc.org.my/about/our-story ; members: https://www.psdc.org.my/members
2000-2010	E&E share of gross exports falls from 61.7% to 42.4%; non-E&E manufacturing rises 23.4% to 33.8%; commodities 13.3% to 22.2%.	BNM whitebox link above
2024	National Semiconductor Strategy (NSS): three phases, at least RM500 billion investment by 2030, at least RM25 billion (~USD 5.3 billion per the source) of government fiscal support, 60,000 skilled local engineers, at least 10 Malaysian design and advanced packaging firms with revenue RM1-4.7 billion, and 100+ local firms above RM1 billion.	MITI NSS link above; MIDA, https://www.mida.gov.my/mida-news/govt-allocates-rm25bil-to-operationalise-national-semiconductor-strategy/

Phase 1 of the NSS is described as building on existing capacity, modernising outsourced assembly and test (OSAT) toward advanced packaging, and expanding trailing-edge chips. Phase 3 is design, advanced packaging and equipment firms and attracting buyers of advanced chips (MITI NSS). These are plans and targets, not results.

3. Measured outcomes

All figures are Malaysia's own statistics.

- **Export weight.** E&E exports were RM575.5 billion, 40.3 per cent of total exports in 2023, a 3.0 per cent (RM17.5 billion) fall on 2022 in a global downturn. Total exports were RM1.4 trillion (DOSM, External Trade Statistics Malaysia 2023, released 30 Jul 2024,

https://www.dosm.gov.my/portal-main/release-content/external-trade-statistics-malaysia-2023).

- **Trade balance.** Malaysia recorded a trade surplus for the 26th consecutive year since 1998; RM215.2 billion in 2023 (same DOSM release). Whether electronics caused this is not shown by the release.

- **Global position.** E&E is about 40 per cent of gross exports, 3.7 per cent of global E&E exports and 7.3 per cent of global semiconductor exports in 2024 (BNM, Economic and Monetary Review 2024, feature article, https://www.bnm.gov.my/documents/20124/17523401/emr2024_en_box1.pdf).

- **Jobs and pay.** 614,051 jobs and an average monthly wage of RM4,019 against RM3,448 for manufacturing overall (2024 average, DOSM monthly manufacturing data as cited by BNM, same article). [Desk calc: a 16.6 per cent premium.] The sources do not control for firm size, skill mix or location, so the premium is descriptive.

- **Position in the chain.** About 13 per cent of global assembly, testing and packaging (ATP), with 64 per cent of Malaysia's E&E exports being semiconductors (BNM, same). BNM's illustration, adapted from the Semiconductor Industry Association and Boston Consulting Group, puts global value added at roughly 50 per cent in design/R&D, 24 per cent in fabrication, 6 per cent in ATP and 20 per cent in business services and support. These global stage weights are not a measurement of Malaysian domestic value added and are not multiplied by its activity share.

- **Diversification.** The 61.7% to 42.4% fall in E&E share between 2000 and 2010 is BNM's description of a more diversified export base, with part of the shift driven by raw-material demand and weakness in segments such as PCs, where Malaysia had been strong (BNM whitebox).

4. Possible mechanisms, not causal proof

Documented institutions and plausible mechanisms are separated below; no causal policy evaluation is supplied.

1. **A foreign-capital entry point with a visible first mover.** The record shows Intel's 1972 plant, followed by a cluster; the NSS itself frames 50-plus years of experience as the platform (MITI NSS). Sources do not isolate how much the free zone regime, as opposed to wages or geography, mattered. [Hypothesis: the zone removed customs and administrative friction for assemblers; we have not verified the incentive terms.] 2. **Skills built jointly with firms.** PSDC is a documented industry-led training institution created in 1989 by state, firms and a university (PSDC site). Whether it raised productivity is not measured in the sources we hold. 3. **Neutrality and diversified markets.** BNM argues Malaysia is well placed as firms spread their supply chains, citing its neutrality and diversified export and market structure (BNM EMR 2024). This is the central bank's assessment, not a test. 4. **Persistence.** Policy continued across decades and governments to the 2024 NSS. [Hypothesis: continuity lowers perceived risk for long-lived plants.]

5. What did not transfer or went wrong

- **Upgrading remains unfinished.** The government's own 2024 plan is built on moving "from OSAT toward advanced packaging" and growing local design firms, which describes an upgrading objective, not a measured count of current local champions (MITI NSS). The NSS target of 10 local design and packaging firms with RM1-4.7 billion revenue is a goal, not an existing count.

- **Technology cycles hit exports.** E&E exports fell 3.0 per cent in 2023 and BNM notes that Malaysia's memory chip exports lagged frontrunners and that it has limited presence in high-bandwidth memory (BNM

EMR 2024). A concentrated export is volatile.

- **Missed device waves.** BNM says the shift from PCs to tablets and smartphones contributed to reduced E&E reliance in 2000-2010, "segments in which Malaysia is not heavily involved" (BNM whitebox).

- **Cost of the next step.** At least RM25 billion of public money is earmarked (MITI NSS). Outcomes are unobserved because the plan began in 2024. Any claim that the NSS "worked" would be unsupported today.

- **Not like-for-like.** Malaysia had a 50-year head start and a far larger electronics base (see section 6). We did not retrieve Malaysian FDI stocks or wage comparisons, so we do not quantify other differences.

6. What Sri Lanka can take, with conditions and limits

Sri Lanka's starting point. The EDB 2023 publication describes an export structure dominated by apparel and textiles, with a much smaller electrical and electronics category. The precise electronics figure and table year mapping are not used here because the column headers were not confirmed. No Malaysia/Sri Lanka numerical scale ratio is claimed.

Transferable lessons

1. **Pick a narrow, credible entry segment first.** Malaysia began with assembly, not design. Sri Lanka's equivalent is a specific niche where it already exports (for example, a verified electrical-components niche) rather than a national chip strategy. Condition: confirm which firms are foreign-owned and where the buyers are before choosing. 2. **Build a firm-led training body early.** PSDC shows the structure: employers fund and shape the curriculum with a state body and a university. Condition: employers must commit money and equipment; a purely government-run institute would not replicate it. Limit: we have no measured returns from PSDC. 3. **Track the value-added stage, not just export value.** Malaysia's own planners now worry about the position in the chain, not volume. A Sri Lankan policy dashboard (and MacroLens) should show value-added or domestic content next to export value, once official data exist. Limit: we did not find a published Sri Lankan domestic value-added series for electronics. 4. **Treat concentration as a risk even when it succeeds.** Malaysia's 2023 fall and the 2000-2010 reduction in E&E share show the same exposure Sri Lanka has with garments in 2023. Condition: any new sector adds diversification only if it is not driven by the same buyers and shocks.

What Sri Lanka should not infer

- That free zones plus a foreign anchor firm will reproduce Malaysia's outcome. Sri Lanka has had export processing zones; the sources here do not compare results.

- That a Malaysian-size fiscal package is feasible or advisable. The RM25 billion plan is Malaysia's, from an economy with a different fiscal position; we make no estimate of Sri Lankan costs.

- That Malaysia's wage premium would appear in Sri Lanka. It is an observed 2024 Malaysian average, not a causal effect.

Open questions for follow-up research (not answered here): Sri Lankan domestic value-added in electronics exports; the incentive terms and results of Sri Lankan export zones; Malaysia's FDI stock and local-firm share in E&E; evidence on PSDC outcomes.

7. Source list

- DOSM, External Trade Statistics Malaysia 2023: https://www.dosm.gov.my/portal-main/release-content/external-trade-statistics-malaysia-2023

- BNM, Economic and Monetary Review 2024, Feature Article on the E&E value chain: https://www.bnm.gov.my/documents/20124/17523401/emr2024_en_box1.pdf

- BNM, composition of export products (2000 vs 2010): https://www.bnm.gov.my/documents/20124/830197/cp01_003_whitebox.pdf

- MITI, National Semiconductor Strategy (Oct 2024): https://www.miti.gov.my/miti/resources/NSS_141024.pdf

- MIDA, RM25 billion allocation: https://www.mida.gov.my/mida-news/govt-allocates-rm25bil-to-operationalise-national-semiconductor-strategy/

- PSDC (state-industry-university body): https://www.psdc.org.my/about/our-story

- CBSL, External Sector Performance Dec 2023: https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20240131_external_sector_performance_2023_december_e.pdf

- EDB Sri Lanka, Export Performance Indicators 2023: https://www.srilankabusiness.com/ebooks/export-performance-indicators-of-sri-lanka-2023.pdf