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ASEAN 半導体フレームワーク：日本企業にとっての機会

ASEAN Semiconductor Framework: Opportunities for Japanese Industry

【要約】

ASEAN は 2025 年 10 月、「半導体サプライチェーン統合を目指す戦略枠組み（AFISS）」を採択した。これは ASEAN を後工程中心から垂直統合型の半導体生産拠点へ転換する長期計画であり、供給網、技術・インフラ、人材の 3 分野と 6 つの戦略課題を柱に約 30 の自主的施策を 2045 年までに推進するものである。日本は重要な技術パートナーとして位置付けられ、材料・装置・工程技術で強みを発揮できる。

具体的には、インフラ整備やレアアース加工、成熟ノード向け装置供給、研究開発協力、人材育成などで協業機会が存在する。枠組みは非拘束的であるため、各国の優先度に応じた二国間戦略が必要であるが、政治的後押しにより投資リスクは低減する。日本企業は長期視点で ASEAN との補完関係を強化し、サプライチェーン多元化と信頼性確保を図ることが重要である。

Title: ASEAN Semiconductor Framework: Opportunities for Japanese Industry

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Overview

In October 2025, the 26th ASEAN Economic Community Council (AECC) Meeting adopted the ASEAN Framework for Integrated Semiconductor Supply Chain (**AFISS**), a comprehensive non-binding strategic framework aimed at transforming the region from a back-end semiconductor service provider into a vertically integrated production ecosystem. With the global semiconductor market projected to grow from USD 600 billion in 2024 to USD 980 billion by 2029, AFISS positions ASEAN to capture greater value across the semiconductor supply chain. The framework is structured around three core areas (Supply Chain, Technology & Infrastructure, and Talent) and six strategic thrusts encompassing approximately 30 specific initiatives to be implemented voluntarily by ASEAN Member States toward 2045.

AFISS is organized around six strategic thrusts:

1. **Infrastructure Quality and Resilience** – upgrading manufacturing facilities, utilities, and shared resources
2. **Technology Innovation, Transfer and Sharing** – R&D collaboration, IP development, and open-source initiatives
3. **Supply Chain Hubs and Clusters** – enhancing connectivity, digital transformation, and trade facilitation
4. **Industrial and Trade Policies** – attracting investment, mineral processing, and regulatory coordination
5. **Market Access and Connectivity** – joint ventures, industry associations, and trade agreements
6. **Talent Development and Mobility** – workforce training, education-industry linkages, and cross-border mobility

AFISS represents ASEAN's strategic response to global semiconductor realignment driven by US-China tensions, supply chain vulnerabilities, and concentrated production risks. The framework explicitly identifies Japan, alongside the United States and South Korea, as a strategic partner for technology transfer, infrastructure development, and talent training. This positioning reflects recognition of Japan's unique strengths in semiconductor materials, precision equipment and tools, and front-end process technology—capabilities ASEAN requires to move up the value chain.

For Japanese companies, AFISS creates structured frameworks for deepening semiconductor engagement through technology partnerships, joint ventures, training programs, and infrastructure investment. Unlike competitive dynamics where Chinese manufacturers leverage cost advantages, AFISS positions Japanese companies as invited technology partners addressing ASEAN's critical capability gaps. The framework's non-binding nature means implementation depends on individual member states' priorities, requiring bilateral strategies rather than uniform regional approaches. However, AFISS provides political backing and institutional frameworks reducing investment risks for Japanese semiconductor ecosystem expansion across ASEAN.

Details and Analysis

Infrastructure and Materials. Strategic Thrust 1 focuses on infrastructure quality and materials processing—areas where Japanese companies dominate globally. Japan produces approximately 60% of global silicon wafers (Shin-Etsu, SUMCO), dominates photoresist materials (JSR, Tokyo Ohka Kogyo), and supplies critical chemicals for manufacturing. AFISS initiatives promoting shared manufacturing facilities, cleanroom infrastructure upgrades, and materials processing for rare earths, gallium, and germanium create direct opportunities. Japanese materials suppliers can establish partnerships with ASEAN-based semiconductor-relevant businesses like semiconductor manufacturing zones and mineral processing initiatives.

Semiconductor Equipment. Japan's equipment manufacturers (Tokyo Electron, Hitachi High-Tech, Screen Holdings, DISCO) hold strong positions in deposition, etching, wafer processing, and dicing tools. AFISS infrastructure upgrades and manufacturing capacity expansion create demand for production equipment. While ASEAN focuses on mature nodes (28nm and above) for automotive, industrial, and IoT applications rather than cutting-edge processes, these segments align with Japanese equipment strengths. Shared facility initiatives enable equipment leasing models and regional service hubs in Singapore or Malaysia providing maintenance and technical support, improving utilization economics while building recurring revenues.

Technology Transfer and R&D. Strategic Thrust 2 addresses R&D capacity, IP generation, and design capabilities. AFISS calls for establishing Technology Transfer Offices, unified R&D strategies, and RISC-V open-source architecture adoption. For Japanese companies, these create partnership opportunities with lower IP exposure risks than China engagements. Japanese firms can license mature process technologies, provide design training, and establish joint R&D centers targeting automotive chips, industrial automation, and IoT sensors where Japanese expertise is strong.

Talent Development. Strategic Thrust 6 addresses critical workforce gaps through regional mobility mechanisms, education-industry linkages, and training programs. Japan faces acute semiconductor talent shortages due to demographics and industry consolidation. By establishing training partnerships with ASEAN universities, Japanese companies develop talent pipelines serving ASEAN operations and potential Japan recruitment. Japanese companies can also sponsor scholarships, provide secondments for ASEAN engineers to Japanese facilities, and establish regional training centers building long-term relationships and ensuring understanding of Japanese quality standards.

Supply Chain Integration. Strategic Thrust 3 and 5 focus on intra-ASEAN supply chain integration, logistics efficiency, and joint ventures. AFISS promotes digital supply chain transformation, removal of trade barriers, and intra-ASEAN joint ventures leveraging complementary capabilities. Japanese companies can establish wafer processing, ATP operations, and final assembly in ASEAN Member States, creating ASEAN-based supply chains which reduce geopolitical risks. Joint ventures with ASEAN firms and manufacturers combine Japanese technology with ASEAN cost structures and market access. AFISS's goal of developing ASEAN-based products using ASEAN-made semiconductors creates opportunities for Japanese companies producing automotive components or industrial equipment in ASEAN to source semiconductors regionally.

Investment Facilitation. Strategic Thrust 4 addresses investment frameworks, fiscal incentives, and regulatory coordination. AFISS proposes model investment facilitation mechanisms and unified investment destination positioning. However, non-binding nature means implementation varies significantly—some more developed states offer sophisticated tax incentives (R&D credits, manufacturing tax holidays), while less developed states lack comparable capacity. Japanese companies should engage AFISS implementation through bilateral channels to influence standards, certifications, and incentives

favoring quality and technology leadership. AFISS's focus on "quality FDI" and sustainability aligns with Japanese companies' emphasis on environmental standards, ethical sourcing, and long-term partnerships.

Immediate Priority Actions

Strategic Assessment and Prioritization (Q1-Q2 2026): Japanese semiconductor companies should evaluate which AFISS initiatives align with corporate strategies. Materials and chemicals companies prioritize infrastructure and materials processing initiatives. Equipment manufacturers engage with shared facility initiatives and capacity expansion plans. Companies with design and IP capabilities explore technology partnerships with ASEAN-based institutions. All companies engage talent development initiatives addressing shared workforce challenges. Identify 2-3 priority member states for bilateral partnerships based on existing presence, government relationships, and alignment between national priorities and company capabilities.

Engagement with Implementation Planning (Starting Now): Monitor AFISS implementation. Participate in Plans of Action development through bilateral government semiconductor dialogues, ASEAN industry associations, and direct relationships with investment promotion agencies. Early engagement positions Japanese companies to shape initiatives toward areas of competitive advantage while building stakeholder relationships. Engage with Focus Group on Global Value Chains providing industry input into framework coordination.

Partnership Development and Pilot Projects (2026-2027): Identify specific partnership opportunities aligning with AFISS thrusts—joint R&D centers, training programs with universities, materials processing joint ventures, or equipment leasing arrangements for shared facilities. Initiate pilot projects demonstrating technology value and building trust before larger commitments. Explore partnership models combining Japanese technology leadership with ASEAN manufacturing scale and resource access. Consider joint ventures with ASEAN partners rather than wholly-owned operations to align with the framework's emphasis on regional capacity development.

Implementation Timeline and Critical Considerations

AFISS extends toward 2045 as a long-term strategic framework rather than near-term action plan with binding commitments. Implementation unfolds gradually as member states develop Plans of Action, allocate resources, and pursue initiatives aligned with national priorities. Japanese companies should approach establishing a 10-20 year partnership framework. Near-term focus should be engagement with planning processes and positioning for early-stage infrastructure and training initiatives.

Strategic Positioning

AFISS formalizes and accelerates ASEAN's growing semiconductor importance, Japan's China diversification, and both parties' interest in trusted technology partnerships amid US-China tensions. Japanese companies aligning corporate strategies with these trends benefit from political backing, institutional frameworks, and partnership platforms reducing uncertainty.

Strategic positioning should emphasize:

1. **Complementarity and mutual benefits rather than Japanese control**. AFISS reflects ASEAN's desire for technology partnerships supporting regional capacity development, not simply assembly operations. Japanese companies articulating long-term commitments to technology transfer, workforce development, and ecosystem building secure favorable reception over purely transactional approaches.

2. **Technology leadership in core strengths**: Materials and chemicals, semiconductor equipment, process technology, quality systems, and sustainable manufacturing where Japanese companies compete effectively against South Korean scale or Chinese cost advantages.
3. **10-20 year partnership horizon**. Framework's long-term nature rewards patience and relationship building. Japanese companies with decades-long ASEAN presence leverage existing relationships to expand into AFISS-aligned activities. For companies without presence, AFISS provides structured frameworks reducing entry barriers through shared facilities and partnerships.

Priority focus areas by company type:

1. **Materials and chemicals companies**: Infrastructure and processing initiatives across relevant ASEAN member states. Establish local presence supporting ASEAN manufacturing and broader Asia-Pacific exports.
2. **Equipment manufacturers**: Shared facility initiatives, capacity expansion in mature nodes for automotive and industrial applications, regional service hubs providing maintenance and technical support with recurring revenues.
3. **Design and IP companies**: Technology transfer partnerships with relevant ASEAN member states. Focus on automotive chips, industrial automation, IoT where Japanese expertise is strong and ASEAN manufacturing creates mutual benefits.
4. **Integrated manufacturers**: Joint ventures combining Japanese technology with ASEAN manufacturing scale. Establish regional supply chains—wafer processing, ATP, and assembly to reduce geopolitical concentration risks.

Monitor implementation, particularly in Indonesia, Vietnam, Thailand, and Malaysia where impacts will be most significant. Engage ASEAN business associations tracking policy developments. Maintain realistic expectations about timelines while positioning strategically for long-term opportunities as ASEAN's semiconductor ecosystem develops.