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Table of Contents

Introduction 4
Abstract 4
Keywords 4
1 Overview 5
2 Research questions 5
3 Methods 5
4 Findings and results 7
Developmental State Capacities 7
Environmental Achievements and Contradictions 9
Labour, Inequality, and Exploitation 11
European Union Policies and Global Supply Chains 13
5 Main results 16
6 Discussion and conclusions 19
7 Recommendations 21
8 References 24

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Introduction

Abstract

This case study examines green industrial policy in Southeast Asia, exploring how developmental states with established industrial upgrading abilities handle green transitions while maintaining competitive positions in global value chains. The research question asks: Can Southeast Asian developmental state models achieve ecological sustainability without compromising economic dynamism and poverty alleviation? Findings reveal that, although countries like Vietnam, Thailand, and Malaysia have quickly implemented relatively successful national policies through effective state coordination, export-oriented industrialisation patterns often reproduce precarious labour conditions and environmental pollution despite 'green' labelling. The study shows that Southeast Asia's developmental states have strong institutional capacities for coordinated green transitions that exceed market-led approaches; however, democratising these processes remains essential for truly fair outcomes.

Keywords

Industrial policy; trade; investment; just transition; state.

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1 Overview

This case study examines green industrial policy in Southeast Asia, exploring how developmental states with established industrial upgrading capabilities navigate green transitions while maintaining competitive positions in global value chains. Drawing on empirical research from an international workshop held in May 2025 in Bangkok, jointly organised by the Horizon Europe GreenPaths project, the ERC GRIP-ARM project, TNI, and the Science Technology and Innovation Policy Institute (STIPI). The study investigates the experiences of six Southeast Asian countries: Vietnam, Thailand, Malaysia, Indonesia, Singapore, and the Philippines—through a critical political economy perspective.

Our analysis reveals that although countries like Vietnam and Thailand have rapidly deployed effective national green policies through state coordination, export-oriented industrialisation patterns often reproduce precarious labour conditions and environmental pollution despite 'green' branding. The paper contributes to debates on industrial policy, state capacity, and the political economy of just transitions in the Global South. It argues that Southeast Asian developmental states possess strong institutional capacities for coordinated green transitions exceeding market-led approaches; however, democratising these processes remains essential for genuinely fair and sustainable outcomes.

Additionally, we examine the complex relationship between European Union climate and trade policies and Asia-Pacific green industrial strategies, revealing both convergences and contradictions.

2 Research questions

This research investigates three core questions: First, how do Southeast Asian developmental state models approach green industrial transitions, and what institutional capacities enable rapid deployment of renewable energy and green manufacturing? Second, what are the environmental and social costs of green industrialisation, particularly regarding labour conditions, gender dynamics, and resource extraction? Third, how do European Union policies—through climate standards, trade regimes, and strategic competition—shape Southeast Asian green industrial development pathways, and what opportunities exist for alternative South-South cooperation frameworks?

3 Methods

This case study is based on a literature review combined with regional stakeholder consultations and expert interviews spanning East, South, and Southeast Asia. Beyond conventional desktop research, this analysis draws comprehensively on an international

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seminar convened on 21–23 May 2025 at the Science, Technology and Innovation Policy Institute (STIPI) at King Mongkut's University of Technology Thonburi in Bangkok. The workshop, co-organised by STIPI, the Transnational Institute, the GreenPaths project, the ERC-funded GRIP-ARM project, and the University of Sussex, brought together academic researchers, civil society activists, government policymakers, and development practitioners from across the Asia Pacific. Participants included specialists with expertise spanning China, India, Indonesia, the Philippines, Singapore, South Korea, Thailand, and Vietnam. This diverse expert community provided crucial insights into implementation challenges, political obstacles to green transition, labour market dynamics, supply chain vulnerabilities, and divergent national policy priorities.

The workshop format enabled comparative discussion of how different developmental state models approach sectoral promotion, technology transfer, and labour governance within contexts of green industrialisation. Participants examined divergent national pathways: Vietnam's aggressive feed-in tariffs, contrasting with Thailand's hybrid state-private approach; Indonesia's infrastructure-led development, versus the Philippines' fragmented institutional coordination; and Singapore's comprehensive urban planning, versus Malaysia's selective sectoral targeting. These comparative discussions revealed both possibilities for policy learning and structural constraints limiting policy transfer across national contexts. The diversity of institutional arrangements and policy outcomes across Southeast Asia demonstrates that green industrial policy is not a singular approach, but a family of strategies adapted to national circumstances, regional positioning, and governance capacities.

The analysis employs a multidimensional framework that recognises that Southeast Asia's distinctive starting point differs fundamentally from those of other Global South regions. Environmental dimensions encompass both costs (pollution, deforestation, climate impacts from manufacturing) and benefits (renewable energy deployment, improved urban environmental quality). Social dimensions encompass labour precarity, displacement, and inequality alongside poverty reduction and enhanced state capacity for sectoral coordination. This balanced analytical approach avoids both uncritical celebration of green industrialisation and dismissal of genuine material achievements. The framework recognises that green transitions in Southeast Asia occur within inherited structures of inequality, while simultaneously creating opportunities for transformative change through deliberate policy choices.

The resurgence of industrial policy in the twenty-first century represents a decisive departure from decades of neoliberal orthodoxy. This transformation reflects multiple intersecting pressures: intensifying strategic competition between China and Western powers, the imperative of rapid decarbonisation amid the climate crisis, and the recognition that market mechanisms alone are insufficient to drive technological transition. Within this context, green industrial policy has emerged as a central framework through which developing economies attempt to reconcile economic development objectives with environmental sustainability imperatives (Juhász et al., 2024; Nem Singh, 2023).

Southeast Asia occupies a distinctive and consequential position within global green industrial dynamics. The region accounts for approximately 12% of global manufacturing

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and hosts pivotal links in emerging supply chains for renewable energy technologies, electric vehicles, batteries, and semiconductor components. Nevertheless, Southeast Asian governments face contradictory pressures: the imperative to upgrade manufacturing capabilities while addressing labour precarity, the need to decarbonise while managing fossil fuel dependencies, and the requirement to capture value chains while integrating within asymmetrical global trade architectures. Moreover, these dynamics unfold within a complex geopolitical context in which the United States, the European Union, and China each pursue distinct industrial policy regimes with significant implications for Asian development pathways (Nem Singh et al., 2025).

This paper presents a comprehensive political economy analysis of green industrial policy in Southeast Asia. Drawing on qualitative research combining systematic literature review, regional stakeholder consultations, and an international research workshop convened in Bangkok in May 2025, the analysis examines six focal countries: Vietnam, Thailand, Malaysia, Indonesia, Singapore, and the Philippines. The paper adopts a progressive political economy perspective informed by developmental state theory, critical global value chain analysis, and just transition frameworks. This approach enables examination of both material achievements and persistent contradictions in Southeast Asian green industrialisation. The analysis seeks to understand whether Southeast Asian developmental state models can achieve ecological sustainability and social justice without compromising economic dynamism and poverty alleviation, and whether global competitive pressures and asymmetrical power structures within international trade regimes obstruct transformative green transitions.

4 Findings and results

Developmental State Capacities

Southeast Asian economies occupy a distinctive position within the political economy of global industrial development. Following Japan's postwar developmental state model and the subsequent successful industrialisation of South Korea and Taiwan, Southeast Asian countries adopted systematic 'late development' strategies emphasising manufacturing capacity building, technology absorption, and productivity improvement. These strategies explicitly deployed state institutions to direct capital, manage technology flows, and coordinate sectoral development (Amsden, 1992; Wade, 1990). Unlike neoliberal frameworks that emphasise market liberalisation, developmental state approaches recognise that deliberate state intervention remains necessary for late-industrialising economies to overcome structural disadvantages and compete within global value chains.

Thailand exemplifies this approach. Through coordinated state orchestration of foreign direct investment, local content requirements, targeted skills development, and deliberate export promotion, the country became Southeast Asia's automotive

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manufacturing hub, producing over 2 million vehicles annually (Doner et al., 2021). This transformation was not spontaneous but reflected deliberate policy choices by state institutions, including the Board of Investment, which screened foreign investment proposals, imposed performance requirements, and channelled resources towards priority sectors. Malaysia pursued similar strategies within the electronics sector, advancing from simple assembly operations towards design and testing services. The Malaysian state actively promoted indigenous firm development through targeted policies and strategic support for national champions. Vietnam's more recent integration into global value chains demonstrates the continued relevance of developmental state approaches, particularly through state support for domestic champions such as VinFast in electric vehicle manufacturing and the deliberate cultivation of solar panel production capabilities (Nem Singh et al., 2025).

Substantial material improvements for populations accompanied these successes. Vietnam reduced poverty from 58% in 1993 to under 5% by 2020, among the fastest poverty-reduction trajectories globally, while maintaining world-leading growth rates (World Bank, 2021). Thailand's coordinated development eliminated absolute poverty through sustained manufacturing employment and rural development programmes. Malaysia achieved upper-middle-income status through deliberate sectoral upgrading. Public education and training systems built workforce capabilities, enabling continuous industrial upgrading. State enterprises and sovereign wealth funds maintained strategic control over critical sectors despite liberalisation pressures, preserving national autonomy in determining development trajectories. Coordinated wage growth policies in manufacturing sectors significantly improved living standards. However, these advances remain persistently unequal across regions and sectors, between urban and rural areas, and between core and peripheral workers.

Significantly, Southeast Asian manufacturing wages are substantially higher than those in South Asia or sub-Saharan Africa, despite persistent labour exploitation (Natsuda and Thoburn, 2021). These institutional legacies—distinctive amongst Global South regions—fundamentally shape possibilities for green industrial transitions. While labour conditions in export sectors warrant sustained criticism, Southeast Asian developmental states have demonstrated capacities for coordinated sectoral development that most other developing economies lack. Understanding contemporary green industrial policy requires recognising both the institutional capabilities these achievements represent and the persistent injustices they contain. The question confronting contemporary policymakers is whether these developmental state capacities can be redirected towards genuinely sustainable and equitable green transitions, or whether the contradictions embedded in previous industrialisation patterns will reproduce themselves in green sectors.

The Philippines presents a contrasting case, revealing how developmental-state institutional weakness constrains the possibilities for green industrial policy. Unlike Thailand and Vietnam, which have coherent, long-term sectoral strategies, Philippine policymaking has remained fragmented across competing bureaucratic agencies, resulting in inconsistent policy direction. The shift away from industrial policy following the 1986 democratisation, undertaken as part of neoliberal structural adjustment

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conditionalities, dismantled state institutions that had previously supported manufacturing development. Decades of liberalisation left the Philippines with a limited export base diversity, a weak supply chain integration, and inadequate infrastructure for industrial expansion. When climate change and international green demand emerged as development opportunities, the Philippines lacked the institutional capacity for a coordinated response comparable to those of Vietnamese or Thai approaches. This trajectory reveals that developmental state capabilities, once dismantled, prove extremely difficult to rebuild. Democratic transitions, undertaken under constraints imposed by international financial institutions, often involved an explicit rejection of state-directed development approaches, creating path dependencies that limit subsequent policy options.

Environmental Achievements and Contradictions

Vietnam has achieved one of the world's fastest solar energy transitions, demonstrating the potential of state-coordinated green industrial deployment. Installed solar capacity expanded from 86 megawatts in 2018 to approximately 16.5–17.6 gigawatts by the end of 2020, driven by aggressive state-mandated feed-in tariffs of US$93.5 per megawatt-hour (Do and Sharma, 2020; ASEAN Centre for Energy, 2021). This rapid expansion made Vietnam the world's third-largest solar market in 2020, with approximately 101,000 rooftop solar installations predominantly owned by small-scale producers and farmers seeking supplementary income. By the end of 2020, Vietnam's installed wind power capacity reached 600 megawatts. These achievements reflect deliberate state coordination through the Ministry of Planning and Investment, which maintains comprehensive sectoral strategies integrating industrial development, infrastructure provision, and workforce training. The Feed-in Tariff mechanism, while subsequently modified due to cost concerns, catalysed unprecedented renewable energy expansion by creating reliable investment certainty for both utility-scale and distributed renewable projects.

The Vietnamese solar success reflects not merely technological adoption but deliberate institutional innovation. The Feed-in Tariff mechanism, substantially higher than globally conventional rates, created investment certainty, attracting both domestic and foreign capital. Small farmers in the Mekong Delta installed rooftop systems, capturing tariff revenues to supplement agricultural income. The distributed renewable deployment differed markedly from conventional utility-scale approaches, creating more decentralised production and broader stakeholder participation. However, subsequent tariff reductions and grid integration challenges reveal tensions within rapid expansion: grid stability concerns, storage limitations, and the vulnerability of small producers to tariff policy changes. These technical challenges require ongoing state coordination and long-term policy commitment rather than market-driven spontaneous resolution.

Thailand's Alternative Energy Development Plan (2015–2036) coordinates the systematic expansion of solar, wind, and biomass energy, aiming to achieve 30% of final

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energy consumption from renewable sources by 2036 (Asian Development Bank, n.d.). Critically, the state utility EGAT retains strategic control over this transition while collaborating with private developers in accordance with government-determined parameters. This hybrid approach preserves public-interest representation while leveraging private-sector efficiency and capital. Thailand has successfully reduced its reliance on coal—which dominated its energy mix throughout the 1990s and 2000s—while simultaneously maintaining industrial competitiveness within competitive global automotive and electronics value chains, representing a substantially more sophisticated achievement than neoliberal narratives typically acknowledge. State planning enabled coordinated infrastructure development, technology acquisition, and workforce training supporting renewable energy transition while maintaining grid stability and industrial energy security.

Singapore's Green Plan 2030 aims to reach net-zero emissions by 2050, with 60% of electricity produced from low-carbon sources by 2035, including solar energy, regional power imports, and emerging technologies. An extensive public transport network covers 99% of households within a 10-minute walk of transit stations, resulting in notably low private vehicle ownership and associated emissions. These achievements, uncommon amongst comparable-income countries, reflect deliberate state orchestration of urban development, energy infrastructure, and transport systems. Singapore's constrained geography and small population enabled comprehensive state direction of development patterns, demonstrating the possibilities for integrated, climate-aligned urban planning when genuine policy autonomy exists.

Despite these renewable energy achievements, Southeast Asia faces severe environmental costs from green industrialisation. The region added over 50 gigawatts of coal capacity during the 2010s, substantially offsetting renewable energy deployment. Indonesia and the Philippines' coal mining expanded precisely as solar and wind capacity increased, revealing the contradictions in the simultaneous expansion of green and fossil fuels. Pollution from export-oriented manufacturing persists despite 'green' sector labelling, particularly in electronics and battery production. Environmental degradation from resource extraction—lithium, cobalt, nickel, and copper—required for clean energy transitions generates significant ecological destruction. It displaces communities, especially in Indonesian and Philippine territories where mining concessions overlap with indigenous lands and critical ecosystems (Nem Singh et al., 2025).

The contradictions between green energy expansion and resource extraction deserve particular attention. Southeast Asia's critical mineral wealth—including lithium deposits in Indonesia and Myanmar, cobalt in the Philippines, and nickel in Indonesia—positions the region as essential to global clean energy transitions. However, mining for these materials generates severe environmental costs: lithium extraction requires enormous water use in water-stressed regions, cobalt mining generates toxic tailings that contaminate water supplies, and nickel mining drives forest destruction. Mining communities face displacement, water contamination, and minimal compensation relative to the value of the extracted minerals. International mining companies, often backed by governments of the Global North and development finance institutions,

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structure extraction to maximise capital returns rather than local development benefits. Revenue capture by national governments often benefits connected elites rather than affected communities. Within Green industrial policy frameworks, critical mineral extraction remains largely unaddressed, with renewable energy expansion proceeding as if mineral supplies are infinite and costless. There is a fundamental contradiction: green industrial policy cannot proceed on current trajectories without confronting the extractive violence required for mineral sourcing. Genuine just transitions must include mining communities and establish equitable benefit-sharing arrangements with transparent revenue allocation and genuine community consent rights.

Vietnam's rapid expansion of solar panel manufacturing, despite its green credentials, relies on energy-intensive production processes that are substantially powered by fossil fuels. The carbon payback period for solar panel manufacturing remains substantial, requiring careful lifecycle accounting. Malaysia's electronics industry, which supplies critical components for renewable energy systems, generates substantial electronic waste and chemical pollution, often exported to less developed countries for informal recycling. Thailand's electric vehicle manufacturing ambitions require expansion of lithium extraction and refining infrastructure, with associated environmental costs transferred to mining regions and neighbouring countries. These contradictions demonstrate that export-oriented green manufacturing reproduces environmental degradation despite sustainability branding. The 'greening' of industrial policy has not fundamentally altered the extractive logic structuring Southeast Asian integration within global value chains. Sustainability remains predominantly oriented towards the Global North's consumer preferences and regulatory requirements rather than genuine ecological transformation.

Labour, Inequality, and Exploitation

Green industrial policy in Southeast Asia has generated substantial manufacturing employment in solar panels, electronics, and electric vehicles. Vietnam's solar sector expansion created direct and indirect employment opportunities while contributing to poverty reduction through export-driven growth. Manufacturing employment remains a crucial pathway for workers to access formal-sector positions, social protections, and wage income that exceeds that of agricultural alternatives. State-coordinated industrial development has distributed employment benefits unevenly but significantly compared with purely market-driven allocation. Thai automotive manufacturing supported millions of workers across assembly plants, component suppliers, logistics, and ancillary services. Malaysian electronics workers, despite exploitation, achieved living standards substantially higher than those available in agriculture or informal services.

However, these labour gains coexist with persistent precarity and exploitation. Green manufacturing sectors—particularly electronics and solar panel production—display working conditions structurally identical to those condemned in traditional manufacturing sectors (Natsuda and Thoburn, 2021). Workers face excessive hours (regularly exceeding fifty per week), inadequate wages relative to productivity, limited

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collective bargaining rights, and exposure to hazardous chemicals and processes. Women concentrate disproportionately in the worst-remunerated positions with limited advancement pathways, performing fine assembly work that damages eyesight and requires intense concentration for minimal compensation. Migrant workers, particularly from Myanmar, Cambodia, and Laos, face systematic exploitation with minimal legal protection. These dynamics reveal that 'green' sector designation does not assure labour justice or worker wellbeing. The structural vulnerability of workers remains determined by their position in the global value chain rather than by sectoral environmental credentials.

Gender dynamics within green manufacturing reveal particularly acute injustices. Women constitute seventy to 80%of workers in electronics assembly and solar panel manufacturing, concentrated in positions requiring fine motor control but offering minimal skill development. Wage segregation persists despite women's similar productivity to men, with women typically earning 15-30% less for identical work. Pregnancy discrimination remains widespread, with workers pressured to resign when pregnant, losing benefits and employment security. Sexual harassment by supervisors and male workers occurs with minimal institutional accountability. Childcare responsibilities disproportionately burden women, limiting their ability to work overtime shifts or secure promotions requiring flexibility. These gendered labour dynamics reproduce patriarchal structures within ostensibly modern manufacturing sectors, demonstrating that sectoral modernity carries no inherent gender justice implications without deliberate policy interventions.

Developmental state models have enabled poverty reduction and improvements in living standards compared with alternatives, yet have systematically suppressed independent labour organising. Thailand's post-1997 democratisation movement strengthened labour advocacy despite subsequent military interventions, creating space for independent unions and collective bargaining in some sectors. Vietnam's authoritarian system achieved rapid growth but systematically restricted civil society participation, including independent labour organisations and environmental advocacy, which are essential for equitable transitions. Labour federations remain state-controlled, limiting capacity for genuine worker representation in industrial policy formulation. Without democratisation enabling independent labour organisation, genuine collective bargaining, and democratic participation in industrial policy formulation, green transitions risk perpetuating patterns of exploitation beneath environmental legitimacy. This tension between the developmental state's capacity for rapid transition and its tendency towards authoritarian governance remains unresolved, constraining possibilities for transformative social change.

The relationship between labour organising and green industrial policy deserves closer examination. In Thailand, independent unions have achieved significant gains despite state restrictions, securing wage improvements and safety protections in several manufacturing sectors. In Vietnam, the absence of independent unions means state-controlled federations cannot effectively represent worker interests against employer demands. In Malaysia, restrictions on migrant worker organising mean the workforce, which is most vulnerable to exploitation, lacks collective representation. However,

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worker organising across supply chains faces particular challenges within green manufacturing: production often disperses across multiple suppliers in different countries, complicating union coordination; rapid technological change creates skills gaps limiting worker bargaining power; employer threats to relocate to lower-cost jurisdictions discipline worker demands; international competition pressures manufacturers to minimise labour costs. Building adequate worker power within green supply chains requires simultaneously strengthening national labour movements and developing international labour solidarity mechanisms enabling coordination across borders. This demands resources and strategic support rarely available to labour organisations operating with minimal external support, particularly in contexts where governments restrict independent organising.

European Union Policies and Global Supply Chains

The European Union has emerged as a significant actor shaping Southeast Asian green industrial policy development through multiple policy mechanisms spanning climate governance, trade regimes, supply chain regulation, and sectoral standards. EU policies both enable and constrain Southeast Asian green industrialisation pathways in complex ways, reflecting underlying tensions between the EU's own strategic autonomy imperatives and stated commitments to equitable development and climate justice. Understanding these dynamics requires examining how the Global North's standard-setting authority intersects with the Global South's policy constraints, particularly in asymmetrical trade relationships and global value chains. European sustainability demands increasingly structure production requirements for suppliers, creating cascading compliance burdens throughout supply chains.

EU environmental regulations and product standards—particularly directives governing battery composition, carbon content, and supply chain transparency—substantially shape Southeast Asian manufacturing specifications. The Battery Regulation (EU 2023/1542) and proposed Carbon Border Adjustment Mechanism (CBAM) establish environmental and labour standards that Southeast Asian producers must meet to access European markets. These regulations reflect legitimate environmental governance concerns, yet create compliance burdens disproportionately affecting smaller producers and less-capitalised manufacturers. Companies operating within global value chains increasingly demand proof of 'ethical' sourcing and decarbonised production, intensifying pressure on Southeast Asian suppliers to rapidly upgrade environmental and social standards. The cost of compliance documentation, third-party auditing, and certification creates barriers to market entry for smaller manufacturers.

The EU's supply chain due diligence directives, which demand detailed documentation of labour conditions, environmental impacts, and material sourcing across production networks, create informational asymmetries that favour large multinational corporations capable of managing compliance documentation. Smaller Southeast Asian manufacturers face significant costs in establishing compliance infrastructure, often requiring external consultants and certification bodies based in the Global North. These

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regulations, while addressing legitimate concerns about labour exploitation and environmental degradation, simultaneously entrench power asymmetries within global value chains. Southeast Asian companies must comply with EU standards without formal participation in standard-setting processes, reflecting broader North-South structural inequalities in global governance (Farrell and Newman, 2019). The standardisation process itself marginalises Global South voices, reproducing historical patterns in which more prosperous and more powerful economies set the parameters for Global South production.

EU standards function not merely as technical requirements but as mechanisms through which Global North economies shape production relations in Global South suppliers. The standards assume particular production models, worker relations, and documentation practices reflecting established manufacturing experience. They impose costs on alternative models—whether more decentralised small producer networks or cooperative manufacturing arrangements—that might be locally appropriate but do not conform to European expectations. Compliance requires hiring external auditors, predominantly based in the North, creating service export opportunities for Global North firms while imposing costs on Global South manufacturers. The standards embody normative assumptions about appropriate governance, labour relations, and environmental management derived from Global North contexts but presented as universal best practices. Southeast Asian producers, lacking seats at standard-setting tables, absorb compliance costs without participating in defining requirements. This trend reproduces colonial patterns in which peripheral economies adopt institutional models designed elsewhere, without genuine choice or the capacity to negotiate alternatives. Challenging Global North dominance in standard-setting requires both raising the Global South's voice in international forums and developing alternative standards that reflect Global South priorities and development needs.

The EU's industrial policy response to Chinese technological advancement has intensified competition between Western and Asian developmental state models. EU initiatives, including the European Chips Act (€43 billion), the Net-Zero Industry Act, and the proposed Critical Raw Materials Act, attempt to secure European technological sovereignty in the semiconductor and clean energy sectors. These EU policies privilege European producers and attract semiconductor and battery manufacturing investment to Europe, directly competing with Southeast Asian industrialisation objectives. Simultaneously, the EU pursues selective trade negotiations and preferential agreements with Southeast Asian countries, increasingly incorporating environmental and labour standards chapters that create leverage points through which the EU shapes partner-country policies. Trade agreements become mechanisms through which Global North environmental and labour preferences become binding commitments for Global South countries.

The EU's Carbon Border Adjustment Mechanism, though designed to prevent carbon leakage and level the playing field internationally, will disproportionately affect Southeast Asian manufacturers reliant on fossil fuels. While countries with access to renewable energy (Vietnam, Thailand) may weather CBAM impacts more successfully, manufacturers in coal-dependent economies face substantial tariff costs unless energy

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systems decarbonise rapidly. The CBAM simultaneously creates incentive structures for green energy investment—potentially supporting EU policy objectives—and imposes costs that favour capital-abundant Global North producers over less-capitalised Global South manufacturers. This policy contradicts just transition principles and climate justice frameworks prioritising differentiated responsibilities reflecting historical emissions and development needs (Oqubay et al., 2020). The burden of transition falls disproportionately on economies least responsible for historical emissions.

The CBAM implementation timeline reveals particular sensitivity to transition concerns. The mechanism begins with a reporting phase (2023–2025) requiring importers to monitor and declare the carbon content of imported goods, followed by a transition phase (2025–2034) in which importers purchase CBAM certificates at gradually increasing rates, eventually replacing tariff exemptions and rebates under the EU's existing carbon trading system. For Southeast Asian exporters, this creates cascading compliance burdens and cost uncertainties. Manufacturers must conduct lifecycle carbon assessments across supply chains, often extending to resource extraction in third countries beyond their direct control. The complexity of carbon accounting creates opportunities for gaming and uncertainty about actual carbon content, disadvantaging smaller producers without sophisticated monitoring capacity. Large multinational corporations can absorb CBAM costs more readily, potentially accelerating consolidation within Southeast Asian manufacturing as smaller competitors become uncompetitive.

EU policies prioritising domestic semiconductor and battery manufacturing may inadvertently marginalise Southeast Asian producers from critical green technology supply chains. The European Chips Act and Net-Zero Industry Act create substantial subsidies attracting battery and semiconductor investment to Europe, potentially reducing demand for Southeast Asian intermediate component production. This risks reproducing patterns familiar from earlier industrial transitions: peripheral economies develop manufacturing capacity for sectors subsequently relocated to core countries as technological sophistication increases. For Southeast Asia, which has invested substantially in semiconductor assembly, battery component manufacturing, and electric vehicle production, EU reshoring strategies threaten the profitability and viability of industrialisation investments. The region's development aspirations depend on sustained manufacturing capacity, not relegation to remaining labour-intensive assembly operations.

However, the complete reshoring scenario remains unlikely. EU industrial policy realistically aims to increase European production shares while maintaining offshore production in favourable locations, particularly for labour-intensive assembly operations. This reality creates opportunities for Southeast Asian manufacturers capable of producing components and assembled products meeting EU environmental and labour standards. The challenge for Southeast Asian policymakers is to position countries within the reshaped international division of labour, where policy options are constrained by EU standard-setting authority and investment prerogatives. Conversely, Southeast Asian governments are actively pursuing diversified supply chain relationships, particularly developing South-South cooperation with India, China, and

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Latin America, potentially reducing dependence on European markets and standards (Nem Singh et al., 2025). Regional cooperation mechanisms, including ASEAN, provide frameworks for collective negotiation with Global North economies, though institutional weaknesses limit their effectiveness.

South-South cooperation, particularly with China and India, offers alternative pathways to reducing dependence on Global North's markets and standards. China's Belt and Road Initiative has invested substantially in Southeast Asian energy infrastructure, manufacturing facilities, and critical mineral extraction. While controversial due to its environmental and labour implications, Chinese involvement offers alternatives to Western-dominated development finance and technology partnerships. India's solar manufacturing expansion and growing battery production capacity create opportunities for technology cooperation. However, South-South cooperation carries distinct risks: Chinese and Indian investments sometimes reproduce exploitative labour practices and environmental degradation in the absence of adequate host-country regulation; technology transfer agreements may embed dependence on foreign firms rather than building genuine domestic capacity; financial arrangements can create debt burdens that limit policy autonomy. Genuine progressive South-South cooperation requires strong host-country regulation, transparent governance, and deliberate capacity-building rather than mere technology substitution. ASEAN institutions could facilitate South-South cooperation frameworks that enable knowledge sharing and joint development initiatives. However, this requires ASEAN members to overcome historical suspicions and competing interests to establish effective regional mechanisms. Given diverse development levels and policy orientations across ASEAN, this remains politically challenging. Nevertheless, developing genuine South-South alternatives to Global North-dominated frameworks represents an essential element of progressive green industrial strategy.

5 Main results

State coordination remains absolutely crucial for the swift deployment of renewable energy infrastructure and integrated green industrial sectors. Vietnam's extraordinary solar expansion and Thailand's coordinated renewable planning demonstrate conclusively that effective government intervention outperforms market-led approaches in rapidly scaling clean energy. This finding directly contradicts three decades of neoliberal policy recommendations emphasising private initiative and market mechanisms. Southeast Asian experience demonstrates that without deliberate state orchestration, capital flows remain insufficient, coordination failures persist, and technological transition proceeds much more slowly. State-owned utilities retaining strategic control, combined with performance requirements imposed on foreign investors, enable rapid sectoral transformation that market mechanisms alone cannot achieve (Nem Singh, 2023; Juhász et al., 2024). The speed of renewable energy deployment in Vietnam and Thailand significantly exceeds comparable-income countries relying on market mechanisms.

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Vietnam's feed-in tariff mechanism enabled grid-connected capacity expansion within 2 to 3 years, whereas comparable countries required significantly longer periods. Thailand's integrated renewable planning, spanning energy, water, and agricultural sectors, enabled coordinated infrastructure development. These achievements reflect deliberate state institutions directing capital, setting priorities, and implementing consistent policies. A comparative analysis of renewable energy expansion across developing countries reveals a consistent pattern: countries with strong state capacity and deliberate industrial policy achieved faster transitions than those relying on market-driven alternatives. This finding carries profound implications for global climate policy: achieving the requisite carbon reductions within the remaining timeframe likely requires strengthening state capacities for coordinated industrial policy, contradicting dominant neoliberal frameworks that emphasise privatisation and market liberalisation. Climate justice requires not merely transitions but equitable transitions that protect and advance working people's interests.

'Green' sector designation offers absolutely no assurance of social justice, labour dignity, or environmental integrity. Electronics manufacturing and solar panel production display exploitative working conditions structurally identical to those in traditional sectors, which have been condemned for decades. Without robust independent labour organisations, democratic participation in policy formulation, and mechanisms ensuring fair distribution of gains, green industrialisation risks perpetuating exploitation beneath environmental legitimacy. This finding challenges mainstream narratives equating green transitions with social progress. The relationship between sectoral 'greenness' and labour standards is contingent, dependent on deliberate policies that prioritise worker rights and democratic governance rather than being automatic. Environmental credentials carry no inherent labour or social benefits; these outcomes require deliberate political struggle.

Electronics manufacturing sectors designated as 'green' due to producing renewable energy components display identical labour exploitation patterns to traditional sectors. Worker wages typically range from three to five US dollars per day, insufficient to meet basic needs in most Southeast Asian contexts. Working hours regularly exceed fifty per week with minimal compensation for overtime. Occupational health hazards, including chemical exposure and repetitive strain injuries, remain inadequately addressed. Women workers are concentrated in the lowest-wage positions with limited advancement pathways. Migrant workers face particular vulnerability with minimal legal protections and employer restrictions on freedom of movement. These conditions persist despite international scrutiny of supply chains and certification systems that claim to verify ethical labour practices. The gap between certified compliance and actual labour conditions reveals fundamental limitations of market-based accountability mechanisms. Genuine labour justice requires independent worker organisations capable of monitoring conditions and negotiating improvements directly with employers, supported by government enforcement of labour standards. This demands strengthening rather than weakening labour regulations, contrary to competitive liberalisation pressures.

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Developmental state models necessitate democratisation for genuinely transformative results. Authoritarian steering facilitated rapid industrialisation in past contexts, but did so systematically at substantial costs to labour rights, environmental health, and democratic participation. Contemporary green transitions demand participatory governance extending far beyond elite consultations. Thailand's recent democratic movements strengthened labour advocacy despite militarism; Vietnam's restrictions on civil society participation limit equitable transitions. Policymakers in other Global South regions contemplating developmental state strategies must grapple with this fundamental tension: developmental state effectiveness in previous eras occurred within authoritarian contexts that systematically repressed labour organisation and environmental advocacy (Natsuda and Thoburn, 2021). This tension suggests that achieving genuinely just green transitions may require developmental state institutional capacities combined with democratic accountability mechanisms absent from historical models.

Assertive state policies actively enable opportunities for technology transfer and industrial upgrading. Local content requirements, performance conditions imposed on foreign investment, support for domestic research institutes, and incentives for domestic firm development have fostered indigenous technological capabilities despite neoliberal predictions that such policies would fail (Doner et al., 2021). Multinational corporations, responding to state pressure and market opportunities, have increasingly localised technological development. Vietnam's emergence as a solar panel producer reflects deliberate state investment in manufacturing capability, including support for domestic firms and technology partnerships. Thailand's automotive sophistication reflects decades of coordinated state-business collaboration, including consistent support for supplier development and quality improvement programmes. These achievements remain unthinkable under purely market-led approaches that privilege foreign investors' prerogatives without reciprocal development obligations (Wade, 1990; Amsden, 1992). Asymmetrical market access for foreign firms must be balanced by development conditions protecting the local industry.

Technology transfer mechanisms within green industrial policy reveal inherent tensions between profit imperatives and development objectives. Multinational corporations typically resist genuine technology transfer, preferring to supply components and maintain monopolies on advanced production stages. Vietnamese solar companies, despite rapid capacity expansion, predominantly assemble imported cells rather than manufacturing from raw materials, limiting value capture. Thai automotive firms, while achieving substantial domestic content through local suppliers, remain dependent on foreign firms for engine technology and advanced components. This situation reflects global value chain structures in which the lowest-wage locations focus on labour-intensive assembly operations, while core-country corporations control capital-intensive, technology-rich stages. Breaking these patterns requires deliberate policy intervention: mandatory technology transfer as investment conditions, support for domestic research and development, protection of infant industries during capability-building, and patient capital to enable long-term development investments. China's experience demonstrates the possibilities for indigenous technological development

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when the state consistently prioritises capability-building over short-term profit extraction. However, this requires regulatory autonomy and development finance capabilities that many Southeast Asian countries lack. International technology cooperation frameworks, through ASEAN or South-South partnerships, could strengthen technological capabilities while reducing individual countries' political costs of protecting domestic industries.

6 Discussion and conclusions

The political economy of green industrial transition in Southeast Asia involves fundamental questions of power, legitimacy, and democratic governance. Technical policies alone—whether regarding renewable energy deployment, manufacturing incentives, or labour standards—prove insufficient without political movements capable of sustaining pressure for equitable implementation. History demonstrates that progressive reforms typically result from organised social pressure rather than enlightened policymakers spontaneously embracing justice. Labour movements, environmental organisations, farmer organisations, and youth climate activists represent essential constituencies whose mobilisation determines whether green transitions serve the interests of the majority or reproduce existing inequalities. Supporting these movements through funding, international solidarity, and political recognition represents a crucial contribution to progressive outcomes. Simultaneously, sympathetic policymakers and bureaucrats require protection and support when implementing progressive policies against opposition from entrenched interests. Building cross-sectoral alliances connecting labour, environmental, peasant, and development-focused organisations creates opportunities for political pressure that transcends sectional interests. These movements must simultaneously operate nationally, where state power concentrates, and transnationally, where corporate and financial power operates. This reality requires innovations in movement coordination, strategic thinking, and resource mobilisation, often beyond the current capacities of civil society organisations operating with limited resources.

Southeast Asia's developmental state legacies offer essential institutional foundations for green transitions that most other Global South regions fundamentally lack. Strong state coordination, sectoral expertise, engagement with foreign investors, and invested capacity for long-term planning represent comparative advantages enabling rapid technological deployment. These institutional capabilities have enabled renewable energy transitions and the expansion of green manufacturing, substantially outpacing market-driven alternatives in comparable-income countries. The region offers opportunities for accelerated environmental transition when state capacity is deliberately mobilised towards sustainability objectives.

Simultaneously, achieving genuinely just and sustainable outcomes requires democratising developmental state capacities, enhancing labour and environmental protections, and challenging both domestic and international power structures that

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obstruct transformative change. The analysis reveals persistent contradictions: state coordination enables rapid transition but without democratic governance risks authoritarian imposition; manufacturing growth creates employment but often involves exploitative working conditions; renewable energy expands while fossil fuels simultaneously increase; green sectors emerge while extractive logic persists. These contradictions cannot be resolved through technical policy adjustments alone but demand a fundamental reorientation of power relations and development priorities. The stakes involve distributional justice and genuine ecological transformation, not merely technological substitution that maintains existing power hierarchies.

European Union policies shape these dynamics substantially through climate standards, trade regimes, and strategic competition, yet often in ways that reproduce North-South inequalities and constrain Southeast Asian policy autonomy. Progressive green industrial policy requires both advancing environmental and labour standards while resisting Global North domination of standard-setting and supply chain governance. Southeast Asian governments must simultaneously embrace state capacity for sectoral development while democratising these capacities; maintain openness to foreign investment while protecting technology and establishing development conditions; and integrate into global value chains while building regional cooperation, reducing Global North dependence. These tensions cannot be perfectly reconciled but require sustained political negotiation.

The stakes for Southeast Asia are profound: the region's development trajectory, its position within shifting global orders, and crucially, whether green transitions deliver genuine improvements in wellbeing and ecosystem integrity for the hundreds of millions of people the region encompasses. Meeting these challenges demands sustained political commitment to democratic governance, labour rights, and environmental justice as non-negotiable components of green industrial strategies. The technical capacity exists; the political will to democratise power relations fundamentally constrains transformation. Building that political will requires sustained organising by labour movements, environmental activists, and social movements capable of maintaining pressure on state institutions and transnational corporations. Without this counter-power from below, developmental state capacities risk being mobilised for transitions that reproduce existing inequalities and ecological destruction beneath green branding.

The final analysis returns to fundamental questions of power and legitimacy. Southeast Asian governments face pressures from multiple directions: international financial institutions demanding liberalisation, multinational corporations seeking favourable investment conditions, the climate crisis demanding urgent transitions, and working populations requiring decent livelihoods. Reconciling these competing demands requires political leadership willing to prioritise genuine development and sustainability over narrow elite interests. This proves especially challenging given transnational corporate integration into Southeast Asian state institutions through corruption, revolving-door arrangements between government and business, and ideological commitment to neoliberal frameworks. However, historical precedents demonstrate that transformative change becomes possible when organised movements create sufficient

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political pressure for reform. Vietnam's revolutionary transformation, Thailand's labour movements, Malaysia's indigenous rights advocacy, and the Philippines' democratic transitions all involved sustained political struggle rather than elite goodwill. Progressive green industrial policy requires similar sustained movements capable of maintaining pressure on state institutions and multinational corporations. This report hopes to contribute to that essential struggle through documenting possibilities for state-led green transitions, revealing contradictions within current approaches, and identifying pathways towards genuinely just and sustainable industrial development.

7 Recommendations

Drawing on the analysis above, several priorities emerge for a progressive green industrial policy that advances both ecological sustainability and social justice in Southeast Asia. Firstly, strengthening independent labour protections and enabling genuine collective bargaining independent from state co-optation remains essential. Green industrialisation must embed labour rights as structural requirements, not optional supplements. This aim requires moving beyond formal frameworks towards active enforcement mechanisms and meaningful worker participation in monitoring and governance. Trade union independence, protection against victimisation, and genuine collective bargaining rights should be prioritised within green sector development policies.

Secondly, expanding mechanisms for democratic participation in industrial policy formulation beyond elite consultations between state bureaucracies, multinational corporations, and selected business associations is vital. Worker organisations, environmental activists, and affected communities must participate meaningfully in priority-setting for green transitions. This demands institutional innovations enabling participatory governance at national and regional levels, including meaningful representation in policymaking bodies rather than consultative window-dressing. Affected communities should have veto power over resource extraction and industrial projects impacting their territories, not merely consultation rights.

Thirdly, increasing technology transfer requirements with compulsory licensing provisions and substantial public research investment should be pursued vigorously. Technology transfer should not depend on corporate voluntary initiatives but instead be a binding condition for access to Southeast Asian markets and resources. This approach contrasts sharply with current regimes that privilege intellectual property protection over development needs. Regional cooperation mechanisms should coordinate technology policies to prevent competitive races to the bottom (Oqubay et al., 2020). Public research institutions should be strengthened to develop indigenous technological capabilities rather than remaining dependent on foreign firms.

Fourthly, enhancing enforcement mechanisms for environmental governance by moving beyond regulatory frameworks towards active monitoring, public participation, and meaningful sanctions for violations is essential. Enforcement must extend beyond

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formal-sector manufacturers to supply chains and informal-sector producers, addressing currently unregulated environmental externalities. Developing context-specific development indicators beyond GDP growth reflecting wellbeing, ecological health, and distributional outcomes would reorient policy evaluation away from conventional growth metrics (Noman and Stiglitz, 2017). Environmental impact assessments should be mandatory before industrial expansion, with meaningful community consultation and compensation for affected populations.

Finally, creating ASEAN-wide frameworks for joint technology development, coordinated labour standards, and environmental protection remains crucial to preventing a race to the bottom. Regional cooperation should enhance collective bargaining power against transnational corporations and Global North trade partners, enabling Southeast Asian countries to negotiate from a collective rather than an individual position within global value chains. South-South technology collaboration, particularly with India and China, provides alternatives to Global North-led intellectual property regimes. Harmonised labour standards across ASEAN would prevent capital flight to the lowest-wage jurisdictions and protect workers' collective rights.

Just transition frameworks, increasingly prominent in international climate discourse, deserve critical examination within Southeast Asian contexts. Global discussions of just transitions typically focus on coal miners and fossil fuel industry workers requiring retraining and income support during energy transitions. Nevertheless, Southeast Asian energy transitions co-occur with manufacturing expansion, creating complex labour dynamics in which declining fossil fuel sectors coexist with expanding green manufacturing. Workers displaced from coal mining lack guaranteed pathways into green manufacturing jobs; retraining programmes often teach skills that do not align with local job availability. Gender dimensions remain largely absent from just transition discussions, despite women constituting the majority of workforces in light manufacturing and green sectors. The family and community consequences of industrial transitions receive minimal attention despite their profound impacts on household survival strategies. Just transition frameworks must extend beyond income support for affected workers towards comprehensive restructuring of development pathways, ensuring transitions benefit working people and marginalised communities rather than merely substituting one form of exploitation for another. This demands substantial public investment in education, retraining, infrastructure, and social protection systems alongside coordinated industrial policy.

ASEAN institutions, despite a formal commitment to regional cooperation, have historically prioritised national sovereignty over coordinated action, thereby limiting their effectiveness in addressing problems that require collective responses. The ASEAN Comprehensive Investment Agreement and various trade frameworks have predominantly liberalised markets rather than coordinated development strategies. Green industrial policy, however, creates incentives for deeper coordination: harmonised standards reduce compliance costs for producers serving multiple markets; joint technology development platforms multiply individual-country research capacity; coordinated labour standards prevent capital flight to the lowest-wage jurisdictions. Indonesia, as the largest economy in Southeast Asia and the ASEAN chair, could lead the

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establishment of regional green industrial frameworks. Vietnam's technological sophistication in renewables could anchor regional knowledge platforms. Thailand's manufacturing expertise could support sectoral development elsewhere. Such cooperation would require moving ASEAN beyond rhetoric towards genuine institutional capacity for coordinated policymaking, a fundamental shift from historically fragmented approaches.

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8 References

Amsden, A. H. (1992). *Asia's Next Giant: South Korea and Late Industrialisation*. Oxford: Oxford University Press.

ASEAN Centre for Energy. (2021, April 13). Vietnam smashes 2020 solar capacity records. https://aseanenergy.org/vietnam-smashes-2020-solar-capacity-records/

Asian Development Bank. (n.d.). Alternative Energy Development Plan, 2015–2036 (Thailand): ADB's Law and Policy Reform Program. https://lpr.adb.org/resource/alternative-energy-development-plan-2015-2036-thailand

Do, T. N., and Sharma, D. (2020). Underlying drivers and barriers for solar photovoltaics diffusion: The case of Vietnam. *Energy Policy*, 144, 111561. https://doi.org/10.1016/j.enpol.2020.111561

Doner, R. F., Noble, G. W., and Ravenhill, J. (2021). *The Political Economy of Automotive Industrialisation in East Asia*. Oxford: Oxford University Press.

Farrell, H., and Newman, A. L. (2019). Weaponised Interdependence: How Global Economic Networks Shape State Coercion. International Security, 44(1), 42–79. https://doi.org/10.1162/isec_a_00351

Juhász, R., Lane, N., and Rodrik, D. (2024). The new economics of industrial policy. *Annual Review of Economics*, 16, 213-242. https://doi.org/10.1146/annurev-economics-081023-024638

Natsuda, K., and Thoburn, J. (2021). *Automotive Industrialisation: Industrial Policy and Development in Southeast Asia*. New York: Routledge.

Nem Singh, J. T. (2023). The advance of the state and the renewal of industrial policy in the age of strategic competition. *Third World Quarterly*, 44(11), 2527–2545. https://doi.org/10.1080/01436597.2023.2217766

Nem Singh, J. T., Ngamarunchot, B., and Somsiriwong, P. (2025). Green industrial policy in Asia Pacific and the global supply chain: A dynamic exchange of ideas for a sustainable future. Transnational Institute. https://www.tni.org/en/article/green-industrial-policy-in-asia-pacific-and-the-global-supply-chain

Noman, A., and Stiglitz, J. E. (eds.). (2017). *Efficiency, Finance, and Varieties of Industrial Policy: Guiding resources, learning and technology for sustained growth*. New York: Columbia University Press.

Oqubay, A., Cramer, C., Chang, H.-J., and Kozul-Wright, R. (Eds.). (2020). *The Oxford Handbook of Industrial Policy*. Oxford: Oxford University Press.

Vietnam Briefing. (2023, January 17). Feed-in tariffs for solar and wind power projects in Vietnam. https://www.vietnam-briefing.com/news/feed-in-tariffs-solar-wind-vietnam.html

Wade, R. H. (1990). *Governing the Market: Economic theory and the role of government in East Asian industrialisation*. Princeton: Princeton University Press.

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