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Abstract

This discussion paper examines the emerging Pax Silica initiative from the perspective of the Philippine Tatak Pinoy Strategy (TPS) and associated consultations involving the semiconductor, electronics, and IT-BPM sectors. It argues that the developmental significance of Philippine participation will depend less on investment attraction alone than on whether the country can progressively deepen domestic technological, engineering, and organizational capabilities within emerging semiconductor and AI-related ecosystems.

Drawing from stakeholder consultations and comparative industrial-policy literature, the paper identifies fragmented institutional support systems, weak cross-agency coordination, financing constraints, workforce mismatches, and discontinuities in government-industry collaboration as major barriers to industrial upgrading. At the same time, the consultations also point to the gradual expansion of higher-value capabilities across all three sectors: in the semiconductor and electronics sectors, these include engineering services, advanced manufacturing process development, and equipment design; in the IT-BPM and digital-services sector, they extend to AI-enabled services, technology consulting, cloud operations, cybersecurity, engineering outsourcing, and digital-content creation.

The paper argues that semiconductor and AI-related industries are substantially more coordination-intensive than earlier generations of export manufacturing. Long-term competitiveness increasingly depends on workforce systems, applied research capability, supplier development, financing systems, digital infrastructure, and sustained institutional coordination across firms, universities, industry organizations, and government agencies. From this perspective, Pax Silica should be approached not simply as an investment-attraction initiative, but as a potential platform for long-term capability deepening, ecosystem integration, and institutional learning.

Introduction

The Pax Silica initiative emerged in December 2025 as a U.S.-led effort to strengthen cooperation among allied economies across semiconductors, artificial intelligence (AI), critical minerals, advanced manufacturing, and digital infrastructure. Convened through the inaugural Pax Silica Summit in Washington, D.C., the initiative reflects the growing tendency among major economies to treat semiconductor and AI ecosystems not only as engines of commercial innovation, but also as strategic assets linked to economic security, industrial resilience, and long-term geopolitical positioning (Miller 2022; European Commission 2023). Reuters (2026) similarly describes Pax Silica as part of broader efforts to strengthen trusted technology and supply-chain cooperation among allied economies.

In the Philippines, the initiative is now being organized around New Clark City in Capas, Tarlac. In April 2026, the Philippines formally joined the Pax Silica Declaration, while Philippine and U.S. officials announced plans for a 4,000-acre Economic Security Zone within the Luzon Economic Corridor, described as the first AI-native industrial acceleration hub under Pax Silica (U.S. Department of State 2026; BCDA 2026; Reuters 2026). BCDA subsequently identified New Clark City as the proposed site and described the hub as a platform for technology firms, research institutions, and government agencies to develop an integrated AI and advanced-technology ecosystem (BCDA 2026).

At the same time, the initiative remains at an early implementation stage. Reuters reported in May 2026 that both governments were still negotiating elements of the long-term framework, including sectoral priorities and governance arrangements, while Philippine officials publicly rejected proposals that would place the zone under U.S. jurisdiction or grant diplomatic-style immunity (Reuters 2026). Important questions regarding the project's institutional structure, regulatory framework, investor commitments, and long-term governance therefore remain unsettled.

From the perspective of the Tatak Pinoy Strategy (TPS)[1], the central policy issue is therefore not simply whether the Philippines can attract strategic investments. The more important issue is whether participation in emerging semiconductor and AI ecosystems can generate sustained domestic capability accumulation, engineering deepening, technological learning, supplier development, and institutional upgrading.

This paper argues that the developmental value of Philippine participation in Pax Silica will depend less on investment volume alone than on whether the country can progressively integrate into more capability-intensive and higher-value segments of semiconductor and AI-related

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[1]The Tatak Pinoy Strategy refers to the broader industrial-policy and institutional framework developed under Republic Act No. 11981, or the Tatak Pinoy (Proudly Filipino) Act. The strategy emphasizes long-term industrial upgrading through sectoral transformation maps, capability development, innovation support, supplier upgrading, workforce formation, and stronger coordination among government, industry, and academe, with the objective of helping Philippine industries move into higher-value and more capability-intensive activities over time.

ecosystems while strengthening the institutional, technological, and organizational foundations needed to sustain long-term industrial upgrading.

Pax Silica and the Changing Structure of Industrial Competition

Earlier generations of industrial competition often focused primarily on labor costs, export competitiveness, physical infrastructure, and manufacturing scale. Semiconductor and AI-related industries increasingly operate through integrated systems involving semiconductor fabrication and testing, advanced packaging, embedded software, cloud infrastructure, cybersecurity systems, engineering services, AI applications, logistics systems, and advanced digital operations.

Industrial competitiveness therefore increasingly depends on whether countries can coordinate multiple complementary capabilities simultaneously. This includes workforce systems, applied research, supplier development, digital infrastructure, standards systems, financing mechanisms, and sustained institutional coordination. Fernandes and Reed (2026) note that contemporary industrial policy increasingly relies on combinations of public inputs, capability-building systems, and complementary policy instruments rather than isolated incentives alone.

This broader restructuring helps explain the emergence of initiatives such as Pax Silica. Current discussions suggest an effort among allied economies to strengthen trusted supply chains and industrial cooperation across semiconductors, AI systems, advanced electronics, and strategic digital infrastructure.

For the Philippines, this creates both opportunities and risks. The country enters these discussions with several existing strengths, including longstanding semiconductor and electronics manufacturing activity, globally competitive IT-BPM services, a large English-speaking labor force, and growing digital-services capability. At the same time, the Philippine experience with export-oriented manufacturing illustrates the limits of integration without deeper domestic upgrading.

A central risk, in this context, is that Philippine participation in Pax Silica could reproduce precisely the same pattern of enclave development that characterized earlier phases of export-manufacturing expansion, with the Philippines serving primarily as a physical host for AI and semiconductor infrastructure designed, built, owned, and operated by foreign technology companies. Under such a scenario, the country risks becoming a site for externally controlled infrastructure rather than a genuinely integrated node in a technology ecosystem. New Clark City could emerge as a technologically impressive enclave in which Filipinos are largely spectators rather than architects, operators, or innovators. The transformative aspiration of the Tatak Pinoy Strategy demands something more fundamental: that Philippine participation in Pax Silica be actively shaped by Filipino talent, institutions, values, and industrial ambition, and not merely by the provision of land, labor, and physical infrastructure for systems designed and governed elsewhere.

Electronics manufacturing expanded significantly over several decades, yet domestic participation often remained concentrated in assembly, testing, and other relatively lower-value activities within global production networks (Athukorala 2021; Balaoing-Pelkmans and Mendoza 2024). Domestic engineering capability, supplier ecosystems, proprietary technology development, innovation systems, and higher-value design functions remained comparatively underdeveloped (NEDA 2023; Balaoing-Pelkmans and Mendoza 2024). Balaoing-Pelkmans and Mendoza (2024) document this as a pattern of arrested development: limited diversification into more sophisticated production, weak expansion of higher-technology manufacturing, and low technological utilization across much of Philippine manufacturing — findings echoed in the Philippine Development Plan 2023–2028 (NEDA 2023).

At the same time, consultations conducted under the Tatak Pinoy Strategy suggest a more differentiated picture than conventional narratives often imply. In the semiconductor and electronics sectors, stakeholders pointed to the emergence of more capability-intensive activities involving engineering services, advanced process development, equipment design and fabrication, medical device manufacturing, and specialized technical services for global customers. In the IT-BPM and digital-services sector, firms described expanding capability in technology consulting, AI-enabled business process transformation, engineering outsourcing for international clients, cloud operations, cybersecurity, animation and game development, and digital-infrastructure management. Across all three sectors, many of these capabilities emerged gradually through accumulated firm-level experience and private-sector investment despite fragmented institutional support systems and uneven ecosystem coordination.

The consultations also highlighted the increasingly important role played by intermediary industry organizations in workforce development, skills coordination, standards formation, industry representation, and government-industry engagement. In the semiconductor and electronics sectors, the Semiconductor and Electronics Industries in the Philippines Foundation (SEIPI), the Electronics Industries Association of the Philippines (EIAPI), and the Philippine Integrated Circuit Design Association (PICDA) were identified by FGD participants as the primary bodies attempting to coordinate talent pipelines, industry-government engagement, and sectoral advocacy — often with limited resources and inconsistent government counterpart support. In the IT-BPM and digital-services sector, the Game Developers Association of the Philippines (GDAP) was specifically cited as a model of private-sector coordination, bringing studios together around shared promotion, client access, and curriculum engagement with universities and TESDA. These intermediary institutions may become increasingly important under Pax Silica because semiconductor and AI-related industries depend heavily on continuous coordination across firms, universities, training institutions, infrastructure systems, financing systems, and government agencies.

This problem is also well-recognized in global value-chain literature. Gereffi, Humphrey, and Sturgeon (2005) note that participation in fragmented production systems does not automatically generate technological upgrading unless countries strengthen domestic learning systems, supplier ecosystems, workforce capability, and institutional coordination. Baldwin (2016) similarly argues that modern production fragmentation allows countries to participate in global production systems without necessarily capturing higher-value activities.

The central policy challenge is therefore not simply attracting investment or expanding production activity, but determining whether Philippine firms, workers, suppliers, and institutions can progressively participate in more capability-intensive segments of semiconductor and AI-related production systems over time. This extends beyond manufacturing itself to the broader range of higher-value engineering, software, and research functions increasingly embedded within modern technology ecosystems.

The Tatak Pinoy Strategy and the Problem of Institutional Fragmentation

Many of these issues are directly recognized within the Tatak Pinoy Strategy and the associated sectoral transformation maps for semiconductors, electronics, and IT-BPM.

Beyond the institutional dimension, the TPS consultations surfaced a deeper strategic question: whether the Philippines will succeed in building something distinctively Filipino within the Pax Silica ecosystem, or whether it will default to replicating configurations that worked in other national contexts. Nations that have built lasting technological identities — Japan with precision manufacturing and industrial craftsmanship, South Korea with consumer electronics and display technology, Taiwan with semiconductor foundry services — did so not by mechanically copying foreign models, but by infusing those models with their own engineering culture, industrial values, and national ambition. The result was not merely technical competence but a recognizable and trusted country brand. This is a challenge the Tatak Pinoy Strategy must address explicitly: not only reforming institutional systems, but consciously building from distinctively Filipino strengths, including extraordinary adaptability, deep cross-cultural fluency, strong service orientation, and a demonstrated capacity to perform at high levels under demanding and resource-constrained conditions.

This observation has a structural dimension that deserves explicit attention. Even where a country can identify the policy instruments used in a successful precedent, the transferability of those instruments is constrained by the nonlinear, path-dependent character of technology ecosystem development. Semiconductor and AI ecosystems involve large numbers of simultaneously interacting actors, institutions, capabilities, and feedback mechanisms. In systems of this kind, small differences in initial conditions — the specific sequencing of institutional investments, the inherited stock of engineering capability, the structure of existing firm networks, the timing of foreign technology partnerships, the character of state-business relations — compound into qualitatively different development trajectories over time. The double pendulum in physics illustrates this dynamic with unusual clarity: two pendulums released from positions that differ by only a fraction of a degree follow paths that are indistinguishable at first and then diverge completely and permanently within seconds. The divergence is not just noise or failure, but a structural feature of the system. Taiwan's institutional architecture produced the outcomes it did not only because of the specific instruments deployed, but because those instruments were released into a specific configuration of initial conditions that cannot be recreated elsewhere or at a later historical moment. The Hsinchu Science Park and ITRI emerged from a combination of Cold War technology transfer relationships, diaspora capital flows from Silicon Valley, land reform foundations for broad-based human capital accumulation, and a very specific window of U.S.-Taiwan industrial alignment that has since closed (Saxenian and Hsu 2001; Breznitz 2007; Wade 1990; Mathews and Cho 2000). The policy challenge for the Philippines is therefore not to identify what Taiwan or Singapore did and replicate it, but to develop diagnostic capacity to read the specific configuration of Philippine initial conditions — including existing capabilities, institutional legacies, workforce structures, and ecosystem relationships — and reason carefully about what kinds of coordinated interventions can generate upgrading trajectories from this starting point rather than from someone else's.

Across the broader Tatak Pinoy consultations, stakeholders repeatedly emphasized that the central challenge confronting Philippine industry is not simply market access or investment attraction, but the strengthening of productive and technological capabilities over time. Importantly, the consultations did not suggest the total absence of government support programs. Rather, firms frequently pointed to fragmentation across initiatives, duplication between agencies, uneven coordination, shifting program priorities, and weak alignment between existing support systems and the actual technological requirements of emerging industries.

In several discussions, stakeholders noted that existing workforce and training programs often remain more oriented toward low- and medium-skilled requirements, while higher-value segments increasingly require specialized engineering capability, advanced digital systems knowledge, semiconductor-related technical skills, cybersecurity capability, cloud operations expertise, industrial software capability, and applied AI competencies. Similar concerns emerged regarding research support, supplier upgrading initiatives, financing mechanisms, testing infrastructure, and industry-development programs, where support systems were often described as insufficiently coordinated, inconsistent across agencies, or difficult to sustain over long upgrading horizons.

Stakeholders also pointed to the problem of discontinuities in government-industry collaboration. In some cases, firms and industry organizations invested significant time in curriculum development, workforce coordination, and collaborative upgrading initiatives, only to encounter shifting administrative priorities, changing program structures, or unstable budget support. These stop-and-go dynamics were repeatedly identified as major constraints for sectors requiring sustained capability formation and long-term technological upgrading.

The structural analogy to chaotic systems is instructive here in a way that goes beyond conventional governance critique. In a system exhibiting sensitive dependence on initial conditions, a perturbation does not simply set the trajectory back by the magnitude of the disturbance; it moves the system onto a qualitatively different path from which the original trajectory cannot be recovered simply by resuming the same inputs. A curriculum program abandoned after one administration and restarted under the next does not continue from where it left off. The cohort of students, the firms that had adapted their hiring to the program, the instructors who developed institutional knowledge, and the industry relationships that formed around it have all moved on. The system has diverged. This gives the case for the proposed Strategic Development Unit in the TPS an additional register beyond coordination efficiency. Sustaining institutional continuity across electoral cycles is not merely an administrative preference; it is the mechanism by which the country stabilizes the initial conditions of each new policy phase, preventing the compounding divergence that stop-and-go dynamics generate in coordination-intensive industries.

The consultations therefore increasingly pointed toward the need for a more coherent industrial strategy capable not merely of launching programs, but of aligning workforce systems, infrastructure support, financing mechanisms, research institutions, standards systems, and industrial priorities over longer time horizons, particularly in sectors requiring sustained technological adaptation and capability formation.

The IT-BPM Sector and Capability Deepening

The stakeholder discussions surrounding the IT-BPM Sectoral Transformation Maps become especially relevant under Pax Silica because AI-related industries increasingly function as integrated technical ecosystems, combining software, data analytics, and engineering capabilities within broader industrial systems.

TPS consultations with IT-BPM firms pointed to a recognizable pattern: firms that had successfully moved into higher-value service categories — software development, systems integration, data analytics, and engineering support — consistently reported having made deliberate internal investments in technical upskilling, process standardization, and organizational learning over sustained periods. The transition was rarely rapid or driven by market signals alone. It typically required management commitment to capability investment alongside external support for training infrastructure and technology access. The policy implication is that the shift toward AI-integrated services is less a market-led upgrade than a capability-formation process that requires intentional institutional scaffolding.

Stakeholders also emphasized that institutional support systems have not always fully adjusted to the changing capability requirements of the sector. While the Philippines successfully developed large-scale workforce pipelines for earlier generations of BPO expansion, firms increasingly pointed to shortages in more specialized technical skills involving software development, systems architecture, AI applications, cloud engineering, cybersecurity, advanced analytics, and engineering-intensive digital functions.

These issues become increasingly important as the sector moves toward more technologically sophisticated activities requiring longer-term investments in technical capability formation, organizational learning, and engineering specialization.

The developmental opportunity under Pax Silica may therefore lie less in semiconductor fabrication alone than in the broader expansion of capability-intensive ecosystem functions already emerging within the Philippine economy, including engineering services, industrial software, and AI-enabled business services.

Workforce Formation, Financing, and Technological Upgrading

The Philippines' long-term position within emerging technology sectors may depend as much on human capability formation as on physical infrastructure investment.

Semiconductor workforce pipelines, engineering capability formation, AI training systems, and applied research ecosystems increasingly function as core industrial infrastructure rather than peripheral education concerns. This may require redesigning engineering curricula around semiconductor packaging, industrial automation, embedded systems, AI applications, and cloud operations. TESDA certification systems may likewise need closer alignment with semiconductor maintenance, industrial automation, and advanced digital operations.

Stronger university-industry partnerships will also become increasingly important. Semiconductor engineering programs, applied AI research, cybersecurity training, and industrial-software capability may require sustained collaboration among SUCs, CHED, DOST, TESDA, industry associations, and private firms.

At the same time, several consultations also pointed to the increasingly serious problem of technical brain drain across engineering, semiconductor-related, and advanced digital occupations. Stakeholders noted that wage structures for highly specialized technical talent often remain substantially more competitive abroad, particularly in areas such as semiconductor engineering, cloud systems, cybersecurity, AI-related services, and advanced software development. This creates important externalities in workforce formation. Investments in training and technical capability do not automatically translate into domestic industrial upgrading if a large share of highly trained personnel eventually migrates into overseas labor markets or foreign firms.

The relationship between local skills formation and domestic technological upgrading may therefore be non-linear rather than automatic. Expanding technical training capacity alone may not generate sustained domestic capability accumulation unless firms and industrial ecosystems are also prepared to absorb, retain, and continuously upgrade specialized talent through higher-value operations, stronger career pathways, and more competitive compensation structures. In this sense, workforce policy cannot be separated from broader industrial upgrading itself. The long-term retention of technical talent increasingly depends on whether the domestic economy generates sufficiently sophisticated and high-productivity activities capable of supporting higher wages and longer-term professional development.

At the same time, financing constraints remain a significant bottleneck for many emerging technology-oriented firms and suppliers. Several of the higher-value and more capability-intensive pockets identified during consultations remain relatively small in scale and often lack access to patient capital, technology financing, scaling support, and long-term upgrading finance.

This issue becomes especially important because many of the capabilities associated with semiconductor and AI ecosystems require long gestation periods, sustained technical learning, expensive workforce formation, and continuous technological adaptation. Without more stable financing mechanisms and longer-term institutional support, firms may struggle to scale beyond relatively narrow operational niches.

The consultations also surfaced a specific and underutilized financing mechanism: government as the first customer for locally developed technology products, particularly in sectors where Philippine innovators are already producing working prototypes but cannot yet compete on price against established foreign suppliers with economies of scale. The electronics FGD documented this problem in concrete terms. Electronics manufacturing firms working with university research partners are already producing medical devices — including artificial aortas, catheters, and ablation devices — that have passed clinical testing and meet technical standards, but carry higher unit costs than comparable imported products from China, India, and South Korea. The Department of Health’s annual medical device procurement budget runs to hundreds of millions of dollars, of which the overwhelming share goes to imported products. Stakeholders argued that early government procurement of domestically developed products, even at a cost premium during the incubation period, would function as an investment in the commercialization pipeline rather than merely as a public expenditure — allowing firms to move through the scale-up phase, reduce unit costs, and eventually compete in broader markets on commercial terms. This logic applies beyond medical devices: wherever Filipino firms and research institutions have already cleared development and technical validation, government procurement policy can serve as the bridge between prototype and commercial scale that private financing alone rarely provides in emerging industrial economies. The Tatak Pinoy Strategy's procurement-linked frameworks are well-positioned to institutionalize this mechanism across priority sectors.

Governance, Institutional Coordination, and Ecosystem Learning

Many of the constraints identified during the consultations were institutional and organizational rather than purely technological. Several stakeholders emphasized operational resilience, secure cloud practices, distributed delivery systems, cybersecurity capability, digital governance systems, technologically sophisticated monitoring systems, and the increasing complexity of globally integrated digital operations. These realities have direct implications for how the Philippines designs certification systems, cybersecurity regulation, digital-governance standards, investment rules, and industrial-support systems.

More broadly, the consultations repeatedly pointed toward the difficulty of making government-private sector-academe coordination operationally workable in practice rather than merely consultative or ad hoc. This issue closely resembles what industrial-policy literature describes as the challenge of "embedded autonomy," where governments must simultaneously maintain sufficient strategic coordination with industry to understand technological and operational realities while also preserving sufficient institutional independence to avoid capture and short-termism (Evans 1995). Recent industrial-policy literature likewise emphasizes the importance of reciprocal and learning-oriented state-industry coordination mechanisms (Mazzucato and Rodrik 2023).

This issue may become especially important under Pax Silica because semiconductor and AI-related industries are substantially more governance-intensive than earlier export-processing-zone models. Long-term competitiveness increasingly depends not only on firm-level efficiency, but also on whether countries can sustain coordination across workforce systems, research institutions, infrastructure planning, financing systems, supplier development, standards systems, and cross-agency implementation over long periods of time.

Fernandes and Reed (2026) similarly emphasize that contemporary industrial policy increasingly depends on state capacity to coordinate complementary public inputs, maintain implementation continuity, support technological adaptation, and sustain institutional learning across multiple actors and time horizons.

An important priority during the early stages of Pax Silica implementation should therefore be systematic learning from firms that have already managed to move into more capability-intensive activities despite existing structural constraints.

Several consultations suggested that parts of the semiconductor, electronics, and IT-BPM sectors have already accumulated specialized capabilities across several of the capability-intensive functions identified earlier — engineering services, technical support, and analytics among them. Yet these upgrading pathways remain insufficiently studied within Philippine industrial policy.

A more strategic approach would involve identifying what capabilities these firms successfully developed, how they accumulated technical knowledge, what workforce and training systems supported them, how they accessed foreign markets and technology, what forms of organizational learning proved important, and what institutional bottlenecks continue to constrain scaling and diffusion.

A structural governance problem raised explicitly in the semiconductor consultations also deserves attention. Administrative Order No. 31 established the Semiconductor and Electronics Industry Advisory Council, but the council's composition — twelve members with only one private-sector representative — was identified by FGD participants as seriously inadequate given the breadth and technical specificity of the sector's actual coordination needs. The IC design sub-sector, which is the segment most critical to the country's long-term upgrading trajectory within semiconductor ecosystems, has no meaningful representation in the council's current architecture. Stakeholders noted that PICDA was formed precisely to address the absence of a coherent advocacy and coordination body for IC design, and that its predecessor initiative (the MYPAD program)[2] had made tangible progress in curriculum development and university-industry bridging before losing institutional momentum. The semiconductor FGD was explicit that the advisory council's current structure prevents the sector from ensuring that policy decisions reflect the actual technological and operational realities of the most capability-intensive activities in the value chain. Broadening private-sector representation in national advisory bodies — particularly for emerging sub-sectors like IC design, advanced packaging, and industrial electronics — is therefore not merely an equity concern but an operational prerequisite for effective industrial coordination under Pax Silica.

What is needed is not more consultation but the creation of institutional learning systems capable of identifying emerging technological opportunities, diagnosing capability gaps, adapting policy instruments, and coordinating upgrading pathways over time.

The Sectoral Development Unit and the Sectoral Transformation Maps

The continuous elaboration, implementation, monitoring, and iteration of the TPS sectoral transformation maps create an opportunity to institutionalize coordination more systematically across firms, universities, sectoral organizations, regulatory agencies, research institutions, and financing institutions.

This matters because semiconductor and AI-related industries evolve rapidly. Workforce requirements, software architectures, production technologies, standards systems, cybersecurity requirements, financing needs, and engineering capabilities continuously change.

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[2]The MYPAD initiative laid the early groundwork for the Philippine semiconductor ecosystem by developing microelectronics curricula and building structured links between local engineering universities and the semiconductor industry. It ultimately lost momentum, however, because it lacked sustained institutional backing and a dedicated advocacy body capable of coordinating across firms, universities, and government agencies over the long term.

From this perspective, the transformation maps should not be treated merely as planning documents. Properly operationalized, they can function as coordination platforms capable of aligning workforce priorities, identifying capability gaps, coordinating applied research agendas, facilitating supplier upgrading, supporting standards development, integrating industry feedback into policy adjustment, improving financing coordination, and sustaining cross-agency industrial coordination.

The proposed Sectoral Development Unit (SDU) framework under TPS becomes highly relevant in this context. The SDU concept recognizes that modern industrial ecosystems increasingly require dedicated coordination mechanisms capable of aligning agencies, integrating industrial priorities into budgeting systems, monitoring implementation, coordinating interventions, and sustaining long-term governance.

Fernandes and Reed (2026) similarly note that modern industrial policy increasingly requires organizational systems capable of coordinating across agencies, aligning public investments, supporting technological upgrading, and adapting policies over long implementation horizons.

Budget coordination also becomes increasingly important because many capabilities required under Pax Silica, including semiconductor workforce development, engineering education, cybersecurity systems, applied research, standards systems, digital infrastructure, and industrial financing, cut across multiple agencies and funding streams.

Without stronger coordination between industrial priorities and medium-term budgeting systems, implementation fragmentation will likely persist even where broad strategic alignment exists at the policy level.

Comparative Lessons from Asia

Experiences from Taiwan, Singapore, Malaysia, and Vietnam suggest that successful participation in semiconductor and advanced-technology ecosystems rarely emerges from investment incentives alone. More often, competitiveness depends on long-term coordination across workforce systems, applied research institutions, industrial financing, supplier upgrading, standards systems, and technology-oriented public institutions.

Taiwan’s semiconductor ecosystem was not built through infrastructure incentives alone, but through long-term institutional coordination linking research, workforce formation, technology transfer, supplier development, and commercialization. Institutions such as the Industrial Technology Research Institute (ITRI) and the Hsinchu Science Park played central roles in connecting public research, industrial capability formation, pilot production, and private-sector upgrading (Mathews and Cho 2000; National Research Council 2003).

Singapore similarly treats semiconductor development as an ecosystem-coordination problem rather than a purely investment-promotion exercise. Its strategy combines workforce systems, applied research institutions, packaging and testing capability, supplier upgrading, and coordinated industrial planning through institutions such as the Economic Development Board (EDB) and A*STAR (Wong 1999; Huff 1994).

Malaysia's semiconductor strategy is particularly relevant because it explicitly recognizes the limitations of remaining concentrated in assembly and testing activities. The National Semiconductor Strategy therefore emphasizes movement toward integrated circuit design, advanced packaging, engineering capability formation, domestic supplier development, and higher-value technical functions while simultaneously investing heavily in semiconductor talent development (MITI 2024).

Vietnam's recent semiconductor initiatives likewise place strong emphasis on workforce coordination, technical education, university-industry collaboration, and engineering capability formation. Current initiatives specifically recognize that participation in semiconductor value chains requires sustained investments in technical manpower, chip-design capability, electronics engineering, and applied training systems rather than infrastructure attraction alone (U.S. International Trade Administration 2024).

These comparative experiences reinforce one of the central insights emerging from TPS: industrial policy succeeds not merely through isolated sectoral interventions, but through the interaction between targeted sectoral strategies and broader support systems involving skills, infrastructure, innovation capability, supplier development, financing systems, governance systems, and institutional coordination.

A further dimension of the East Asian model that deserves explicit attention in the Philippine context is spatial agglomeration — the physical concentration of sector-relevant firms, institutions, and support services within a defined geographic area. Industrial parks in Taiwan, South Korea, Singapore, and China were not simply designated zones but genuine geographic clusters in which semiconductor and electronics firms, component suppliers, research institutions, and engineering service providers co-located to exploit shared infrastructure and generate inter-firm knowledge spillovers. This stands in contrast to many Philippine Special Economic Zones (SEZs), which often function more as designated investment enclaves for individual firms or limited groups of subsidiaries than as true ecosystem clusters. In some cases, registered SEZs extend only to the compound of a single large locator, excluding the indirect exporters, input suppliers, and support service providers that constitute the upstream and downstream ecosystem around an anchor investor. This structural pattern limits the scope for shared infrastructure, inter-firm knowledge exchange, and the vertical integration that characterized successful East Asian industrial districts. Pax Silica — anchored in a 4,000-acre corridor at New Clark City — represents a rare opportunity to break from this pattern by designing a zone that deliberately concentrates the full horizontal and vertical ecosystem of a sector within a single geographic space.

Private-Sector Leadership, Political Will, and the Balance of Initiative

One of the most important structural questions surrounding Tatak Pinoy and Pax Silica concerns the appropriate division of labor between the public and private sectors. The comparative evidence reviewed above, and the stakeholder consultations conducted under TPS, together suggest that successful technology-ecosystem development is consistently private-sector-led and government-supported — not government-driven with private participation as an afterthought. This distinction matters enormously in practice. AI and semiconductor markets are operating on iteration cycles measured in weeks and months, not the administrative and political cycles of years and administrations. Government agencies are structurally ill-suited to move at the speed these markets require. They are better positioned as architects of the enabling environment — setting policy, building infrastructure, providing incentives, and creating the conditions for private initiative — than as primary organizers of innovation and commercial development (De Boer et al. 2024; Karaki 2024; Leadership Academy for Development 2021).

The Silicon Valley model is instructive here, not as a template for literal replication but as a demonstration of what the right division of labor can produce. The private sector executed aggressively, iterating rapidly and tolerating failure. Government created physical infrastructure, funded foundational research through defense and civilian programs, provided tax incentives, shaped procurement, and enabled favorable regulatory conditions. The result was not simply a cluster of successful companies but the emergence of an ecosystem — a dense, self-reinforcing network capable of solving problems the world had not yet named. That combination of private-sector dynamism and government-enabled conditions is what Tatak Pinoy should aspire to replicate in its own Filipino form, not the organizational structures themselves but the underlying logic: private initiative at the frontier, government as platform builder and capability scaffolder (De Boer et al. 2024).

At the same time, the evidence from both comparative cases and the TPS consultations is equally clear that private-sector dynamism alone cannot substitute for sustained political commitment. For Pax Silica and Tatak Pinoy to reach critical mass, industrial upgrading must become a consistent element of the national agenda at the highest level of government, with sustained public communication, sustained budgetary commitment, and sustained inter-agency coordination maintained across administrations rather than cycling with political calendars (OECD and UNU-CPR 2024). Industrial ecosystems take a decade or more to develop; political administrations last six years (Daude, Nagengast, and Perea 2014; Felipe, Kumar, and Abdon 2010). Bridging this mismatch requires institutional mechanisms — such as the proposed Sectoral Development Unit — capable of preserving strategic continuity across electoral cycles. But it also requires the visible, consistent signaling from national leadership that technology-driven industrial upgrading is a genuine national priority and not a project that lives only in government documents.

Informal coordination mechanisms also deserve attention alongside formal institutional structures. Deep relationships — forged through sustained roundtable discussions, peer-to-peer exchanges among leaders in industry, government, and academia, and the gradual accumulation of shared understanding across sectors — have historically been as important as formal bureaucratic mechanisms in driving successful industrial upgrading (Karaki 2024; Global Partnership for Effective Development Co-operation 2019). This is particularly true in the early stages of ecosystem development, when formal rules and institutions are still being designed. Building sufficient shared understanding among a critical mass of private-sector leaders, public officials, and academic researchers about the scale and urgency of the opportunity may be as strategically important as any single policy instrument.

Building Filipino Champions and a Nationally Distinctive Technology Brand

A further dimension of the Tatak Pinoy strategy that deserves more explicit attention concerns the deliberate identification and support of a select group of Philippine companies capable of creating globally competitive products and services. Industrial upgrading at the national level is rarely the aggregated product of gradual, incremental improvements across all firms simultaneously. More often, it is driven by visible early success stories — companies that create products of such differentiated quality that the market responds before potential buyers have even registered their Filipino origin. These early champions generate credibility that ordinary promotion cannot manufacture. They create demonstration effects that reshape private expectations, attract talent, shift investor confidence, and gradually reframe how both domestic and international markets perceive Philippine technological capability (Felipe, Kumar, and Abdon 2010; Daude, Nagengast, and Perea 2014).

The analogy of "Made in Japan" is instructive here. Japan did not build its global technological reputation primarily through marketing campaigns or diplomatic branding initiatives. It built that reputation through sustained, government-supported investment in mastery, craftsmanship, precision, and product excellence — and over time, the brand formed around the execution. The country of origin became a signal of quality before consumers necessarily knew the company. The Tatak Pinoy vision requires something analogous: a deliberate strategy to identify, back, and internationally position a pipeline of Filipino technology companies producing products and services of sufficient differentiation that global markets encounter them on merit, and then discover they are Filipino. Today, many Filipinos themselves express skepticism about the competitive quality of domestically produced technology products and services. Reversing this perception requires not slogans but visible, unambiguous demonstrations of Filipino technological excellence. The goal is not national sentiment but national credibility — earned through execution.

Filipino cultural strengths are, in this context, genuine industrial assets rather than merely rhetorical talking points. The extraordinary resilience and adaptability that characterize the Filipino workforce — the capacity to perform reliably under constraints, to maintain high-quality service delivery across difficult conditions, to build and sustain relationships across cultural and linguistic contexts — are precisely the qualities increasingly valued in global technology ecosystems that are themselves complex, distributed, and continuously adapting. These qualities, if properly directed through capable institutional systems toward higher-value technical activities, represent a foundation on which a genuinely distinctive Filipino technology identity can be built. The question is whether the country can channel these inherent strengths through sufficiently capable institutional systems into globally competitive technological products and services — with enough early and visible wins to make that aspiration credible.

Policy Recommendations

Drawing together the analysis above, this paper offers the following policy recommendations for how the Philippines should approach Pax Silica from a Tatak Pinoy Strategy perspective.

First, define Philippine participation terms proactively and from a capability standpoint. As the governance and sectoral architecture of Pax Silica is still being negotiated, the Philippines has a genuine window to shape the terms of its participation. Negotiations should explicitly include commitments to incentivize local content in engineering services, technology transfer obligations, joint research arrangements, Filipino talent development requirements, and mechanisms for gradually transferring higher-value functions to domestic firms and institutions. However, these provisions will only be credible — and acceptable to foreign partners — if the Philippine government simultaneously demonstrates a sustained and verifiable commitment to investing in skills formation, applied research, and institutional capacity. Foreign partners are unlikely to accept local content obligations or tolerate transition-period inefficiencies if they have little confidence that domestic capabilities will actually materialize. The binding constraint is therefore not just the negotiating posture but the credibility of the public investment program that underpins it. Participation terms that fail to embed capability-deepening obligations risk locking the Philippines into a primarily hosting role; but those obligations will only hold if backed by a government commitment that foreign partners find believable.

Second, ensure Pax Silica is private-sector-led with strong government enabling conditions — and build genuine co-governance mechanisms to make this real. Government should focus on creating enabling policy frameworks, building infrastructure, providing incentives for capability-intensive activities, and sustaining coordination across agencies — not on directly managing commercial activity. The primary drivers of the ecosystem must be Filipino and foreign private firms operating under frameworks designed to generate Filipino capability accumulation over time. But private-sector leadership requires more than consultation. The comparative industrial policy literature consistently shows that the most durable public-private arrangements are those in which firms have genuine decision-making space in the design of sectoral roadmaps, capability investment priorities, and program architecture — not merely advisory roles after key choices have been settled. The Tatak Pinoy Strategy's emphasis on co-governance reflects this lesson: effective collaboration requires that private stakeholders share co-ownership of outcomes, not just visibility into government plans. Dedicated institutional mechanisms, including the proposed Strategic Development Unit, should be empowered with sufficient budget authority, inter-agency convening power, and administrative continuity to sustain coordination across electoral cycles, and should be structurally designed to operationalize co-governance rather than replicate conventional consultation frameworks (De Boer et al. 2024; Leadership Academy for Development 2021).

Third, invest aggressively in Filipino capability formation at every layer of the technology stack. Pax Silica will only generate lasting developmental value if Filipino engineers, developers, data scientists, cloud architects, cybersecurity professionals, systems integrators, and applied researchers are present and advancing within it — not merely providing support functions. This requires redesigning engineering and technical education, strengthening university-industry partnerships, and addressing the brain-drain problem through domestic career pathways, wage structures, and professional development opportunities that compete credibly with what overseas markets offer. A recurring concern raised in TPS consultations was that skills training in the Philippines defaults institutionally to TESDA — a system designed primarily for initial certification and entry-level technical formation. Upskilling, by contrast, requires a different set of mechanisms: sustained firm-level investment, sectoral training funds, modular post-employment learning pathways, and university or polytechnic programs capable of reaching workers already in industry. The gap between what TESDA currently provides and what capability deepening actually demands is not a criticism of TESDA's mandate; it is a structural gap that requires dedicated policy attention and new institutional arrangements. Aligning certification systems with emerging semiconductor and AI occupations is necessary but not sufficient — the harder challenge is building the infrastructure for continuous, career-long technical development that the sector will need.

Fourth, identify and back a pipeline of Filipino technology champions with global ambitions. The Tatak Pinoy Strategy should move beyond general ecosystem support to the targeted identification and backing of a select group of Filipino companies capable of creating globally competitive technology products and services. These champions need patient capital, access to international markets and networks, support for product development and certification, and active promotion in target markets. Early and visible wins from Filipino technology companies in global markets — products so differentiated that buyers encounter them on merit before knowing their Filipino origin — are essential for reframing the country's technology brand and creating the demonstration effects that attract further talent and investment into the ecosystem.

Fifth, sustain informal trust-building alongside formal institutional mechanisms. The formal institutional architecture of Pax Silica — governance frameworks, investment rules, financing systems, regulatory standards — must be complemented by sustained investment in the informal side of ecosystem development. This means creating regular forums for deep, candid exchange between leaders in industry, government, and universities; supporting the gradual accumulation of mutual understanding and trust across sectors; and ensuring that enough decision-makers in each domain genuinely understand the scale of the opportunity and the urgency of coordinated action. Ecosystems are built by networks of people, not only by formal institutions.

Sixth, use the sectoral transformation maps as living coordination platforms. The TPS sectoral transformation maps for semiconductors, electronics, and IT-BPM should be operationalized not as static planning documents but as dynamic coordination platforms that align workforce priorities, applied research agendas, infrastructure investments, financing mechanisms, and regulatory adaptation in real time. This requires regular review cycles with genuine private-sector input, integration with the medium-term expenditure framework, and transparent monitoring of capability-deepening indicators rather than only investment volumes and employment numbers (Karaki 2024; Global Partnership for Effective Development Co-operation 2019).

Seventh, design Pax Silica as a genuine spatial and sectoral cluster rather than a designated investment zone. The New Clark City footprint creates an opportunity to physically concentrate sector-relevant firms — including indirect exporters, component suppliers, engineering services providers, training institutions, and applied research centres — within a single geographic space with shared infrastructure. This requires zone governance that actively recruits upstream and downstream players alongside anchor investors, and that provides transition support and incentives to encourage existing domestic firms to co-locate within the corridor. Infrastructure planning should be integrated and demand-driven: power supply, water systems, telecommunications, transport connectivity, and worker housing must be designed to support a functioning industrial community, not merely a series of investment facilities. Getting this spatial design right from the outset will be far easier than retrofitting a fragmented zone after anchor investors have already settled.

Conclusion

Pax Silica should not be approached merely as an investment-attraction initiative or enclave industrial-zone project. From a Tatak Pinoy Strategy perspective, its long-term developmental value will depend on whether it becomes a platform for sustained capability deepening across semiconductors, AI systems, software services, engineering, cybersecurity, cloud infrastructure, workforce development, financing systems, and domestic supplier ecosystems.

One important insight emerging from the consultations is that the Philippines may already possess more latent capability than conventional narratives often assume. The challenge is less the total absence of capability than the absence of sufficiently coherent institutional systems capable of financing, scaling, coordinating, connecting, and sustaining these emerging pockets of technological and industrial upgrading over long periods of time.

In this sense, the central issue under Pax Silica is not simply investment attraction, but whether the Philippines can build the institutional and ecosystem capacities needed to convert participation in strategic technology networks into long-term domestic capability accumulation.

The double pendulum metaphor that opened this analysis closes here with a final and more demanding implication. A country that enters Pax Silica primarily as a host — accepting the governance terms, technology architectures, and industrial configurations designed elsewhere — is, in effect, releasing its development trajectory from a position not of its own choosing. The path that follows belongs to that position. The nonlinear dynamics of technology ecosystem development mean that this is not a recoverable choice over a short horizon: early configurations shape what capabilities form, which firms grow, which workforce specializations deepen, and which institutional relationships solidify. Participating proactively in the design of Pax Silica's governance, capability obligations, and technology transfer arrangements — as the first policy recommendation of this paper urges — is therefore not only a question of equity or sovereignty. It is the act of setting the initial conditions from which the Philippines' long-term development trajectory within the AI and semiconductor ecosystem will unfold. Initial conditions in chaotic systems are not merely the starting point; they are, in a structural sense, the policy.

What Pax Silica ultimately offers the Philippines is a high-stakes test of whether the country can navigate the same structural challenge it has faced across multiple generations of external economic integration: the challenge of converting participation into ownership, and presence into capability. The answer will not be found in the investment commitments announced at summits, but in what Filipino engineers design, what Filipino companies build, what Filipino institutions sustain, and what Filipino communities ultimately come to trust and take pride in as their own. The aspiration is not to be host to a world-class technology ecosystem, but to be its co-creator — one shaped by Filipino talent, values, and ambition as much as by the capital and technology of international partners.

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