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Table of Contents

Introduction	4
Abstract	4
Keywords	4
1 Overview	5
2 Research questions	5
3 Methods	6
4 Findings and results.....	6
The Latin American Context: Recent Initiatives and Structural Challenges	6
Geopolitical Dimensions: China, the United States, and the European Union	12
6 Discussion and conclusions	15
7 Recommendations	16
8 References	18

Introduction

Abstract

This case study examines the challenges and opportunities for green industrial policy in Latin America, focusing on how countries in the Global South balance the demands of mineral extraction for global green technologies, development needs, and climate action. While Costa Rica and Uruguay have successfully implemented state-led renewable energy programmes, the ‘lithium triangle’ (comprising Argentina, Bolivia, and Chile) faces increased extractivism that benefits elites and transnational corporations rather than local communities. Resource nationalism often perpetuates dependency patterns, characterised by limited technology transfer. The study highlights that the success of green industrial policies largely depends on state capacity, democratic participation mechanisms, and regional cooperation frameworks, rather than resource endowments alone, challenging both neoliberal and deterministic pessimistic narratives.

Keywords

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

1 Overview

Latin America faces a crucial challenge: ensuring long-term economic and social development while adopting policies to address the climate crisis. After decades of neoliberal dominance and reliance on global value chains, the region stands at a critical juncture where the global energy transition could either deepen existing marginalisation or foster real structural change. Green industrial policy (GIP) can be a strategic tool for addressing this challenge. Drawing on recent policy developments and debates across the region, the paper argues that Latin America needs a fresh perspective, an ecological neodevelopmentalist consensus, tailored to the 21st-century realities of deglobalisation, the energy transition, and multipolar geopolitical competition.

For genuinely green industrial policy to succeed in Latin America, it must address four key dimensions: respecting planetary boundaries while enabling development; achieving transformation at unprecedented speed and scale; mobilising financing to bridge the substantial climate finance gap; and facilitating international cooperation, especially South-South solidarity, given the failures of Global North-led multilateral institutions. This paper outlines six pillars for a progressive green industrial policy agenda: pragmatic regional collaboration around targeted productive chains; strengthened state capacity; shifting natural resource sectors from rent extraction to innovation ecosystems; strategic neoindustrialisation connecting sectors with frontier technologies; intentional green industrialisation in renewable energy and clean technology manufacturing; and building broad social legitimacy through holistic approaches that explicitly connect productive transformation with welfare enhancement and a just transition.

The stakes could not be higher. Without structural change, Latin America risks either ongoing stagnation or a return to dependent primary-export models under a green rhetoric. Through coordinated efforts, the region has unique advantages—extensive renewable energy potential, critical mineral reserves, existing industrial capacities, and biodiversity—to advance sovereign and sustainable development. The challenge is whether political will, institutional capacity, and social mobilisation can come together to unlock this potential before climate tipping points shut down transformative opportunities.

2 Research questions

This case study addresses several critical questions: Can green industrial policy break Latin America's dependency patterns in the global economy, or does it risk reproducing unequal exchange under new environmental guises? How can the region move beyond green colonialism toward genuine South-South cooperation and equitable technology transfer? What institutional reforms are necessary to operationalise a progressive green industrial agenda grounded in democratic participation and social legitimacy? How do geopolitical interests of China, the United States, and the European Union shape regional decarbonisation possibilities and constrain policy options?

3 Methods

Based on comparative political economy analysis, this study examines recent developments in several Latin American economies and regional policy initiatives. The research combines secondary source analysis of policy documents, academic literature, and institutional reports with insights from collaborative knowledge production involving researchers, social activists, and government officials across the region. The analysis incorporates perspectives from workers' organisations, indigenous communities, and civil society engaged in debates on green transformation.

This case study focuses on renewable energy transitions, critical mineral extraction, and sectoral industrial policy initiatives, with particular attention to the lithium triangle (Argentina, Bolivia, Chile) and digital economy development. The analysis draws from workshops, forums, and seminars organised across Rio de Janeiro, Mexico City, Bogotá, and Montevideo between October 2024 and October 2025, incorporating diverse perspectives from Latin American scholars, policymakers, labour leaders, and practitioners engaged in green economic transformation. This collaborative knowledge-production approach ensures that policy recommendations reflect both academic expertise and the ground-level realities of workers and communities affected by industrial policy decisions.

4 Findings and results

The Latin American Context: Recent Initiatives and Structural Challenges

Globally, the orthodox neoliberal idea that markets alone can efficiently allocate resources to green technologies has proven insufficient, both in theory and in practice. The climate crisis signifies a systemic failure that requires coordinated state action to address technological lock-in, infrastructure gaps, and the substantial financing needed for a swift green transformation (Lebdoui, 2024). Nevertheless, state intervention by itself is not enough without democratic governance, regional cooperation, and a clear focus on distributional outcomes and territorial justice.

In this context, three prominent external actors influence Latin America's prospects for a green transition: China, both a significant investor in extractive sectors and increasingly involved in renewable energy infrastructure; the United States, pursuing friendshoring and nearshoring strategies to shift supply chains away from Chinese dominance; and the European Union, promoting its Green Deal with unclear implications for Latin American partners, who fluctuate between cooperation and what critics term green colonialism (Hamouchene and Sandwell, 2024). The risk of green reprimarisation—where Latin America becomes merely a supplier of critical minerals and clean energy for reindustrialisation in the Global North—looms large. The lithium triangle exemplifies these tensions: despite holding massive lithium reserves, Argentina, Bolivia, and Chile have struggled to move beyond raw-material exports towards battery manufacturing and higher-value-added production (Sanchez-Lopez, 2023). Water-intensive extraction processes have created what environmental activists call sacrifice

zones (Juskus, 2023), impacting indigenous communities, while revenues flow primarily to transnational corporations rather than financing local development.

Nevertheless, the region also features successful examples of government-led green transitions. Uruguay shifted its electricity mix from 35% fossil fuels in 2007 to 98% renewables by 2024 through coordinated public investment and strategic planning, leading to annual savings of hundreds of millions of euros in energy imports (Earth.org, 2025). Costa Rica relies almost entirely on renewable electricity generation (Climate Action Tracker, 2024). Brazil's Nova Indústria plan represents an ambitious effort to connect decarbonisation with industrial upgrading policies (Reis Maria et al., 2025).

Understanding Latin America's current predicament requires examining the structural break that occurred around 1980, marking the exhaustion of import-substitution industrialisation and the rise of neoliberal orthodoxy. Productivity data reveal two sharply differing historical phases. Between 1950 and 1980, during the developmentalist era—despite its limitations—productivity in major Latin American economies grew at 2.8% annually, maintaining pace with or occasionally surpassing U.S. productivity gains and thereby narrowing relative gaps (Kulfas and Schapiro, 2025). Brazil, Mexico, and Argentina experienced sustained productivity growth, developing diversified industrial structures encompassing steel, petrochemicals, automobiles, machinery, and consumer durables.

The post-1980 period shows a markedly different pattern. Regional productivity growth in Latin America declined to nearly zero from 1980 to 2019, even as other parts of the world continued to grow. This decline in productivity signals a premature deindustrialisation (Palma, 2025), characterised by the shrinking share of manufacturing in employment and output. In Argentina, manufacturing employment peaked in the mid-1970s before declining; in Brazil and Mexico, the share of manufacturing in GDP has stagnated or decreased since the 1980s, despite substantial population growth. Chile offers an apparent counterexample that is still coherent with the broader regional trend. After experiencing slower productivity growth during the import-substitution era, Chile experienced strong productivity growth from the 1990s onwards following radical neoliberal reforms. However, growth mainly relied on intensive extraction of natural resources—copper mining, forestry, salmon farming, and fruit exports—with relatively limited progress in manufacturing (Landerretche et al., 2024).

The productivity crisis directly intersects with environmental challenges. Structural transformation towards higher productive complexity correlates strongly with reduced greenhouse gas emission intensity. Economies specialised in primary commodities and energy-intensive basic manufacturing tend to have higher emissions per unit of GDP, creating a dual trap of low productivity and high carbon intensity (Ahumada and Sosdorf, 2025). Breaking this trap requires coordinated industrial and environmental policies—precisely what green industrial policy aims to achieve.

Traditional economic justifications for industrial policy rely on market failure theory: governments are expected to intervene when markets fail to produce efficient outcomes due to externalities, public goods, information asymmetries, or coordination problems. From this perspective, environmental policy addresses negative externalities (pollution, emissions) through measures such as carbon taxes or cap-and-trade systems that internalise these costs into market prices. Industrial policy, separately, may target coordination failures in the development of new industries.

This framework proves fundamentally inadequate for understanding the imperative of ecological transformation. Climate change and broader environmental crises are not merely isolated market failures but are indicative of systemic failures driven by the growth logic of capital accumulation, technological lock-in within carbon-intensive systems, institutional structures that prioritise short-term profits over long-term sustainability, and infrastructural commitments embodying decades of high-carbon development (Mazzucato, 2025). Addressing these systemic failures requires shifting from merely correcting market failures to actively shaping markets and creating new economic spaces that align with collective goals.

GIP has been defined as all government measures that seek to accelerate structural change toward a resource-efficient and low-carbon economy while enabling productivity improvements (Altenburg and Rodrik, 2017). This understanding includes traditional tools—subsidies, procurement, tariffs, regulations—but employs them strategically for transformation rather than merely optimisation within existing frameworks. Instead of simply adjusting price signals, GIP actively promotes new industries, technologies, and productive capabilities that advance ecological sustainability while also creating jobs, boosting productivity, and improving living standards.

Several recent GIP initiatives, such as Brazil's Nova Indústria Brasil (Ministério da Fazenda, 2024) and Mexico's Plan México (Gobierno de México, 2025), adopt a mission-oriented framework (Mazzucato, 2018). From a critical political economy perspective, mission-oriented GIP represents a partial recuperation of planning capacities within capitalism, attempting to subordinate at least some investment decisions to social goals rather than purely private profit maximisation. However, its effectiveness depends critically on state capacity, class power relations, and whether missions genuinely reflect popular needs or merely greenwash accumulation strategies. The mission-oriented framework creates space for progressive intervention but guarantees nothing about outcomes.

A key feature of GIP (when the adjective green genuinely reflects ecological concerns) compared to conventional industrial policy is its explicit recognition of planetary boundaries as strict limits on development. This concept emphasises nine critical Earth system processes: climate change, biodiversity loss, biogeochemical flows (nitrogen and phosphorus), land system change, freshwater use, atmospheric aerosol loading, ocean acidification, stratospheric ozone layer depletion, and emerging chemicals and plastics (Rockström et al., 2009). Each process has boundaries or tipping points beyond which Earth's resilience could be catastrophically compromised.

For Latin America, incorporating planetary boundaries into development strategy means recognising that not all growth pathways remain viable even if economically profitable in conventional terms. The Amazon rainforest, for instance, approaches potential tipping points where deforestation and climate change could trigger an irreversible transition to savanna, with catastrophic implications for regional climate, biodiversity, and indigenous peoples. Similarly, lithium and copper extraction in arid ecosystems can breach local water system boundaries, creating permanent damage regardless of mining revenues.

Nevertheless, the region's vast remaining biodiversity, substantial renewable energy potential, relatively lower historical emissions, and younger infrastructure (less locked into carbon-intensive configurations) create opportunities for leapfrogging to sustainable systems if properly harnessed. Costa Rica and Uruguay demonstrate that

high-renewable electricity systems are achievable: Costa Rica generates 98% renewable electricity primarily from hydroelectric, geothermal, and wind sources, while Uruguay transitioned from 35% fossil fuels in 2007 to practically 100% renewables by 2024 (Climate Action Tracker, 2024; U.S. International Trade Administration, 2024).

Ecological transformation faces unparalleled urgency. The green transition is the first transformation in history required to be achieved within a specific timeframe (Schmitz, 2015). This temporal necessity creates intense tensions in Latin America. Conventional development strategies typically take decades: import-substitution industrialisation took place over many years; East Asian catch-up, although faster, still spanned 30-50 years across different nations. However, climate scientists warn that transformations must be largely completed within 20-30 years to prevent catastrophic outcomes.

The financing challenge is especially significant. The Climate Policy Initiative estimates that current global climate finance flows are approximately €1.3 trillion annually, but achieving the targets of the Paris Agreement requires increasing this fivefold to €6.4 trillion each year from 2024 to 2030 (CPI, 2024). Specifically for Latin America, CEPAL estimates that the region needs roughly €175-260 billion annually in climate investment—much higher than current levels and accounting for 3-5% of the region's GDP (ECLAC, 2023). Where will these resources originate from? Public budgets face significant pressure from fiscal constraints, high debt levels, and political opposition to taxation. Private capital demands risk-adjusted returns that often conflict with green investments. International climate finance from North to South, repeatedly promised since the 1992 Rio Summit and most recently at COP30 in Brazil, has never been delivered at the promised scale and often arrives as loans rather than grants. Influential political economists like Daniela Gabor and Ndongo Samba Sylla (2023) have criticised the dominant derisking paradigm for privatising gains while socialising losses, using public funds mainly to secure returns for capitalist investors in the Global North rather than directly funding the transformation itself.

The urgency of climate change calls for unprecedented international cooperation. Atmospheric greenhouse gas concentrations reflect total global emissions. While essential, unilateral national efforts are insufficient without coordination. The current climate policy framework, based on the Paris Agreement, perpetuates unequal power relations: countries of the Global North, which have historically emitted more and possess greater financial and technological resources, avoid binding commitments to climate finance and technology transfer, while countries of the Global South face pressure to reduce emissions despite having minimal historical responsibility and urgent development needs (Estevez and Riofrancos, 2025). What Latin America and other regions of the Global South require is substantial resource flows from North to South as reparations, not loans or market-based mechanisms.

Multilateral institutions have consistently failed to deliver climate justice. Ongoing negotiations still fall far short of what the Global South needs. The promised €100 billion per year in climate finance—first pledged at Copenhagen in 2009 and only superficially met in 2022—remains critically insufficient. The new collective quantified goal on climate finance, under negotiation at COP30, risks repeating the same patterns: finance is mainly provided as loans rather than grants, and technology transfer is still dependent on restrictive intellectual property protections. The structural asymmetries in policy space—where developed countries deploy industrial policies with little regard for WTO rules or the developmental demands of Global South countries, while the Global South remains constrained by bilateral investment treaties and restrictive intellectual property

regimes—have prompted renewed calls for a new international economic order for the twenty-first century (Ahumada and Chang, 2025).

The current global scenario underscores the need for South-South cooperation as an alternative solidarity framework. Latin America, Africa, and Asia must coordinate to enhance their collective bargaining power, share technologies and best practices, and establish alternative financing mechanisms that are not dominated by Global North institutions. For Latin America, South-South cooperation implies coordinated strategies: regional integration around green value chains (for instance, connecting the lithium triangle with Brazilian industrial capacity), collective bargaining in international negotiations, joint financing mechanisms through regional development banks, technology sharing and collaborative R&D, and harmonised regulatory frameworks to prevent races to the bottom. These strategies face significant obstacles—political instability, ideological divergences, and external powers' divide-and-conquer tactics—yet remain the most promising route for moving beyond dependent development patterns (Estevez and Riofrancos, 2025).

The Nova Indústria Brasil (NIB) plan, launched in January 2024 under President Lula da Silva's third administration, represents Latin America's most ambitious recent industrial policy initiative explicitly linking productive transformation with ecological objectives. NIB adopts a mission-oriented framework organising policy around six significant societal challenges: Sustainable and Digital Agro-industrial Chains, aiming to add value to agricultural complexes while reducing environmental footprints through precision agriculture and biotechnology; Resilient Health Economic-Industrial Complex, seeking to reduce dependence on pharmaceutical and medical equipment imports exposed during COVID-19; Sustainable Infrastructure, Sanitation, Housing, and Mobility, concentrating on urban transformation through electric and low-emission public transport, sustainable construction materials, sanitation systems, and renewable energy integration in social housing; Bioeconomy, Decarbonisation, and Energy Transition and Security, representing the most directly environmental mission, focusing on biofuels, hydrogen economy, renewable energy equipment manufacturing, decarbonising hard-to-abate sectors like steel and cement, and biodiversity-based innovations; Digital Transformation of Industry, promoting automation, digitalisation, and artificial intelligence across manufacturing; and Technologies for Sovereignty and National Defence, covering autonomous technological capacities in aerospace, cybersecurity, and dual-use technologies.

Each mission includes specific targets, indicators, and timelines, with yearly reviews—unlike earlier Brazilian industrial policies, which were criticised for vague objectives. NIB's institutional structure comprises an inter-ministerial council, sectoral chambers bringing together government, business, labour, and research institutions, and technical support from ABDI and other specialised agencies. NIB also stresses conditionalities—linking benefits to performance standards. Firms receiving support must meet targets for domestic content, employment creation, technology advancement, sustainability indicators, and regional distribution. This conditionality approach, drawing on Mazzucato and Rodrik's (2023) work, seeks to ensure public resources deliver public benefits rather than simply subsidising business-as-usual. However, enforcing conditionalities remains a significant implementation challenge: previous Brazilian policies included formal conditionalities often waived in practice due to lobbying, monitoring difficulties, or political pressures.

While Brazil and Mexico develop new industrial policies, two much smaller economies—Uruguay and Costa Rica—have achieved remarkable renewable energy transitions, offering important lessons for the region and other Global South countries. Uruguay transformed its electricity matrix from 35% fossil fuels (primarily imported oil and gas) in 2007 to 98% renewables by 2024 through state-led investment and strategic public-private coordination (U.S. International Trade Administration, 2024). The national utility UTE maintained strategic control while partnering with private renewable energy developers, particularly in wind power, which expanded dramatically alongside existing hydroelectric capacity and biomass cogeneration from forestry and sugar industries. This transition generated multiple benefits: €435 million in annual savings on energy import costs; enhanced energy security and reduced vulnerability to fossil fuel price volatility; positioning Uruguay as an electricity exporter to Argentina and Brazil; and emissions reductions, making it one of the cleanest electricity systems globally.

Uruguay's transition involved deliberate leadership from the public sector. UTE retained planning authority, managed transmission systems, and addressed integration challenges arising from variable renewable sources. However, a closer analysis reveals creeping privatisation: private actors now control assets in renewable capacity, and there is further pressure to privatise wind, solar, and biomass generation (Chavez, 2024). Costa Rica presents a similar case, with 98% of electricity generated from renewable sources: 76% hydroelectric, 11% wind, 11% geothermal, and increasing solar capacity (Low Carbon Power, 2025). The national utility ICE and its subsidiaries played a central role, combining public investment with an increasingly diverse set of sources to maintain reliability. Costa Rica's Generation Expansion Plan 2022-2040 projects adding 2,125 MW of renewable capacity, including 1,100 MW of solar and 502 MW of wind, to reduce dependence on hydroelectric power and sustain its leadership in clean energy (Climate Action Tracker, 2024).

Despite their advances, neither Uruguay nor Costa Rica has substantially industrialised around renewable energy: they consume clean electricity but import wind turbines, solar panels, and related equipment. This limitation represents a missed opportunity for technology development and value chain integration that more robust industrial policies could address.

If Uruguay and Costa Rica exemplify successful green transitions, the lithium triangle—Argentina, Bolivia, and Chile—illustrates the risks of green extractivism and the failures of resource-based development. These three countries together hold approximately 56% of global lithium reserves, concentrated in high-altitude salt flats (*salares*) of the Atacama Desert and Andean highlands (Sanchez-Lopez, 2023). Lithium's centrality to battery technologies for electric vehicles and energy storage positions this region as critical to the global energy transition.

Lithium production remains primarily focused on raw material exports with little domestic value addition. The region supplies lithium carbonate and lithium hydroxide to Asian manufacturers—mainly Chinese, Japanese, and South Korean firms—who dominate battery manufacturing and capture most of the value chain profits. Employment generation is minimal: fewer than 5,000 workers across the entire triangle despite significant investment (Sanchez-Lopez, 2023). Technology transfer has been limited, with extraction and processing techniques mostly imported. Attempts at industrial policies requiring domestic processing or battery production have repeatedly failed to challenge established international supply chain structures.

Environmental and social costs are severe. Lithium extraction consumes enormous amounts of water (up to 500,000 litres per ton of lithium carbonate) in some of the world's most arid ecosystems, threatening fragile wetlands and indigenous water sources (WEF, 2023). In the Atacama Desert, lithium operations consume 65% of the water in certain areas. Indigenous Andean communities report contamination of local water sources, land appropriations without adequate compensation, and disruption of ancestral practices (Sanchez-Lopez, 2023). The lithium triangle exemplifies the dynamics of the resource curse and neoextractivism (Svampa, 2019; Gudynas, 2016). Resource abundance, rather than enabling development, becomes a source of conflict, environmental degradation, and dependence within global value chains. Rents primarily accrue to transnational corporations, while costs—environmental, social, and opportunity costs of foregone alternative development paths—are borne by local communities and future generations.

Comparative institutional analyses indicate that state capacity, rather than resource endowment, determines developmental outcomes from lithium and other minerals (Nem Singh, 2024). Successful resource-based development requires capable state institutions that can negotiate favourable terms with international capital, enforce conditions, capture sufficient rents, channel revenues into productive investment, manage environmental impacts, and ensure social benefits. Recent initiatives show promise but are still in early stages. Chile's new lithium national strategy (2023) boosts state involvement and environmental standards. However, changing entrenched extractive practices faces strong opposition from incumbent companies and aligned domestic elites.

Geopolitical Dimensions: China, the United States, and the European Union

The modern international landscape differs significantly from the era of globalisation between 1990 and 2020. That period, characterised by rapid growth in trade, deep integration of global value chains, China's emergence as the world factory, and the U.S. maintaining open trading systems, has transitioned into a new phase distinguished by great power rivalry, supply chain reconfigurations and political realignments, rising protectionism driven by green and security concerns, and the crucial role of the energy transition in reshaping the world economy. Three factors drive modern deglobalisation trends. First, the distributional effects of hyper-globalisation within developed economies—such as stagnant wages, deindustrialisation, and regional decline—sparked political backlash from Trump's 2016 election campaign through to Brexit and European populism. Second, U.S.-China strategic rivalry escalated as American elites recognised China's rise as a challenge to U.S. technological and geopolitical dominance, prompting efforts to curb Chinese advancement. Third, the pandemic revealed supply chain weaknesses, as reliance on Chinese manufacturing left nations unable to secure essential medical supplies, prompting calls for reshoring and friendshoring. This context significantly influences Latin American prospects as the region is now targeted by rival powers seeking resources and geopolitical influence.

China's engagement with Latin America has evolved through distinct phases: initial commodity imports (1990s-2000s) that drove the super-cycle but reinforced primary-export specialisation; infrastructure investment (2010s) through tied lending with limited technology transfer; and currently, strategic investment in critical minerals and

renewable energy. Chinese companies now dominate lithium extraction in the triangle and invest heavily in solar and wind farms, positioning China to secure inputs for its energy transition while potentially locking Latin America into roles as raw-material suppliers.

China's engagement reveals contradictions. Chinese finance provides alternatives to Western-dominated institutions and infrastructure financing when Northern countries contribute little. Nevertheless, Chinese engagement often relies on extractive models: Latin America exports commodities while importing manufactures, with rising trade deficits in non-commodity sectors. Chinese lending entails high interest rates and collateral requirements that have contributed to debt difficulties in some countries, while environmental and labour standards at Chinese-funded projects typically fall below international norms. Furthermore, China's energy transition strategy seeks to lead in clean technology manufacturing and exports. China already produces over 70% of solar panels, 60% of wind turbines, 70% of battery cells, and most electric vehicles worldwide. This trend raises concerns about fostering new dependencies: if Latin America supplies lithium and other critical minerals to Chinese battery manufacturers, who then sell batteries within the region, the economic value gained locally remains minimal while China maintains dominance over the strategic technology.

However, China's model demonstrates the potential of state-led industrial transformation. China achieved the most significant poverty reduction in history, developed advanced industrial ecosystems across multiple sectors, and currently leads in various clean technologies, all while doing so through active state planning, subsidies, technology policies, and strategic trade management—all industrial policy tools that neoliberal orthodoxy claimed would fail. This example challenges neoliberal narratives and offers inspiration for Latin American industrial policy advocates. A progressive approach requires leveraging Chinese engagement for diversification while insisting on technology transfer, environmental standards, and support for domestic industrialisation—maintaining autonomy rather than replacing one dependency with another.

The United States pursues supply chain reconfiguration away from Chinese dependence through *friendshoring* (relocating production to allied countries) and *nearshoring* (bringing production geographically closer, particularly to Mexico and Central America). This strategy responds to concerns about vulnerability to Chinese supply disruptions revealed during COVID-19 and strategic competition imperatives to limit China's technological advancement and economic leverage. The Inflation Reduction Act illustrates this approach, allocating €321 billion in clean energy subsidies with North American content requirements, creating incentives for firms to shift manufacturing to Mexico. The CHIPS Act subsidises semiconductor manufacturing, with conditions that prioritise U.S. and allied production.

For Latin America, especially Mexico, nearshoring presents significant opportunities given proximity, USMCA provisions, and existing manufacturing capacity. However, concerns temper this optimism. Much nearshoring may involve low-value-added assembly (*maquilisation*) with limited technology transfer, similar to patterns since the 1960s. Without an active industrial policy that enforces technology transfer and local content requirements, Mexico risks becoming a low-wage assembly hub rather than an integrated industrial economy. A progressive strategy should harness nearshoring prospects through active industrial policies that set conditions for foreign investors: technology transfer requirements, local content mandates, training and R&D

obligations, and environmental standards. It should insist on reciprocity: if the U.S. limits market access for national security reasons, Latin American countries should similarly prioritise domestic development.

Across the Atlantic, the European Union progresses with its European Green Deal (EGD), targeting net-zero emissions by 2050 and setting interim goals for 2030 that demand swift changes across energy, transport, industry, buildings, and agriculture. The EGD draws substantial public and private investment for decarbonisation, positioning the EU as a climate leader. For Latin America, the EGD and related policy packages offer both opportunities and risks. On the opportunity side, the EU could be a significant market for green products. However, many researchers have identified patterns of green colonialism in EU strategy (Hamouchene and Sandwell, 2024).

Two dynamics warrant concern: First, regulatory imperialism involves the EU unilaterally imposing environmental and social standards on trade partners through market access conditions. The proposed Carbon Border Adjustment Mechanism (CBAM) imposes carbon tariffs on imports based on embedded emissions, disadvantaging Latin American producers unless they adopt EU-approved production methods. While ostensibly environmental, CBAM protects European industries from competition while limiting policy options for countries in the Global South. Second, resource extraction for the EU's energy transition involves increasing Latin American exports of critical minerals such as lithium, copper, and nickel, as well as clean energy commodities like green hydrogen and biofuels, to European markets without accompanying support for technology transfer or industrial upgrading. The EU uses trade agreements to secure the supply of critical raw materials for its green transition (Müller et al., 2024), continuing colonial-era patterns in which Latin America supplies raw materials to European industry.

A progressive Latin American approach towards the EU should leverage European market demand and sustainability standards as opportunities to upgrade production and stand out from competitors with lower standards, while opposing asymmetric rules that burden Global South countries. It should mandate that European climate finance be grants rather than loans, be untied from European procurement, and take historical responsibility into account. It should insist on technology transfer and joint R&D as prerequisites for market access agreements, and challenge double standards where the EU demands sacrifices from Global South countries but refuses to make them itself.

Given the limitations and contradictions in engagement with all three major global powers, Latin America should emphasise South-South cooperation and strategic autonomy. Several elements are crucial: BRICS+ provides opportunities for South-South cooperation in trade, finance, and technology, offering an institutional space not dominated by Global North interests. The New Development Bank offers alternative development financing, although still on a modest scale. Regional integration focused on specific chains shows greater potential than broad trade liberalisation, which has produced limited outcomes. Examples include pragmatic integration centred on green value chains, such as the connection between lithium producers, Brazilian industrial capacity, and regional markets.

Coordinated critical mineral strategies are essential. Latin America collectively holds dominant positions: 56% of global lithium reserves, 50% of global copper reserves, 38% of global silver reserves, and significant shares of other critical minerals. Strategic coordination in extraction, processing, and export policies could increase leverage over pricing and terms, similar to OPEC for oil. A Critical Minerals Producers Alliance,

including Latin American and African countries, could negotiate collectively with consumer countries, demanding technology transfer, development of processing capacity, and fair pricing. South-South technology transfer, in which countries share successful technologies while protecting intellectual property, could accelerate regional development. Brazil's extensive biofuels expertise could be shared with other tropical nations. Uruguay's experience with renewable energy could serve as a guide for similarly sized economies. Alternative climate finance mechanisms through regional development banks should supplement dependence on Northern institutions.

6 Discussion and conclusions

This analysis synthesises policy research and extensive regional consultation into six pillars for a progressive green industrial policy agenda: (1) Pragmatic regional collaboration around targeted productive chains, establishing coordination mechanisms for renewable energy, battery manufacturing, and green hydrogen; (2) Strengthened state capacity through institutional development and democratic governance frameworks; (3) Shifting natural resource sectors from rent extraction toward innovation ecosystems with local value capture; (4) Strategic neoindustrialisation connecting sectors with frontier technologies through South-South partnerships; (5) Intentional green industrialisation in renewable energy equipment manufacturing and clean technology production; and (6) Building broad social legitimacy through just transition policies linking transformation with employment, skills development, and welfare enhancement.

For genuinely green industrial policy to succeed in Latin America, it must address four key dimensions simultaneously. First, respecting planetary boundaries while enabling development requires moving beyond false dichotomies between environment and growth. Second, achieving transformation at unprecedented speed and scale demands mobilising state capacity, public investment, and sectoral coordination. Third, mobilising financing to bridge the substantial climate finance gap requires repurposing existing mechanisms and establishing new South-South financial institutions. Fourth, facilitating international cooperation through South-South solidarity can counter Global North-led failures in multilateral institutions.

The lithium triangle exemplifies current contradictions. Despite holding massive reserves, Argentina, Bolivia, and Chile have struggled to move beyond raw-material exports toward battery manufacturing. Water-intensive extraction creates sacrifice zones impacting indigenous communities, while revenues flow primarily to transnational corporations rather than financing local development. This pattern must be reversed through strategic value capture, local processing, and technology development controlled by regional actors.

The stakes could not be higher. Without structural change, Latin America risks either ongoing stagnation or a return to dependent primary-export models under a green rhetoric. Through coordinated efforts grounded in democratic governance and social legitimacy, the region can unlock its potential for sovereign and sustainable development. The challenge is whether political will, institutional capacity, and social mobilisation can come together to unlock this potential before climate tipping points shut down transformative opportunities.

7 Recommendations

- Establish regional coordination mechanisms for productive chains, particularly in renewable energy, battery manufacturing, and green hydrogen, ensuring value capture by regional actors rather than external corporations.
- Strengthen state capacity through institutional development, strategic planning, infrastructure, and democratic governance frameworks that centre social input in productive transformation.
- Reform extractive sectors toward higher-value-added production, including local processing and downstream manufacturing, with precise mechanisms for revenue distribution and indigenous community benefit.
- Pursue South-South cooperation frameworks that counteract Global North dominance, building technology sharing agreements and joint industrial ventures across Latin America, Africa, and Asia.
- Develop comprehensive just transition policies that explicitly link productive transformation with employment creation, skills development, and welfare enhancement for working populations.
- Mobilise public finance through reformed development banks, debt relief for climate investment, and new concessional financing instruments tailored to green industrialisation requirements.



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