

Analyzing the Role of Tax Incentives in Advancing Inclusive and Sustainable Economic Growth Through Integrated Fiscal and Green Transition Approaches

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Abstract

This review critically examines the effectiveness of tax incentives in promoting inclusive and sustainable economic growth. Tax incentives are widely used fiscal tools aimed at stimulating investment, fostering innovation, and addressing structural development challenges. Drawing on comparative evidence across developed, emerging, and developing economies, the paper explores their impact on growth outcomes such as GDP expansion, foreign direct investment, and sectoral productivity. It further investigates how incentives contribute to inclusiveness through employment generation, regional equity, gender and youth participation, and poverty reduction. The sustainability dimension is analyzed through the role of incentives in advancing renewable energy, low-carbon industries, and alignment with the Sustainable Development Goals (SDGs).

While evidence indicates that well-designed, performance-based incentives can generate significant economic and social returns, challenges remain in ensuring fiscal sustainability, avoiding dependency and inefficiencies, and safeguarding against revenue loss. Effective monitoring, evaluation, and compliance mechanisms emerge as critical determinants of success. The review identifies key research gaps, including limited causal analysis, insufficient assessment of distributional effects, and the underexplored intersection of tax incentives with global tax reforms and environmental justice. The study concludes that tax incentives, when integrated into broader development strategies and accompanied by transparent governance, can serve as powerful instruments for balancing growth, inclusivity, and sustainability in an increasingly complex global economy.

Keywords: *Assessing, Effectiveness, Tax Incentives, Promoting, Inclusive, Sustainable, Economic, Growth.*

I. INTRODUCTION

➤ Background and Significance of Tax Incentives in Economic Policy

Tax incentives have long been employed to catalyze private investment and shape firm behavior, but their contemporary significance lies in aligning growth objectives with inclusiveness and sustainability. Recent empirical work shows that well-designed incentives can relax financing constraints, bolster operational performance, and channel resources toward innovation with economy-wide spillovers (Idika, et al., 2024).

Evidence from accelerated depreciation policies an expenditure-based instrument indicates measurable reductions in corporate carbon emissions via increased investment in abatement capital, productivity upgrades, and innovation, underscoring the potential of tax tools to advance green transitions without sacrificing competitiveness (Hu, Li, & Cao, 2024). Complementing this, firm-level analyses find that tax incentives promote green innovation primarily by easing financing frictions, a mechanism directly linked to inclusive development through job creation in emerging clean-tech value chains and diffusion of capabilities to SMEs (Wang, et al., 2022).

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Taken together, these findings situate tax incentives as pivotal levers for governments seeking a triple mandate: accelerate growth, broaden participation, and decarbonize production systems. The policy challenge, therefore, is not whether to use incentives, but how to target them toward productive, innovation-enhancing investments with transparent eligibility and robust evaluation so that fiscal costs translate into shared, sustainable gains (Hu et al., 2024; Wang et al., 2022; Amebleh, et al., 2021).

➤ *Rationale for Linking Tax Incentives to Inclusive and Sustainable Growth*

Linking tax incentives to both inclusiveness and sustainability is increasingly viewed as a strategic necessity rather than a discretionary luxury. The inclusive growth paradigm emphasizes that economic expansion must be broadly shared across populations, mitigate inequality, and offer opportunities to historically marginalized groups (IMF, 2024). In this light, tax incentives can be calibrated to direct investments into regions, sectors, or firms that promote equitable outcomes, such as job creation in underserved areas or empowerment of small enterprises (IMF, 2024; Hay, 2022). Simultaneously, sustainability imperatives demand that incentive policies internalize environmental externalities and steer capital flows toward clean technologies, renewable energy, and carbon-efficient processes (Aslam, 2023).

Indeed, integrative models of “inclusive green growth” argue that combining social equity and ecological resilience yields stronger and more durable development trajectories (Aslam, 2023). Empirical studies support this synergy: in G20 nations, policy instruments categorized as environmental incentives are shown to enhance both sustainability and social inclusion when supported by redistributive growth frameworks (Ijiga, 2021). Therefore, the rationale for coupling tax incentives with inclusive and sustainable development lies in the possibility of synergistic policy design, where fiscal tools do double duty fostering growth, reducing disparities, and safeguarding environmental limits rather than generating trade-offs.

➤ *Research Objectives and Guiding Questions*

The objectives of this review are centered on critically evaluating the extent to which tax incentives contribute to fostering inclusive and sustainable economic growth. First, the study aims to assess the economic effectiveness of various tax incentive structures, particularly their impact on investment stimulation, job creation, and long-term fiscal balance. Second, it seeks to examine how these incentives influence inclusiveness by promoting equitable participation across different population groups, geographic regions, and enterprise sizes. Third, the review focuses on understanding the role of tax incentives in supporting sustainability, with emphasis on green investment, renewable energy adoption, and environmentally responsible business practices. Guiding questions include: To what extent do tax incentives effectively drive both short- and long-term economic growth? How do they contribute to reducing

inequality and fostering social inclusion? In what ways can tax incentive schemes be aligned with sustainability goals without undermining fiscal stability? What best practices and lessons from global and regional experiences can inform the design of more effective, inclusive, and sustainable fiscal incentive policies? This approach ensures the paper provides not only a synthesis of existing evidence but also a framework for shaping future tax policy in line with inclusive development and sustainability imperatives.

➤ *Structure of the Review*

This review is organized into seven interconnected sections that collectively provide a comprehensive assessment of the effectiveness of tax incentives in promoting inclusive and sustainable economic growth. The first section introduces the background, rationale, objectives, and structure of the study, establishing the foundation for the discussion. The second section outlines the conceptual and theoretical framework, clarifying key definitions, types of tax incentives, and the economic theories underpinning their use. The third section broadens the analysis by exploring global and regional perspectives, highlighting comparative practices and case studies that illustrate varied policy outcomes across different economies. The fourth section evaluates the effectiveness of tax incentives in driving economic growth, focusing on measurable outcomes such as investment stimulation, industrial expansion, and fiscal sustainability.

The fifth section shifts attention to inclusiveness, examining how tax incentives influence employment creation, regional balance, gender equity, and poverty reduction. The sixth section emphasizes sustainability by analyzing the role of tax incentives in advancing green transitions, renewable energy adoption, and alignment with broader environmental objectives. Finally, the seventh section presents policy implications, synthesizing best practices, offering recommendations for more balanced and effective designs, and identifying future research directions. This structure ensures that the review flows logically from conceptual foundations to practical implications, offering a holistic and policy-relevant analysis.

II. CONCEPTUAL AND THEORETICAL FRAMEWORK

➤ *Defining Tax Incentives: Types, Forms, and Objectives*

Tax incentives are preferential measures embedded in tax systems to influence the scale, direction, and behavior of investment by raising post-tax returns relative to a neutral baseline without such measures (Gourgourinis, 2023). Scholars generally classify them into three broad categories. The first is fiscal incentives, which include tax holidays, reductions in statutory or effective rates, investment tax credits, accelerated depreciation, and loss carryforwards. The second is financial incentives, encompassing grants, subsidized loans, and government guarantees aimed at easing financing constraints. The third is regulatory incentives, such as simplified administrative procedures, preferential access to infrastructure, or zone-

specific exemptions, often combined in special economic zones to create hybrid incentive frameworks (Gourgourinis, 2023).

Within fiscal tools, a key distinction exists between cost-based and profit-based incentives (Mosquera Valderrama, 2021; Chen et al., 2023). Cost-based incentives, like accelerated depreciation, reward qualifying expenditures by reducing the user cost of capital, thereby stimulating new investment. Profit-based measures, such as patent or innovation boxes, reduce effective tax rates on eligible income streams to retain and

expand innovation-related activity. While both spur capital investment, evidence suggests they generate weaker effects on employment (Chen et al., 2023; Idoko et al., 2024). Beyond firm-level impacts, governments use incentives to advance wider goals promoting regional rebalancing, encouraging priority sectors like renewable energy or R&D, and strengthening governance through transparent eligibility. Properly designed, incentives complement rather than replace broader reforms that foster a stable and competitive investment environment (Mosquera Valderrama, 2021; Gourgourinis, 2023).

Table 1 Summary of Defining Tax Incentives: Types, Forms, and Objectives

Category/Type	Forms/Examples	Mechanism	Objectives/Impacts
Fiscal Incentives	Tax holidays, reduced rates, investment tax credits, accelerated depreciation, loss carryforwards	Reduce statutory or effective tax burden; alter user cost of capital	Stimulate new investment, capital deepening, productivity gains
Financial Incentives	Grants, subsidized loans, government guarantees	Ease financing constraints and reduce capital access barriers	Support firm liquidity, expand project feasibility, attract FDI
Regulatory Incentives	Simplified procedures, preferential infrastructure access, zone-specific exemptions (e.g., SEZs)	Lower administrative and compliance burdens; create hybrid frameworks	Encourage industrial clustering, attract export-oriented FDI, enhance competitiveness
Design Distinctions	Cost-based (accelerated depreciation); Profit-based (patent/innovation boxes)	Cost-based: reduce upfront investment costs; Profit-based: reduce tax on eligible income streams	Cost-based: stimulate new projects; Profit-based: retain/expand innovation activity. Broader goals: regional rebalancing, priority sector support (R&D, renewable energy), governance via transparent eligibility

➤ Theories of Taxation, Investment, and Growth

Modern analyses of taxation and growth build on three interrelated perspectives. The first draws from neoclassical investment theory, which views capital formation through the tax-adjusted user cost of capital. When taxation raises this cost, desired capital stocks and investment decline; conversely, when incentives lower it, firms expand investment, deepening capital and enhancing productivity. Recent refinements differentiate between genuine capital costs and economic rents, improving understanding of how tax changes influence investment responses and growth accounting (van Vlokhoven, 2024). The second perspective, rooted in endogenous growth and innovation theory, emphasizes how tax structures affect dynamic efficiency by shaping R&D, knowledge diffusion, and intangible asset accumulation. Here, the type of incentive matters: cost-based instruments reduce entry barriers for new projects, while profit-based tools reward innovation returns. Evidence confirms that these mechanisms influence productivity growth, though their magnitude varies across contexts (Fuest & Neumeier, 2023).

The third strand, aggregate growth empirics, evaluates how changes in tax rates or bases affect macroeconomic outcomes after accounting for feedbacks, incidence, and timing. Cross-country evidence suggests that outcomes depend on the type of tax adjusted, scale of

reform, and complementary measures such as base broadening or expenditure shifts (Ajayi, 2019). Together, these perspectives suggest tax incentives are most effective when they reduce marginal investment costs, prioritize learning-intensive activities, and align with coherent, distortion-limiting reforms that foster sustainable and inclusive growth (Fuest & Neumeier, 2023; Ijiga, 2021; van Vlokhoven, 2024).

➤ Frameworks Linking Fiscal Incentives to Inclusive Development

Understanding how tax incentives support inclusive development requires connecting macro-fiscal goals with micro-level distributional and institutional pathways. One guiding perspective is the capability approach, which holds that growth is meaningful only when individuals can convert financial gains into real freedoms and opportunities. Within this view, tax incentives foster inclusion when they expand access to jobs, skills, and entrepreneurship for marginalized groups (Kabeer, 2021). A second framework, spatial equity theory, highlights the corrective role of fiscal policy in reducing geographic disparities. Incentives targeted at underdeveloped regions can attract investment where markets alone would not, helping to balance growth and reduce regional inequality (Rodríguez-Pose & Gill, 2020).

The inclusive growth fiscal triangle offers a third model, stressing that inclusivity arises when three elements align: accessibility through transparent and equitable eligibility, absorption capacity to ensure firms and individuals can effectively use incentives, and compensatory mechanisms such as progressive taxation to safeguard fiscal sustainability. Without these pillars,

incentives may worsen inequality or deplete revenues (Piketty et al., 2023). Empirical evidence reinforces these claims, showing that effective design must prioritize small firms and lagging regions. Complementary measures such as capacity-building, matching grants, and redistributive spending help ensure that tax incentives generate equitable and sustainable development outcomes.

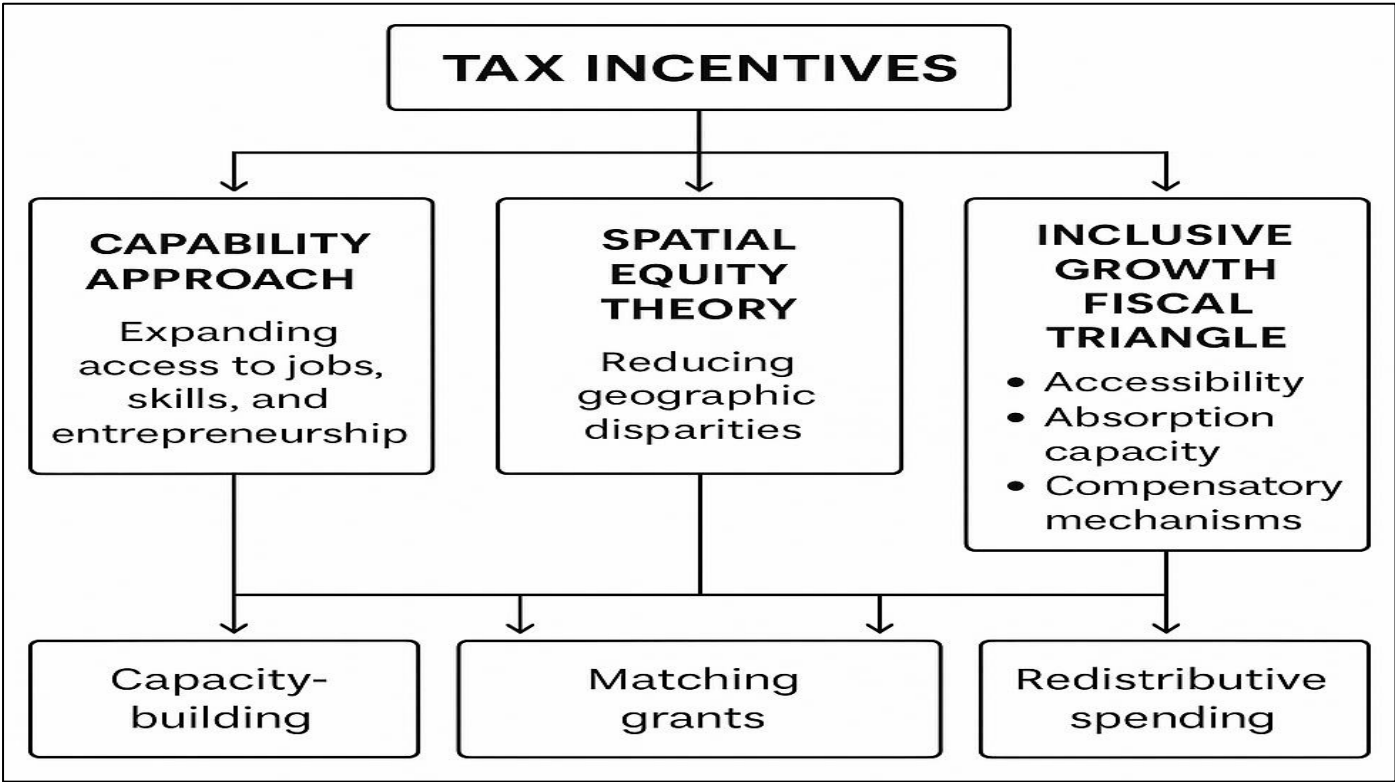


Fig 1 Frameworks Linking Tax Incentives to Inclusive Development"

Figure 1 Illustrates how tax incentives can drive inclusive development through three frameworks: the capability approach, which expands access to jobs, skills, and entrepreneurship; spatial equity theory, which reduces geographic disparities; and the inclusive growth fiscal triangle, which aligns accessability, absorption capacity, and compensatory mechanisms. Together with complementary tools such as capacity-building, matching grants, and redistributive spending, these frameworks ensure that incentives generate equitable and sustainable outcomes.

➤ Sustainable Development Perspectives on Fiscal Policy

From a sustainable development perspective, fiscal policy extends beyond revenue collection to become a strategic instrument for channeling capital and managing risk in support of low-carbon, resilient, and equitable growth (Idoko, et al., 2024). Evidence from post-pandemic recovery shows that green fiscal measures such as clean energy tax credits, accelerated depreciation for abatement technologies, and allowances for nature-based solutions deliver stronger output multipliers than conventional spending while also cutting emissions. This underscores the potential of well-structured incentives to drive both growth and decarbonization, prioritizing sectors with high knowledge spillovers and measurable reductions in carbon intensity (Hepburn et al., 2020; Batini, Di Serio, Fragetta,

et al., 2021). Equity and legitimacy are central to sustainability. Public acceptance of environmental tax reforms rises when revenues are recycled transparently. Tools like lump-sum dividends, earned-income relief, or targeted transfers help mitigate regressivity while broadening participation in the green transition. Linking clean-investment credits with equity safeguards such as refundable credits for low-income households or SMEs and additional benefits for disadvantaged regions prevents concentration of gains among large incumbents (Carattini, Kallbekken, & Orlov, 2019). Three operational principles underpin sustainable fiscal design: additionality (reducing costs for marginal clean investments), credibility (multi-year schedules and predictable phase-downs), and accountability (monitoring outcomes such as emissions cuts or green jobs). Coupled with equity measures and regulatory support, these principles position fiscal policy as a cornerstone of inclusive decarbonization (Batini et al., 2021; Hepburn et al., 2020).

III. GLOBAL AND REGIONAL PERSPECTIVES ON TAX INCENTIVES

➤ Comparative Analysis of Tax Incentive Regimes Across Developed Economies

Developed economies have long acted as laboratories for sophisticated tax incentive regimes, particularly those aimed at innovation, high-value activities, and structural

transformation. In the European Union, input-based R&D incentives such as tax credits and super deductions remain central policy tools. Evidence shows that reducing the effective cost of R&D stimulates private investment, with stronger effects when incentives are refundable, volume-based, or tailored to small and medium enterprises (SMEs), which often face liquidity constraints (Ijiga, 2022). Across the OECD, tax incentives have overtaken direct grants, accounting for about 55% of total business R&D support by 2024. Tiered structures granting SMEs higher subsidy rates for instance, 19% compared to 16% for larger firms reflect recognition of uneven capital access and risk absorption capacity (Ogunlana, & Peter-Anyebe, 2024).

Nonetheless, limitations persist. Profit-based incentives and tax holidays, still present in many jurisdictions, tend to be costlier and less effective in generating genuinely additional investment. A cross-country pilot study found such schemes particularly weak when temporary, zone-specific, or overly generous (Meinzer et al., 2019). Advanced economies also face external pressures from global minimum tax rules and domestic concerns over fiscal efficiency. These dynamics have prompted stricter eligibility criteria and tighter oversight. Overall, while tax incentives can effectively channel investment into knowledge-intensive sectors, their success relies on precise design, efficient administration, and safeguards against leakage or harmful tax competition.

Table 2 Summary of Comparative Analysis of Tax Incentive Regimes Across Developed Economies

Region/Context	Instrument Type	Outcomes	Limitations/Challenges
European Union	Input-based R&D incentives (tax credits, super deductions, refundable/volume-based tools)	Lower effective R&D costs stimulate private investment; stronger impacts for SMEs facing liquidity constraints.	Effectiveness depends on careful targeting; risk of leakage without strong oversight
OECD Countries	Tax incentives as dominant form of business R&D support (~55% of total by 2024); tiered structures (e.g., 19% for SMEs vs. 16% for large firms)	Broader use of incentives over direct grants; tiering improves SME participation by recognizing capital and risk asymmetries.	Rising fiscal costs and concerns about efficiency; requires robust evaluation frameworks
Profit-Based Schemes	Patent/IP boxes, profit-based incentives, and tax holidays	Limited additional investment; often attract profit shifting more than real activity (Meinzer et al., 2019)	High fiscal cost per outcome; weak results when temporary, zone-based, or overly generous
General Lessons in Developed Economies	Mix of input-based, profit-based, and sectoral incentives under international tax constraints	Effective in promoting targeted investment and knowledge-intensive growth	Pressures from global minimum tax rules, domestic opportunity costs, and harmful tax competition demand stricter eligibility and oversight

➤ *Case Studies from Emerging and Developing Economies*

Emerging and developing economies showcase varied approaches to tax incentive design, influenced by fiscal limits, structural barriers, and institutional legacies. In East Asia, Singapore stands out as a success case, combining targeted incentives with strong regulatory governance to attract foreign direct investment and foster knowledge spillovers. Its use of sunset clauses and periodic reviews ensures alignment with evolving national priorities while limiting rent-seeking (Mosquera Valderrama, 2021). By contrast, the Philippines has faced challenges from fragmented fiscal governance, where multiple agencies granted discretionary incentives. Ongoing reforms under the Comprehensive Tax Reform Program (CTRP) aim to rationalize and modernize these practices (Mosquera Valderrama, 2021).

In Sub-Saharan Africa, experiences from Kenya and Nigeria illustrate how weak infrastructure and governance undermine incentive effectiveness. Okoth (2023) finds that in Indonesia, Malaysia, Kenya, and Türkiye, tax incentives only enhance investment when broader business

conditions are supportive. Where institutions are fragile, subsidies often benefit incumbents without delivering inclusive growth, contributing instead to fiscal leakage. A more recent trend involves green investment incentives in renewable energy and climate-related technologies (Ijiga, A. C., et al., 2024). Reviews show that such tools lower financing barriers but succeed only when coupled with transparent administration, clear eligibility, and SME capacity-building (Oyekan, et al., 2024). Overall, effectiveness in emerging economies depends less on generosity and more on institutional coherence, efficiency, and integration into long-term development strategies.

➤ *Regional Experiences: Africa, Asia, Latin America, and Europe*

Tax incentive regimes vary significantly across regions, reflecting institutional capacity, development goals, and integration pressures. Africa. Many African countries employ incentives as industrialization tools, but their effectiveness is mixed. Mining-focused incentives often cause revenue leakage without local value addition due to weak monitoring and poor backward linkages (Amebleh, & Okoh, 2023). In Sub-Saharan Africa,

benefits frequently favor large extractive incumbents while excluding SMEs and communities (Brown, 2021). Reforms emphasize time-bound, sector-specific, and strictly monitored frameworks to preserve fiscal integrity (Ijiga, et al., 2023). Asia. East and Southeast Asia present more advanced systems. Countries like Malaysia, Vietnam, and Thailand embed incentives within export zones, technology hubs, and clusters. These combine fiscal tools with infrastructure, skills, and regulatory reforms to attract investment into high-spillover sectors. Unlike static regimes elsewhere, these frameworks are adaptive and aligned with broader growth strategies (Managing Tax Incentives, 2024).

Latin America and the Caribbean. Incentives are widely used to attract capital but show mixed results.

Broad schemes often impose high fiscal costs while underperforming compared to targeted, performance-based models. Without governance or infrastructure improvements, many fail to sustain investment or job creation (Ilesanmi, et al., 2024).

Europe. The EU relies on input-based R&D credits and super deductions, particularly effective for SMEs when refundable. Yet, challenges include harmful tax competition and compliance with global minimum tax rules (Idika, et al., 2023). Overall, regional experiences show that effectiveness depends less on uniform models than on institutional robustness, complementary reforms, and consistent evaluation.

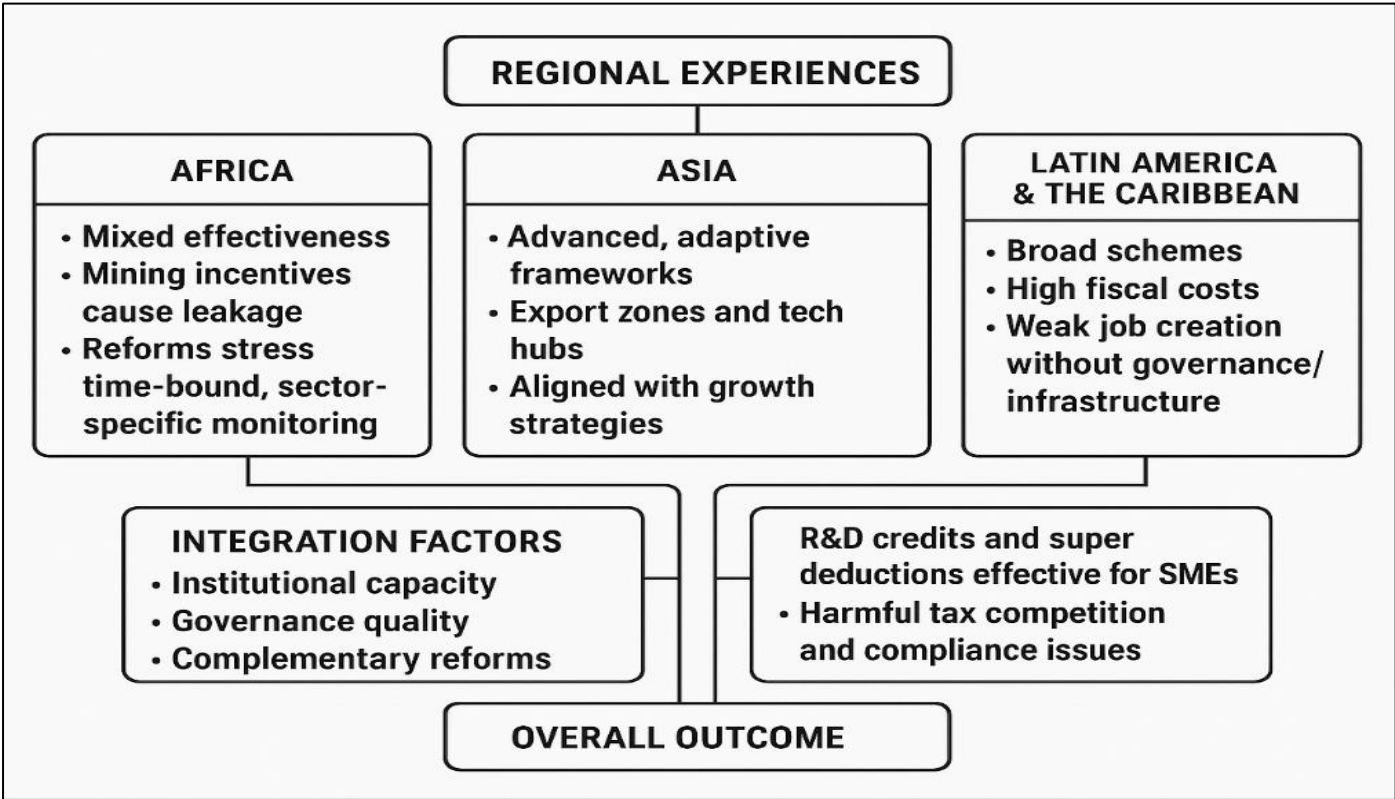


Fig 2 Comparative Regional Approaches to Tax Incentive Regimes

Figure 2 Illustrates regional experiences with tax incentive regimes, highlighting Africa’s mixed effectiveness, Asia’s adaptive frameworks, Latin America’s fiscal burdens, and Europe’s R&D focus. The diagram emphasizes integration factors such as institutional capacity and governance quality. Overall, outcomes depend on reforms and consistent evaluation across regions.

➤ *Lessons Learned from Successful and Failed Models*
Comparative evidence shows that input-based, rule-driven incentives, such as R&D tax credits and super-deductions, are generally the most effective in encouraging investment and innovation. These instruments reduce the user cost of R&D and particularly support liquidity-constrained firms, including SMEs (Dechezleprêtre et al., 2023). When eligibility criteria are transparent and refunds are available, firms demonstrate significant increases in

quality-adjusted patenting. Moreover, technological spillovers benefit neighboring firms, producing wider productivity and inclusion gains. By contrast, profit-based schemes, including patent or intellectual property (IP) boxes, often deliver limited results in stimulating “real activity.” Cross-country studies suggest these regimes are more successful in facilitating profit shifting and IP ownership relocation than in generating new innovation or employment. Consequently, their fiscal cost per unit of new activity is often high unless coordinated with nexus and substance rules to ensure local engagement (Gaessler, et al., 2021).

Zone-based tax relief linked to special economic zones highlights another lesson: without complementary investments in infrastructure, skills, and governance, these incentives may produce little net employment or wage growth and risk displacing existing activity (Brussevich,

Dabla-Norris, & Karnane, 2020, Ayoola et al., 2024). Successful regimes share key traits: targeting marginal investment, time-bound sunset clauses, simple and automatic administration, and transparent evaluation frameworks linking revenue forgone to measurable outcomes.

IV. EFFECTIVENESS OF TAX INCENTIVE IN DRIVING ECONOMIC GROWTH

➤ Measuring Economic Growth Outcomes: GDP, FDI, and Industrial Output

Evaluating the economic impact of tax incentives requires attention to three core indicators: GDP growth, foreign direct investment (FDI), and industrial output. Each metric offers valuable insights but also presents attribution challenges. GDP Growth. Tax incentives lower capital costs, stimulate private investment, and improve productivity, contributing to GDP expansion. Cross-country evidence shows that corporate tax cuts are associated with measurable growth, though effects vary by context. Gechert (2022) finds that a 10-point tax reduction

raises output, while models such as VAR and narrative tax shocks suggest positive medium-term effects on employment and investment (Alam, 2021). However, excessively generous concessions risk eroding revenues, worsening deficits, and undermining long-term growth if not paired with fiscal reforms (Tax Policy Center, n.d.). Foreign Direct Investment. FDI is a vital channel for technology transfer and capital inflows. Evidence suggests that lower tax burdens attract more FDI, particularly in transitional economies (Silva, 2024). Yet studies caution that fundamentals like market size, labor conditions, and governance often outweigh tax incentives (Erokhin & Liu, 2023). OECD (2024) further notes that once endogeneity is corrected, links between incentives and FDI inflows weaken. Industrial Output. Incentives for R&D and capital investment enhance industrial upgrading. China’s experience shows accelerated depreciation supports innovation, while targeted green incentives boost productivity and environmental outcomes (James, et al., 2024). Risks remain, however, of shifting activity across firms without increasing total capacity.

Table 3 Summary of Measuring Economic Growth Outcomes: GDP, FDI, and Industrial Output

Indicator	Contribution of Tax Incentives	Key Evidence & Findings	Risks / Limitations
GDP Growth	Reduces capital costs, stimulates private investment, boosts productivity, and supports job creation.	Gechert (2022): 10-point tax cut raises output. Alam (2021): VAR and narrative tax shocks show medium-term gains in employment & investment.	Overly generous concessions erode revenues, worsen deficits, and undermine long-term growth if not coupled with fiscal reforms (Tax Policy Center, n.d.).
Foreign Direct Investment (FDI)	Attracts foreign capital, promotes technology transfer, and enhances international competitiveness.	Silva (2024): Lower tax burdens draw more FDI, esp. in transitional economies. Erokhin & Liu (2023): Market fundamentals often outweigh tax breaks. OECD (2024): Incentive–FDI links weaken once endogeneity is corrected.	Overemphasis on tax factors neglects governance, labor conditions, and market size, which are often decisive for FDI inflows.
Industrial Output	Encourages R&D, capital investment, and industrial upgrading; supports innovation and productivity.	China: Accelerated depreciation fosters innovation; green incentives increase productivity and environmental gains.	May shift activity across firms rather than expand total capacity; risk of inefficiency or misallocation.

➤ Impacts on Entrepreneurship, SMEs, and Innovation Ecosystems

Tax incentives play a vital role in stimulating entrepreneurship and supporting small- and medium-sized enterprises (SMEs), which are central to job creation, innovation, and inclusive economic growth. By reducing tax liabilities or granting credits, governments allow SMEs to reinvest freed resources into expansion, technology upgrades, and capital acquisition. Evidence from China shows that both VAT and income tax incentives significantly increase SMEs’ sales revenue and asset growth, particularly in high-tech sectors, thereby strengthening competitiveness and resilience in volatile markets. Within innovation ecosystems, targeted R&D incentives often generate long-lasting benefits. Dechezleprêtre et al. (2023) find that R&D tax credits enhance firm-level innovation outputs such as patents,

while producing spillovers for related firms with effects lasting up to seven years. Idika, et al. (2024) show that tax incentives improve SMEs’ total factor productivity (TFP), especially when combined with direct subsidies, highlighting complementarities between fiscal and financial support. Similarly, Ononiwu, et al. (2024) observe that under competitive pressures, tax incentives encourage greater corporate R&D spending by lowering investment costs.

However, effectiveness depends on firm absorptive capacity, sectoral knowledge intensity, and institutional quality. SMEs with limited resources may underutilize incentives. Embedding tax policies within broader strategies—capacity building, financing access, and innovation networks—is essential to maximize their impact on entrepreneurship and dynamic ecosystems.

➤ *Long-Term Fiscal Sustainability and Trade-Offs of Incentives*

While tax incentives can stimulate investment and growth in the short to medium term, their long-run effectiveness depends on fiscal sustainability and the management of trade-offs. A key risk lies in poorly monitored or open-ended incentives, which erode the tax base and weaken governments' capacity to fund essential services such as health, education, and infrastructure—foundations of sustainable development (Keen & Mansour, 2022). Simulation studies show that overly generous regimes, without offsetting revenue measures, can generate negative net present value outcomes and limit future fiscal flexibility (Besley & Coate, 2019). Excessive reliance on incentives may also foster rent-seeking when eligibility rules lack transparency or when discretion dominates allocation. Such dynamics entrench

incumbents, distort competition, and undermine productivity (Li et al., 2024). In some cases, incentives replace structural reforms—like regulatory modernization or land reform—leading to “subsidy dependence” where giveaways substitute for systemic change (Aghion et al., 2019).

Opportunity costs further complicate outcomes, as subsidized sectors may crowd out higher-value investment elsewhere. Evidence from European R&D credits shows diminishing returns once generosity exceeds moderate levels, creating fiscal drag without proportionate innovation (Almunia et al., 2023). To ensure sustainability, effective incentive regimes must be time-bound, performance-linked, and subject to periodic evaluation, complementing rather than substituting for broader reforms.



Fig 3 Balancing Opportunities and Risks of Tax Incentives for Sustainable Development

Figure 3 Illustrates the opportunities and risks of tax incentives, balancing growth potential with fiscal sustainability. It highlights dangers such as rent-seeking and subsidy dependence when incentives are poorly targeted, alongside the need for performance-linked and time-bound measures. Sustainable regimes require transparency, periodic evaluation, and alignment with broader structural reforms to avoid long-term fiscal erosion.

➤ *Risks of Dependency, Inefficiency, and Revenue Loss*

Although tax incentives can stimulate investment and economic activity, they also carry significant risks if poorly designed. One major challenge is dependency, where firms or entire sectors begin to treat incentives as permanent fixtures rather than temporary catalysts. This reliance weakens incentives for efficiency and innovation while embedding distortionary investment behavior (Orihara, 2023). Evidence further shows that financially unconstrained firms often capture a large share of benefits, raising fiscal costs while generating limited additional activity.

Inefficiency arises when incentives divert resources toward subsidized sectors regardless of their comparative advantage. This can create deadweight loss, where investment would have occurred anyway, or displacement effects, as subsidized firms crowd out non-subsidized competitors (Investment Zones, Deadweight and Displacement, 2022). Risks are amplified when schemes are broad, untargeted, or overly generous. Weak enforcement also encourages profit shifting and base erosion, undermining tax collection and reducing funds available for essential public goods (Sun, 2022). The most direct fiscal threat is revenue loss. Without sunset clauses or proper calibration, foregone revenues can accumulate, constraining fiscal flexibility and reducing equity as benefits concentrate among connected or well-resourced firms (Ihimoyan, et al., 2024). Mitigation requires disciplined design: incentives should be time-bound, performance-based, transparently evaluated, and paired with base-broadening reforms to preserve fiscal space for long-term development.

V. INCLUSIVENESS DIMENSIONS OF TAX INCENTIVES

➤ *Employment Generation and Labor Market Inclusion*

Tax incentives can serve as powerful tools to promote employment and foster labor market inclusion, particularly in economies with high underutilized labor. Many governments in developing countries design incentive schemes with explicit job creation goals, often linking eligibility criteria to demonstrated employment outcomes (IISD, 2023). By reducing labor cost burdens, incentives encourage firms especially small and medium enterprises (SMEs) to expand hiring, mitigating liquidity constraints and wage risks that typically hinder workforce growth (Mao, 2024).

Evidence highlights these positive effects. Mao (2024) shows that R&D tax incentives combined with

investment in technology-oriented SMEs significantly increase employment absorption, with firms expanding staff in response to growth opportunities. In Sub-Saharan Africa, Bertrand (2024) documents that tax incentives granted to Gabonese SMEs produced measurable gains in employment, even in institutional environments with capacity constraints. Similarly, Ononiwu, et al., (2023) reports that nearly half of all countries explicitly cite job creation among the criteria for granting tax incentives, underscoring the widespread recognition of employment as a policy priority. Nevertheless, impacts are uneven. In some cases, incentives may support capital investment without net hiring or favor incumbents over new entrants (Carbonnier, 2022). Their effectiveness ultimately depends on careful design conditioning benefits on new hires, targeting marginalized groups, and pairing with training and formalization measures to ensure that jobs created are both inclusive and sustainable.

Table 4 Summary of Employment Generation and Labor Market Inclusion

Policy Intent	Mechanism	Evidence	Limitations
Promote job creation through tax incentives	Reduce labor cost burden for firms, encourage hiring, especially in SMEs	Mao (2024): R&D tax incentives in technology-based SMEs boost employment absorption	Incentives may encourage capital deepening with little net hiring
Enhance labor market inclusion	Tie incentives to conditionality on new hires, focus on youth, women, and rural workers	Bertrand (2024): Gabonese SMEs receiving incentives showed statistically significant employment growth	Benefits may disproportionately favor existing workers over new entrants
Support formalization and quality jobs	Incentives linked with training programs, wage subsidies, and institutional support	~50% of economies cite job creation as explicit criteria for granting incentives	Weak monitoring or poor design can reduce effectiveness, risking revenue leakage
Foster sustainable growth in labor-intensive sectors	Combine fiscal tools with skills development and SME support measures	IISD (2023): Incentives aligned with employment outcomes can address underutilized labor markets	Unequal absorptive capacity across sectors may limit broad impact

➤ *Addressing Regional Disparities and Promoting Balanced Development*

Tax incentives can be strategically designed as place-based or spatial policies to direct capital toward lagging or underdeveloped regions, thereby reducing spatial inequalities and fostering more balanced growth (Bartik, 2021). By lowering the effective tax burden for firms locating or expanding in peripheral areas, governments help offset locational disadvantages such as higher transportation, weaker infrastructure, or institutional gaps while stimulating local investment, employment, and productivity. Evidence shows that payroll tax reductions in remote regions, such as in Norway, boosted economic activity and narrowed the urban–rural divide (Ku, 2020).

The effectiveness of such incentives, however, is not uniform. While they can ease financing constraints and support firms in disadvantaged regions, they also risk entrenching inefficiency by sustaining low-productivity enterprises or obstructing structural change (Zhao et al., 2024). Zhao and colleagues find that in China, regional tax incentives improved total factor productivity (TFP) in older industrial areas but simultaneously hindered the

entry of high-efficiency firms and the exit of weaker ones, thereby limiting broader productivity gains. To maximize inclusiveness, regional incentives should include clear performance conditions, sunset clauses, and complementary measures such as infrastructure upgrades, skills development, and connectivity improvements. Integrated into wider development strategies, they can reduce disparities without reinforcing inefficiencies.

➤ *Gender and Youth-Focused Tax Incentive Outcomes*

Tax incentives can shape gender equality and youth inclusion, but their effectiveness depends on intentional design, availability of disaggregated data, and institutional sensitivity. When created without these lenses, incentives risk reinforcing inequalities, as favored sectors such as heavy manufacturing or capital-intensive industries are often male-dominated or skewed toward older, experienced workers (World Bank, 2024, Ononiwu, et al., 2023). From a gender perspective, research shows both risks and opportunities. Without gender-proofing, incentives often disproportionately benefit men, particularly when targeted at sectors with low female participation or when favoring capital income, which

women own less of relative to wages (OECD, 2022). Conversely, progressive structures and targeted relief such as childcare-related deductions or credits for female entrepreneurs can help close the gender tax wedge, boosting women’s labor force participation and entrepreneurship (IMF, 2022). Ononiwu, et al., (2023) even proposes a Gender Equality Reserve (GER), a corporate tax tool allowing firms to deduct pre-tax investments in gender-inclusive leadership, directly linking incentives to organizational change.

For youth, incentives tied to hiring, internships, or youth-led start-ups can reduce hiring costs and open formal employment pathways. Some local programs already embed youth or diversity criteria in eligibility (Brookings, 2021). However, success depends on broader labor market conditions and the quality of training systems. Integrating gender and youth into tax incentive frameworks is essential. Policymakers should adopt impact assessments, embed participation conditions, and monitor demographic outcomes to ensure incentives foster genuine inclusion rather than reinforce disparities.

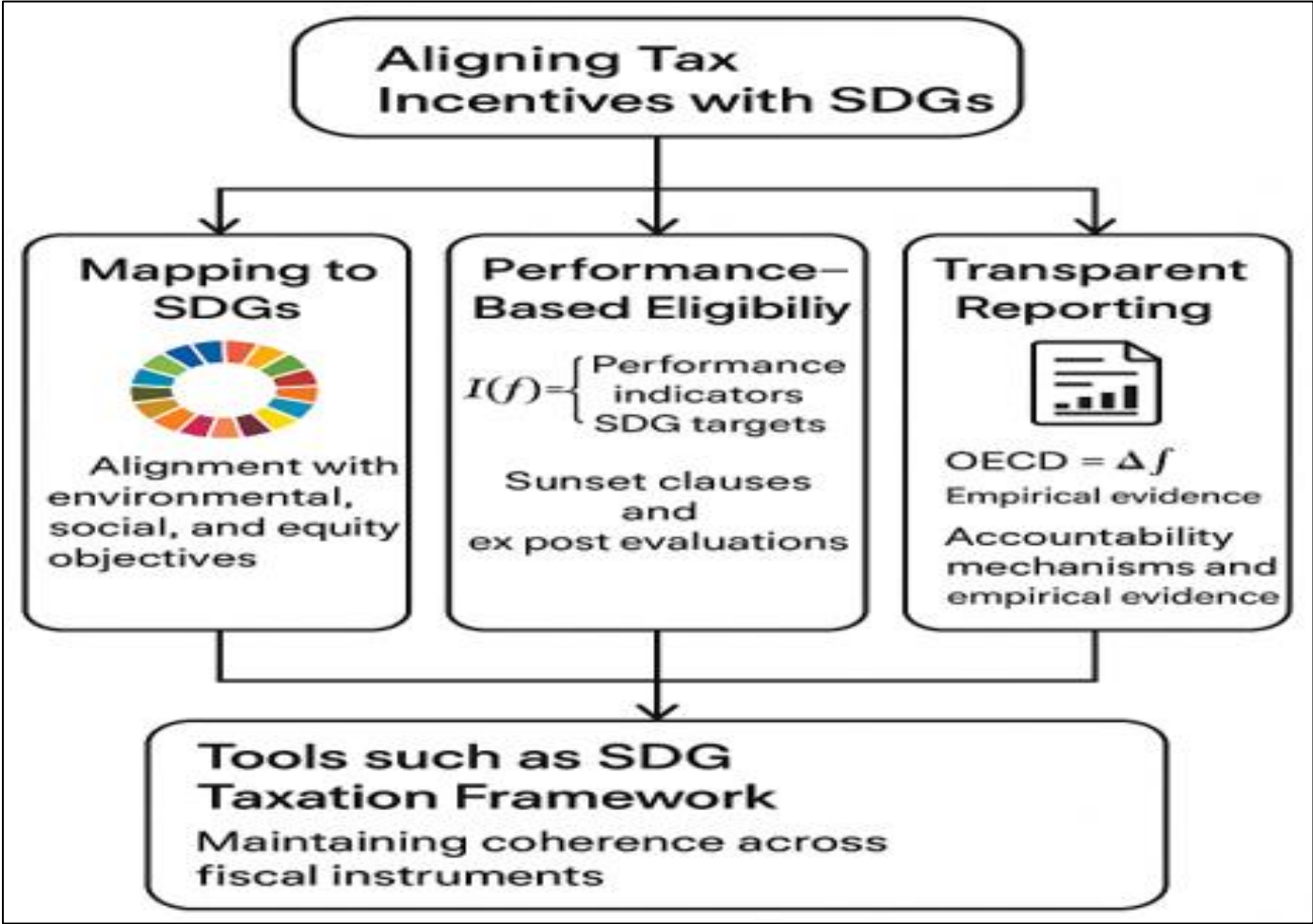


Fig 4 Integrating Tax Incentives into Sustainable Development Goal (SDG) Frameworks

Figure 4 Illustrates the integration of tax incentives with the Sustainable Development Goals (SDGs). It highlights three pillars—mapping incentives to SDG objectives, applying performance-based eligibility with measurable indicators, and ensuring transparent reporting through accountability mechanisms. Together, these elements, guided by frameworks like the UNDP’s SDG Taxation Framework, help align fiscal policy with inclusive and sustainable development outcomes.

➤ *Contribution to Poverty Reduction and Income Redistribution*

Tax incentives can play a role in poverty alleviation and income redistribution, but their effectiveness hinges on targeting, redistributive design, and fiscal offsets. Well-structured incentives stimulate growth and employment in marginalized regions or among underserved groups, indirectly reducing poverty by raising household incomes,

boosting labor demand, and supporting spillover industries (McGuirk & Godanci, 2021). For example, place-based incentives in low-income regions have been shown to lift local wages and reduce poverty rates when multiple household members find work in incentivized sectors (Zhu, 2023). The challenge lies in design. Broad, untar­geted incentives often benefit capital-intensive or high-profit firms, concentrating gains among wealthier owners and worsening inequality if benefits flow mainly to capital rather than labor (Zhang & Hou, 2024). Studies in Latin America reveal that tax breaks for extractive industries often deliver windfalls to elites, with little impact on poverty reduction or redistribution (Atalor, et al., 2023). By contrast, targeted tools such as tax credits tied to hiring low-income workers or caps on allowable claims help distribute benefits more equitably (Piketty et al., 2023, Azonuche, et al., 2024).

To be truly redistributive, incentive regimes must be paired with progressive taxation, social transfers, and public investments in health, education, and safety nets. Without such complements, forgone revenue risks undermining equity goals (Ogbuonyalu, et al., 2024). Thus, incentives can support poverty reduction, but only when carefully targeted, conditional, and integrated into broader redistributive frameworks.

VI. SUSTAINABILITY DIMENSIONS OF TAX INCENTIVES

➤ *Tax Incentives and Green Economy Transitions*
Tax incentives aimed at green economy transitions are designed to channel private investment toward low-carbon, resource-efficient, and climate-resilient sectors. Common instruments include accelerated depreciation for green assets, investment tax credits for renewable energy, exemptions from customs duties on clean technologies, and preferential tax rates for income derived from sustainable activities (Ijiga, et al., 2024). Importantly, such incentives can be dynamically adjusted to match technological maturity and evolving climate priorities, ensuring they remain effective rather than distortionary.

Empirical studies highlight their effectiveness when carefully structured. Wang, et al., (2022) show that tax incentives significantly enhance corporate green innovation, particularly for firms constrained by limited liquidity.

By easing financing pressures, these incentives enable adoption of emissions-reducing technologies and processes. Subsidies, in comparison, often produce weaker marginal impacts. Similarly, Frimpong, et al. (2023) find that fiscal and tax incentives, when reinforced by policy certainty and regulatory support, accelerate green technology adoption across sectors such as manufacturing, energy, and environmental services. However, poorly targeted or indefinite incentives risk revenue losses, rent-seeking, and “greenwashing.” They may also fail where systemic barriers such as inadequate grid capacity or weak institutions remain unaddressed (Jinadu, et al., 2024). Effective deployment requires integration with complementary tools like carbon pricing, sustainability standards, procurement mandates, and rigorous monitoring to ensure that tax incentives drive genuine structural change toward sustainability (Amebleh, & Igba, 2024).

Table 5 Summary of Tax Incentives and Green Economy Transitions

Aspect	Key Instruments	Empirical Evidence	Risks & Requirements
Purpose	Direct investment into low-carbon, resource-efficient, and climate-resilient sectors	Wang, Chen, Hao, & Dagestani (2022): tax incentives enhance corporate green innovation, especially for liquidity-constrained firms	Poorly targeted or indefinite incentives risk revenue loss, rent-seeking, and greenwashing
Instruments	- Accelerated depreciation for green assets- Investment tax credits for renewable energy- Exemptions from customs duties on clean technologies- Preferential tax rates for sustainable activities.	fiscal and tax incentives accelerate green technology adoption when paired with policy certainty and regulatory support	Structural barriers (e.g., weak institutions, inadequate grid capacity) may undermine effectiveness
Dynamic Nature	Adjusted to match technological maturity and evolving climate priorities	Incentives ease financing pressures, enabling emissions-reducing technologies and processes	Requires integration with complementary tools such as carbon pricing, sustainability standards, and procurement mandates
Overall Effectiveness	Works best when carefully structured and performance-linked	More effective than subsidies in producing marginal impacts on innovation and sustainability	Needs rigorous monitoring to ensure genuine structural change toward sustainability.

➤ *Role in Promoting Renewable Energy and Low-Carbon Industries*
Tax incentives can play a decisive role in accelerating renewable energy deployment and supporting low-carbon industries by lowering the user cost of capital for clean technologies. By shifting relative prices in favor of renewables, they speed up adoption along learning curves and strengthen supply chains. Evidence from the United States demonstrates this impact: modeling across nine energy-economy systems shows that clean-energy tax credits such as investment, production, transferability, and technology-neutral credits significantly expand renewable deployment and reduce emissions by 43–48% below 2005

levels by 2035. These effects are largely driven by rapid scale-up of solar, wind, and grid infrastructure (Bistline et al., 2023).

At the firm level, cost-based tools such as accelerated depreciation encourage greener capital deepening, fostering abatement investment, eco-innovation, and productivity-enhancing upgrades while maintaining competitiveness (Hu et al., 2024). Cross-country evidence also suggests that high corporate tax burdens suppress renewable power generation, while stable and predictable relief fosters clean electricity investment (Ilesanmi, et al., 2024). Three design lessons emerge. First, technology-

neutral, cost-based incentives stimulate real capacity additions rather than profit shifting. Second, long-term certainty and policy credibility are as critical as generosity. Third, complementarity with infrastructure and clear market rules enhances effectiveness. Properly designed, tax incentives are indispensable for scaling renewables and advancing low-carbon industrial ecosystems.

➤ *Aligning Incentives with SDGs, Accountability, and Monitoring*

Integrating tax incentives into sustainable development frameworks requires deliberate alignment with the Sustainable Development Goals (SDGs) and credible accountability mechanisms. Policymakers increasingly stress that incentives should not only attract investment but also advance environmental, social, and equity objectives in line with the SDGs (Rahman et al., 2023). Tools such as the UNDP’s SDG Taxation Framework provide guidance for evaluating how fiscal systems including incentives support climate and development priorities while maintaining coherence across tax instruments (Akinleye, et al., 2023). To achieve this, incentive schemes must include performance

indicators tied to SDG targets, such as emissions reduction, green job creation, or regional uplift. Periodic ex post evaluations should benchmark results against counterfactual baselines. OECD investment promotion agencies are moving in this direction by expanding monitoring beyond capital inflows to sustainability indicators, including resource use, emissions, and social inclusion (OECD, 2024, Okoh et al., 2024).

Empirical evidence reinforces this need. In China, incentives linked explicitly to environmental conditions reduced industrial wastewater and sulfur dioxide emissions by up to 19.5%, while schemes lacking such conditions showed weaker outcomes (Tong et al., 2024). Similarly, Jinadu, et al. (2023) find that incentives stimulate stronger green innovation when tied to corporate ESG performance. Thus, aligning tax incentives with SDGs requires three elements: clear mapping of goals, performance-based eligibility with sunset clauses, and transparent reporting. These ensure incentives foster inclusive, sustainable outcomes rather than serving as isolated fiscal tools.

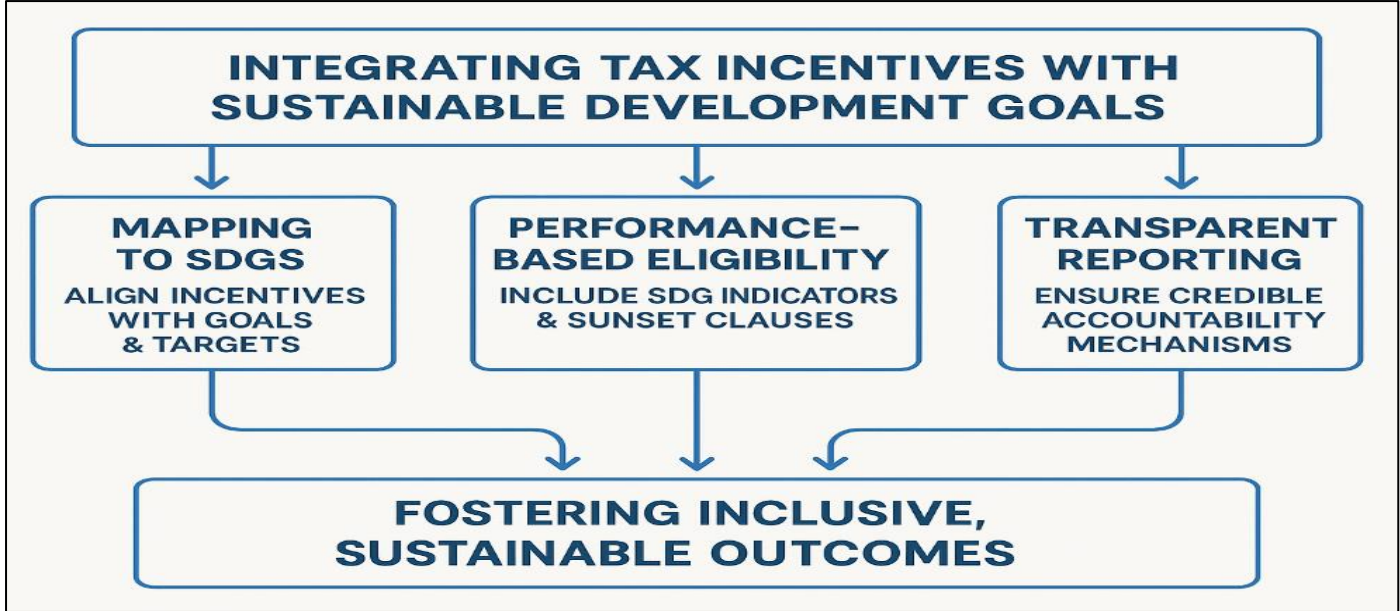


Fig 5 A Framework for SDG-Linked Tax Incentives

Figure 5 Illustrates how integrating tax incentives with the Sustainable Development Goals (SDGs) requires three pillars: mapping incentives to SDG targets, establishing performance-based eligibility with clear indicators and sunset clauses, and ensuring transparent reporting for accountability. Together, these elements align fiscal policy with environmental, social, and equity objectives. The framework ensures that tax incentives foster inclusive, sustainable outcomes rather than functioning as isolated fiscal tools.

➤ *Challenges of Monitoring, Evaluation, and Compliance*

Tax incentives can be effective policy tools, but their success depends on strong monitoring, evaluation, and compliance systems. Weak oversight often results in underperformance, misuse of public resources, and

significant revenue losses. A central challenge is institutional capacity and data availability. Without reliable tracking of firm-level outcomes such as investment, job creation, or environmental performance, it is difficult to determine whether incentives generate true additionality or simply reward activities that would have occurred anyway (Akinleye, et al., 2022). Many developing countries also lack transparency, failing to publish tax expenditure reports or disclose revenue forgone.

Ghana’s Exemptions Act offers a contrasting model, requiring annual reporting on exemptions, foregone revenue estimates, and periodic five-year reviews to align with national priorities (Oyekan, et al., 2023). Attribution poses another difficulty. Evaluating what would have happened in the absence of an incentive is complex,

particularly in contexts with overlapping reforms or external shocks. Short evaluation windows, selection bias, and weak data linkages further complicate credible counterfactual analysis (Lee, & Lee, 2024). Compliance enforcement is often weak. Firms may underreport outcomes, exaggerate costs, or fail to meet conditions, while governments lack claw back tools. Effective regimes require binding performance criteria, sunset clauses, robust audits, and transparency portals to enhance accountability (NCSL).

VII. POLICY IMPLICATIONS AND FUTURE DIRECTIONS

➤ *Best Practices for Designing Effective and Equitable Tax Incentives*

Designing effective tax incentives requires balancing clarity, targeting, equity, and accountability. Clear eligibility rules and transparent guidelines reduce administrative discretion, minimize rent-seeking, and give investors certainty. Incentives should be precisely targeted at sectors with high social returns such as renewable energy, R&D, or employment for marginalized groups rather than applied as broad subsidies that risk eroding the tax base. Equity considerations are central. Incentives must be accessible to small and medium enterprises (SMEs) as well as large corporations, preventing benefits from concentrating among firms with greater financial and administrative capacity. Simplified procedures, refundable credits, and tiered structures that favor disadvantaged regions or demographics can help broaden access. Embedding time-bound provisions and sunset clauses further ensures that incentives remain temporary tools, renewed only when evaluations show measurable success. Accountability depends on robust monitoring and evaluation. Linking incentives to performance-based conditions such as job creation, innovation, or environmental impact helps ensure outcomes align with policy objectives. Publishing tax expenditure reports and subjecting regimes to parliamentary or independent oversight enhances transparency and public trust. Crucially, incentives should not operate in isolation but as part of a coherent fiscal and development framework, aligning with national goals for inclusivity, sustainability, and long-term economic transformation.

➤ *Policy Recommendations for Balancing Growth, Inclusivity, and Sustainability*

For tax incentives to support inclusive and sustainable growth, policymakers must adopt frameworks that balance economic stimulation with equity and environmental priorities. First, incentive regimes should be explicitly tied to measurable outcomes such as employment creation, regional development, or carbon reduction ensuring that fiscal costs generate tangible social and environmental benefits. Embedding performance benchmarks within national development strategies prevents incentives from being granted without accountability.

Second, inclusivity requires that incentives are accessible beyond large corporations. Small and medium

enterprises, start-ups, and firms in disadvantaged regions should be able to participate equitably. This can be achieved through simplified procedures, refundable credits, and targeted support mechanisms that avoid favoring capital-intensive sectors with limited employment spillovers. Third, fiscal safeguards are essential. Incentives must be time-bound, incorporate sunset clauses, and adopt revenue-neutral designs to protect long-term sustainability. Any forgone revenue should be compensated through base broadening, stronger enforcement, or the redirection of inefficient subsidies.

Finally, tax incentives should be complemented with enabling policies such as infrastructure upgrades, skills development, and institutional strengthening. These measures maximize the effectiveness of fiscal tools while ensuring that incentives promote equity and sustainability. When aligned with broader reforms, tax incentives can stimulate growth while safeguarding resilience and inclusivity.

➤ *Research Gaps and Emerging Issues in Fiscal Incentive Analysis*

Although tax incentives are widely used, important gaps remain in evaluating their long-term effectiveness, equity impacts, and sustainability outcomes. A key challenge is causal attribution. Many existing studies rely on correlations, making it difficult to distinguish genuine additional investment or job creation from activity that would have occurred without incentives. Stronger evidence requires methodologies that integrate econometric techniques, firm-level microdata, and longitudinal tracking to establish clearer counterfactuals. Another underexplored area is distributional impact. While aggregate indicators such as GDP and FDI dominate assessments, less attention has been paid to how benefits are shared across income groups, genders, regions, or firm sizes. Critical questions persist on whether incentives disproportionately favor large multinationals while excluding SMEs, women entrepreneurs, or marginalized communities. Embedding equity-sensitive metrics into evaluation frameworks remains a pressing need. The sustainability dimension also requires deeper analysis. Incentives for green growth are often judged by investment volumes rather than ecological outcomes. More research is needed on their interaction with carbon markets, renewable deployment, and environmental justice. Finally, global tax reforms and digitalization present new challenges. The rise of global minimum tax rules, digital services taxation, and shifting international agreements are reshaping the viability of national incentive regimes, creating an evolving frontier for both policy design and research.

VIII. CONCLUSION

Tax incentives occupy a pivotal space at the intersection of economic growth, social inclusion, and environmental sustainability. When thoughtfully designed, they can lower barriers to investment, stimulate entrepreneurship, generate employment, and accelerate transitions toward low-carbon industries. Yet, the evidence

also underscores that incentives are not a panacea. Poorly targeted or weakly monitored schemes risk eroding fiscal capacity, distorting competition, and entrenching inequality rather than alleviating it. The challenge for policymakers is therefore not whether to deploy tax incentives, but how to craft them as strategic, conditional, and accountable tools within a broader fiscal and development framework. Incentives must be tied to measurable outcomes, embedded in time-bound structures, and complemented by enabling policies such as infrastructure development, skills enhancement, and regulatory reforms.

Ultimately, the success of tax incentives lies in balancing short-term economic gains with long-term structural transformation. Achieving this balance requires transparent governance, evidence-based evaluation, and a commitment to ensuring that benefits extend beyond investors to society at large. In this way, tax incentives can evolve from simple fiscal concessions into powerful instruments for advancing inclusive prosperity and sustainable development.

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