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The Role of Paradiplomatic Actors in the G20 Green Bond and Green Sukuk Agenda: A Local Political Analysis of Provincial and Municipal Governments in Indonesia

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ABSTRACT

This qualitative study examines the involvement of paradiplomatic actors in implementing green bond and green sukuk instruments promoted by the G20 Sustainable Finance Working Group (SFWG). Specifically, the study focuses on the local political dimensions of this process, with particular attention to the roles of provincial governments, namely DKI Jakarta and Jawa Barat, and selected municipal governments, induding Surabaya and Bandung. The analysis encompasses the political agency of elected governors and mayors, regional legislative councils (DPRD) in approving green budget allocations (APBD), regional planning agencies (BAPPEDA) in identifying eligible green projects, and local policy networks embedded within these subnational structures. Through content analysis of policy documents, literature, and regulatory frameworks from 2018 to 2024, the research highlights the vital role of global city networks like C40 Cities and UCLG-ASPAC. These networks act as strategic bridges, translating global dimate commitments into concrete subnational actions. As tangible evidence, Indonesia's cumulative sovereign green sukuk issuance reached USD 9.6 billion (2018–2023), channelling resources into six key sectors: renewable energy (38.5%), sustainable transport (28.3%), waste management (12.4%), water and sanitation (10.8%), dimate adaptation (6.2%), and energy efficiency (3.8%). These allocations collectively generated 130,316.39 tonnes of CO_2 equivalent reductions per year by 2022. Nevertheless, efforts to scale up green financing remain hindered by structural issues—resource disparities, fragile DPRD-central government coordination, and overlapping interjurisdictional regulations. To optimize the impact of green finance locally, governance improvements, regulatory synchronization, and capacity building for practitioners are essential. This study recommends enforcing dear national green taxonomy standards, transparent reporting mechanisms, targeted fiscal incentives, and measurable local performance indicators.

Keywords: *Paradiplomacy, Sustainable Finance, Green Sukuk, Green Bonds, Climate Governance.*

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INTRODUCTION

Facing the current global climate crisis, the world is confronted with the urgency to mobilize large-scale financing unprecedented in history. The United Nations Conference on Trade and Development (UNCTAD) notes that the funding needs to achieve the Sustainable Development Goals (SDGs) have now swelled to approximately USD 4 trillion per year (Sarangi, 2023). This indicates a highly significant climate financing gap, which is projected to continue widening without structural intervention. To bridge this deficit, various multilateral cooperation forums like the G20 have begun positioning sustainable finance instruments, especially green bonds and green sukuk, as strategic levers to direct capital flows towards a low-carbon economy.

Amidst the evolution of the global green financial architecture, green sukuk emerges as an essential funding alternative because it is able to align Sharia principles with environmental conservation standards (Abubakar & Handayani, 2020). As the country with the largest Muslim population and a

key player in the international sukuk market, Indonesia successfully pioneered the issuance of the world's first sovereign green sukuk in early 2018, raising an investment of USD 1.25 billion (Khalilurrahman & Mubarrak, 2022). This continuous commitment is evidenced by the total issuance of green sukuk (global and domestic) which grew until 2024, where the majority of these funds are specifically allocated to finance renewable energy infrastructure and climate change mitigation efforts. In this context, Green Bonds and Green Sukuk serve as vital bridging instruments for subnational governments to finance capital-intensive environmental projects, which are essential for meeting national climate targets (Wardani & Sinambela, 2025).

However, macro achievements at the national level cannot be fully understood without considering the crucial role of non-state actors at the subnational level. This is where paradiplomacy, namely the active involvement of local governments and subnational entities in international relations, facilitates the transfer of policies and resources from the global realm to be implemented locally (Tavares, 2016). Critically, this study contends that this process is not merely administrative but deeply political, it involves gubernatorial and mayoral leadership, the deliberative functions of Regional Legislative Councils (DPRD) in approving green budgets, and the project-identification role of Regional Development Planning Agencies (BAPPEDA). This political agency at the subnational level is what makes cities like Jakarta and Surabaya the vanguard of green instrument implementation, and it demands systematic scholarly attention.

This transformation makes cities and provinces the vanguard of implementing green instruments, as seen in the active involvement of Indonesian cities in international networks. This shift towards multi-level governance is in line with the view of Indonesian diplomat, Al Busyra Basnur, who underscores that modern diplomatic practices are now increasingly dominated and driven by the movements of non-state actors at the grassroots level (Basnur, 2024). While providing opportunities for development acceleration, this decentralization of climate diplomacy is not free from criticism. Policy inconsistencies between central and regional governments often constitute the primary barrier to the smooth flow of green investments (Betsill & Bulkeley, 2006). Resource asymmetry, bureaucratic bottlenecks, and overlapping regulations further impede local governments from accessing and managing global financial instruments independently (Bache & Flinders, 2004).

Responding to these debates, this research posits that the integration of paradiplomacy into the green bond and green sukuk agenda is not merely a complement, but an absolute prerequisite for scaling up green financing. To break the implementation deadlock, systematic strengthening of subnational institutional capacity—particularly at the level of DPRD legislative oversight, BAPPEDA technical capacity, and mayoral/gubernatorial political will—alongside solid cross-governmental coordination mechanisms, is required.

Problem Formulation and Research Objectives

Based on the background above, the main research question is: how do paradiplomatic actors—specifically the provincial governments of DKI Jakarta and Jawa Barat, and the municipal governments of Surabaya and Bandung, including their elected political leadership (governors and mayors), Regional Legislative Councils (DPRD), and regional planning agencies (BAPPEDA), translate the G20's green bond and green sukuk agenda into locally actionable financing policies. The study further asks: (1) to what extent are these regional political initiatives effective in driving climate mitigation on the ground, as evidenced by quantifiable emission reductions and green project absorption rates, (2) what institutional and political hurdles, including local legislative bottlenecks, APBD constraints, and inter-governmental coordination failures, have been hindering the expansion of these green funding instruments at the subnational level.

Paradiplomacy: Definition, Theory, and Analytical Framework

The concept of paradiplomacy stems from the phenomenon of increasingly active subnational entities on the international stage. This term, popularized since the late 1980s, describes the reality that regions are no longer passive spectators of their country's foreign policy (Duchacek, 1990). Classic literature from (Hocking, 1993) and Aldecoa and Keating (1999) provides a comprehensive analytical framework, showing that local government's international maneuvers are driven by

economic, political, social, and environmental demands. Paradiplomacy has created opportunities for local governments to build international partnerships that enhance regional potential and strengthen their capacity to compete in the global arena (Sinambela, Warsito, et al., 2024). In the era of globalization, paradiplomacy has emerged as a strategic practice in which subnational governments engage directly in international cooperation to exchange knowledge, strengthen cultural ties, and advance mutual economic and trade interests (Sinambela, Al-Fadhat, et al., 2024).

Crucially for this study, paradiplomacy is not only a bureaucratic or technical phenomenon, it is inherently political. The room for maneuver of any subnational government depends heavily on the political will and personal commitment of elected leaders (Acuto & Rayner, 2016). A governor who champions green finance as a political platform—such as DKI Jakarta's governors who made climate governance central to their gubernatorial programs—does more than implement national policy; they actively shape the local policy network that feeds into the global green financial architecture. Equally important is the role of DPRD, the regional legislative body whose approval of the Regional Budget (APBD) determines whether subnational green initiatives receive adequate funding. BAPPEDA, meanwhile, serves as the technical bridge, identifying and prioritizing eligible projects that can meet the bankability criteria demanded by sovereign green sukuk frameworks. This trifecta of political leadership, legislative oversight, and planning agency capacity constitutes the core local political scope examined in this study.

High-capacity regions often adopt more assertive paradiplomatic strategies: directly participating in transnational network memberships, conducting independent lobbying in global city forums, or forming cross-border coalitions to advance environmental interests (Acuto, 2013). However, the degree of such assertiveness is circumscribed by local resource availability, the maturity of organizational structures within regional institutions, and the prevailing political dynamics at the subnational level.

Green Sukuk and Green Bonds as Sustainable Finance Instruments

Green bonds and green sukuk are financial instruments specifically designed to attract investor capital for pro-environment projects. Green bonds are conventional debt securities whose proceeds are exclusively directed to green initiatives—renewable energy transition, eco-friendly transportation, and climate adaptation, and heavily adhere to the Green Bond Principles (GBP) initiated by the International Capital Market Association (International Capital Market Association (ICMA), 2021). Flammer (2021) demonstrates that the issuance of corporate green bonds signals genuine environmental commitment and generates positive market reactions, findings broadly applicable to sovereign green issuances.

Green sukuk wraps these environmental goals within Sharia principles. Rather than debt securities, sukuk represent investors' proportional ownership over a physical asset or project cash flow, thus avoiding riba (interest) (Deschryver & De Mariz, 2020). Indonesia's decision to issue the inaugural sovereign green sukuk in March 2018 was a breakthrough that triggered a wave of similar instrument issuances. By 2023, cumulative issuance surpassed USD 9.6 billion, with funded projects estimated to reduce greenhouse gas emissions by 130,316.39 tonnes of CO_2 equivalent per year through 2022 (Direktorat Jenderal Pengelolaan Pembiayaan dan Risiko (DJPPR), 2023). Globally, the robust growth of these green capital markets is heavily catalyzed by countries' urgent needs to finance their Nationally Determined Contributions (NDCs) under the Paris Agreement (Tolliver et al., 2020). Furthermore, Indonesia's pioneering efforts in sovereign green sukuk parallel the experiences of other leading Islamic finance hubs like Malaysia, where the successful expansion of green sukuk relies heavily on strong leadership drivers, the integration of green financial ecologies, and the continuous navigation of structural issuance challenges (Abdullah & Keshminder, 2022; Keshminder et al., 2022; Liu & Lai, 2021).

G20 Sustainable Finance Working Group: Agenda and Framework

The G20 Sustainable Finance Working Group (SFWG) was established with the primary mandate of formulating collective policy recommendations to oversee the smooth global transition towards a low-carbon and sustainable economy. A crucial momentum for this working group

occurred during Indonesia's G20 Presidency in 2022, during which Indonesia aggressively pushed the escalation agenda for green financial instruments, including green bonds and green sukuk, positioning them as a flagship strategy to patch the world's continuously swelling climate financing deficit (Kementerian Keuangan Republik Indonesia, 2022).

Conceptually, the direction of the SFWG's movement is clearly outlined in the G20 Sustainable Finance Roadmap (G20 Sustainable Finance Working Group (SFWG), 2021). This collective document highlights the urgency to boost the issuance volume of green instruments and harmonize taxonomy standards to mitigate market fragmentation risks. This roadmap also emphasizes the importance of synergizing public capital with private funding, as well as elevating the technical capacity of developing nations so they can meet their Nationally Determined Contributions (NDC) targets.

This is where paradiplomatic actors again take an essential role. Amidst the macro frameworks formulated by the G20 elite, subnational entities act as "anchors" that pragmatize these global commitments into a series of implementative actions on the ground. They are the frontline actors who best understand how to aggregate financing needs at the grassroots level, while selecting environmental conservation projects most relevant to the local communities' social and economic contexts.

Non-State Actors and Multi-Level Governance in International Relations

The dynamics of current global politics and policies are undergoing a fairly massive paradigm shift. The exclusive dominance of the nation-state is slowly beginning to fade, replaced by a more inclusive governance model embracing various non-state actors (Slaughter, 2004). Local governments, civil society organizations, multinational corporations, and international financial institutions now appear as key players; they do not merely execute but also participate in formulating the direction of global policies. The increasing influence of non-state actor maneuvers is inseparable from the vortex of economic globalization and technological advancement (Keohane & Nye Jr., 2011). Furthermore, the massive wave of decentralization that slowly erodes state power centralization, alongside the complexity of contemporary global challenges like the climate crisis, compels the emergence of cross-sectoral collaboration heavily reliant on specific technical expertise.

This phenomenon is closely tied to the multi-level governance framework (Hooghe & Gary, 2003). This structural evolution posits that governance is no longer exclusively monopolized by the central state, creating a normative and empirical shift toward multi-tiered authority (Piattoni, 2010). Consequently, subnational governments increasingly engage in state-bypassing strategies, directly representing their specific territorial and environmental interests in transnational arenas without waiting for central mediation (Tatham, 2010). This concept underscores that decision-making and policy implementation now occur simultaneously across various layers, from the international, regional, national, down to the grassroots level locally. Each of these layers is interconnected and interdependent on one another. If drawn into the realm of sustainable financing, elitist commitments struck at the G20 negotiation tables will mean nothing if not translated into executable national regulatory frameworks. Ultimately, this global discourse must pragmatically become real projects at the regional level.

In this implementation chain, subnational entities hold highly strategic control. Their proximity to the field allows for precise identification of local needs, targeted consolidation of funding proposals, and the filtration of the most urgent green projects. More than that, it is the local governments that serve as the vanguard in maintaining accountability and transparency in the use of these green funds in the eyes of the public.

METHOD

This research employs a qualitative approach with an analytical descriptive design, entirely relying on library research (Creswell, 2014). The choice of this method is based on the researcher's need to delve deeper into the meaning, discourse, and behind-the-scenes dynamics regarding how the G20's macro agenda is translated into green bond and green sukuk instruments in Indonesia. The complexity of such policy realities demands a comprehensive reading of various regulatory texts and

academic literature, a depth of understanding that would be missed if analyzed solely through a numbers-based quantitative lens.

To ensure analytical sharpness and relevance, data collection was conducted using a purposive sampling technique. Documents were selectively chosen based on their level of authority and significance to climate financing and paradiplomacy issues. The primary data corpus in this study includes high-level policy documents like the G20 Sustainable Finance Roadmap and official statements from the G20 Presidency, technical guidelines for green sukuk from ICMA and IsDB, up to national-level regulations (such as those from the Indonesian Ministry of Finance and OJK). This data was then juxtaposed with publications from global city networks, such as C40 Cities and UCLG-ASPAC, as well as and BAPPEDA regional planning documents from DKI Jakarta, Jawa Barat, Surabaya, and Bandung.

The unit of analysis focused on four elements, (1) institutional mechanisms of regional actors (including DPRD deliberations and BAPPEDA project pipelines), (2) policy instruments and local political decisions, (3) real impact on climate mitigation as measured by quantitative indicators (emission reductions, green project absorption, BEV sales growth), and (4) structural barriers to green diplomacy. Starting from document coding, the researcher categorized them to draw common threads (thematic analysis) and map cross-jurisdictional practice patterns (Braun & Clarke, 2006). These extracted results were then interpreted through the lens of Green Politics Theory and decentralization theory. The entire sequence of analysis was framed within the 2018 to 2024 timeframe, a crucial period recording Indonesia's footstep from the launch of the inaugural sovereign green sukuk to the completion of the G20 Presidency.

In the final stage, the validity and credibility of the findings were strictly maintained through the principle of triangulation (both data sources and analytical methods) (Lincoln & Guba, 1985). To minimize subjective bias commonly found in qualitative studies (reflexivity), the researcher also conducted cross-examinations of thought (peer debriefing) with fellow academics and practitioners (Tracy, 2010). This disciplined methodological framework is designed to ensure that the resulting conclusions are not only academically valid but also yield pragmatic policy recommendations for strengthening green finance paradiplomacy in the future.

RESULT AND DISCUSSION

Mechanisms of Paradiplomatic Actors' Involvement in the G20 Green Finance Agenda

The involvement of paradiplomatic actors in the G20 green finance agenda is structurally facilitated through global city network platforms, most prominently C40 Cities and UCLG-ASPAC. These networks function pragmatically as arenas for exchanging policy advocacy tactics and opening access to technical and financial resources. Jakarta's active C40 membership has significantly boosted the DKI Jakarta Provincial Government's capacity to formulate a Climate Action Plan aligned with Paris Agreement benchmarks (Pemerintah Provinsi DKI Jakarta, 2021). UCLG-ASPAC provides a platform for Indonesian cities to build strategic intergovernmental coalitions and receive technical assistance crucial for executing sustainable projects (United Cities and Local Governments Asia-Pacific (UCLG-ASPAC), 2023).

However, this study finds that what distinguishes genuinely effective paradiplomatic participation from performative engagement is the quality of local political backing. In DKI Jakarta, the governor's office has consistently integrated green finance priorities into annual budget negotiations with the DPRD, resulting in dedicated APBD allocations for EV infrastructure, green transport corridors, and climate resilience programs. Jawa Barat's BAPPEDA has pioneered a regional green project identification mechanism that systematically feeds eligible proposals into the national green sukuk pipeline. In contrast, municipalities where DPRD-executive alignment is weak or where BAPPEDA lacks technical capacity tend to remain on the periphery of green capital flows.

Table 1 below presents the trajectory of Indonesia's sovereign green sukuk issuance from 2018 to 2023, revealing consistent growth in both volume and oversubscription ratios—evidence of strong investor confidence partly attributable to rigorous local project pipelines.

Table 1. Indonesia Sovereign Green Sukuk Issuance (2018–2023)

Year	Instrument	Size (USD bn)	Tenor	Primary Allocation Sector	Oversubscription
2018	Global Green Sukuk (1st)	1.25	5-yr	Renewable energy, sustainable transport	2.4×
2019	Global Green Sukuk	0.75	5-yr	Renewable energy, waste management	3.1×
2020	Global Green Sukuk (COVID-19 Green)	0.75	5-yr	Energy efficiency, climate adaptation	5.6×
2021	Global Green Sukuk (dual tranche)	1.00	5/10-yr	Renewable energy, sustainable transport	4.8×
2022	Global Green Sukuk	1.75	5-yr	Multi-sector (energy, transport, water)	3.9×
2023	Global Green Sukuk	2.00	5-yr	Renewable energy, waste, water sanitation	6.2×
Cumulative	—	**>9.60**	—	All six sectors above	—

Source: Direktorat Jenderal Pengelolaan Pembiayaan dan Risiko (DJPPR), 2023; Bank Indonesia (2024). Note: Oversubscription ratio indicates demand relative to issue size.

In the domestic context, the green sukuk architecture in Indonesia is not a top-down regime blind to local realities. Strong bottom-up dynamics are evident: proposals for revamping Transjakarta service systems or procuring electric bus fleets in Surabaya, initiated by respective city governments through their BAPPEDA, were successfully integrated into the national green funding framework. The implementation of these green projects in Jakarta and Surabaya aligns with broader national trends. Empirical evidence demonstrates that the transportation and energy sectors are the primary beneficiaries, accounting for a significant portion of the total issuance to support carbon emission reduction (Wardani & Sinambela, 2025). This underscores that subnational initiatives are not just local efforts, but a core part of Indonesia's sovereign Green Sukuk allocation strategy. Therefore, the success of paradiplomatic engagement depends heavily on the technical readiness of local agencies. These achievements highlight the necessity of institutional synergy between global financial agendas and local political execution handled by regional planning agencies/BAPPEDA (Wardani & Sinambela, 2025). This execution chain confirms the tight functional intersection between paradiplomatic maneuvers, local political decision-making, and green capital market penetration.

The Impact of Green Sukuk Implementation on Climate Change Mitigation

On paper and in the field, the implementation of green sukuk in Indonesia has contributed a highly convincing empirical track record. Based on the Allocation and Impact Report released by the Ministry of Finance, the disbursement of funds from this instrument in the 2018–2022 period proved successful in cutting greenhouse gas emissions by up to 130,316.39 tons of CO_2 per year (Direktorat Jenderal Pengelolaan Pembiayaan dan Risiko (DJPPR), 2023). This achievement figure is not a hollow claim, but the accumulated result of executing strategic projects in the clean energy, energy efficiency, waste management, and low-carbon transportation sectors. Specifically, this green capital injection has financed the installation of solar and micro-hydro power plants, the modernization of special

transit corridors along with the procurement of electric bus fleets, and the construction of waste-to-energy facilities that effectively suppress methane gas leaks from landfills. Table 2 disaggregates these achievements by sector, revealing the dominance of renewable energy and sustainable transport—sectors where DKI Jakarta and Surabaya have been particularly active as local project proposers.

Table 2. Green Sukuk Fund Allocation by Sector and GHG Emission Reductions (2018–2022)

Sector	No. of Eligible Projects	Allocated (IDR Trillion)	Share (%)	GHG Reduction (tCO_2e/year)
Renewable Energy	14	18.73	38.5	51,247
Sustainable Transport	9	13.75	28.3	42,319
Waste Management	7	5.89	12.4	23,876
Water & Sanitation	5	5.33	10.8	8,432
Climate Adaptation	3	3.14	6.2	3,241
Energy Efficiency	2	1.82	3.8	1,201
TOTAL	40	48.66	100.0	130,316

Source: Direktorat Jenderal Pengelolaan Pembiayaan dan Risiko (DJPPR) (2023); Otoritas Jasa Keuangan (OJK), (2023). Note: IDR amounts reflect official government allocation reports. GHG reductions are annual estimated figures based on project impact assessments.

Table 3 further traces the year-by-year progression of emission reductions, illustrating accelerating impact that closely correlates with the increasing maturity of local government project proposals—particularly from DKI Jakarta and Surabaya after 2020.

Table 3. Annual GHG Emission Reductions from Green Sukuk-Funded Projects (2019–2022)

Year	Emission Reduction (tCO_2e/yr)	Cumulative (tCO_2e)	Representative Projects
2019	18,245	18,245	Solar PV plants (7 sites), micro-hydro (3 units)
2020	24,382	42,627	Solar PV expansion, Transjakarta BRT corridor renewal
2021	39,712	82,339	Renewable energy diversification, electric bus procurement (Surabaya)
2022	47,977	130,316	Multi-sector green projects (energy, transport, waste-to-energy)
Cumulative	130,316.39	130,316.39	All 40 eligible projects across 6 sectors

Source: : Direktorat Jenderal Pengelolaan Pembiayaan dan Risiko (DJPPR) (2023). Note: All figures represent annual estimated GHG reductions per eligible project as reported in official impact assessments.

These national-scale technical achievements became increasingly solid thanks to the orchestrate on of paradiplomatic actors at the city level. Local governments pragmatically began marrying green financing strategies with local policy agendas and public campaigns. The maneuver by the DKI Jakarta Provincial Government serves as a highly representative example; the hosting of the Formula E racing event in 2022 was not merely interpreted as a sports spectacle, but designed as a strong city branding strategy to campaign the clean energy transition narrative (Aisyah & Azzahra,

2024). As Table 4 shows, local governments that have formalized their green finance commitments through DPRD-approved regulations and active network memberships demonstrate the highest levels of green project integration.

Table 4. Local Government Participation in Green Finance Networks and Political Commitments (2022–2024)

Local Government	Network	Joined	DPRD Green Perda	Key Green Finance / Climate Initiatives
DKI Jakarta Province	C40 Cities	2012	Yes (2021)	Climate Action Plan, Formula E, EV transition (BEV +2,712% Q1 2022–Q1 2023), Green Sukuk project integration
Jawa Barat Province	UCLG-ASPAC	2018	Yes (2022)	BAPPEDA green procurement framework, solar energy microgrids, regional green taxonomy pilot
Surabaya Municipality	ICLEI	2010	Yes (2020)	Solid waste reduction, electric bus fleet procurement (proposed green sukuk eligible project)
Bandung Municipality	100RC / ICLEI	2014	In progress	Urban resilience plan, green infrastructure, BAPPEDA coordination with Kemenkeu on green project eligibility
Semarang Municipality	C40 (Observer)	2020	No	Coastal adaptation, flood risk management, regional climate fund proposal

Source: C40 Cities Climate Leadership Group (2016); (United Cities and Local Governments Asia-Pacific (UCLG-ASPAC), 2023); (Pemerintah Provinsi DKI Jakarta, 2021); compiled by authors.

The impact of local political leadership on behavioral change is further quantified by BEV sales data (Table 5), which serves as a measurable proxy for the effectiveness of city-level climate policy. Data from Gabungan Industri Kendaraan Bermotor Indonesia (GAIKINDO) (2023) shows a staggering 2,712% surge in Battery Electric Vehicle sales between Q1 2022 and Q1 2023, directly traceable to a cascade of local government actions: the Formula E-driven city branding by Jakarta's governor, DPRD approval of EV infrastructure budgets, and BAPPEDA coordination of charging infrastructure deployment.

Table 5. Battery Electric Vehicle (BEV) Sales Growth as Proxy for Local Climate Policy Effectiveness (2022–2023)

Quarter	BEV Sales (units)	YoY Growth (%)	Local Govt Catalyst	Policy Enabler
Q1 2022	64	—	DKI Jakarta (Formula E)	EV incentive policy launch; green sukuk-funded charging infra
Q2 2022	145	+126.6	DKI Jakarta, Surabaya	National EV targets announced; DPRD DKI green budget allocation
Q3 2022	312	+115.2	Jawa Barat, Bandung	Import tax incentives for EV; BAPPEDA EV grid pilot

Quarter	BEV Sales (units)	YoY Growth (%)	Local Govt Catalyst	Policy Enabler
Q4 2022	587	+88.1	Multi-city coordination	National EV roadmap; OJK green taxonomy applied to EV financing
Q1 2023	1,800	+2,712	DKI Jakarta (EV subsidy push)	Subsidised charging infrastructure; green sukuk-backed transit projects

Source: Gabungan Industri Kendaraan Bermotor Indonesia (GAIKINDO) (2023). Note: YoY growth for Q1 2023 is calculated relative to Q1 2022 baseline of 64 units. Local govt catalyst and policy enablers identified through policy document cross-referencing.

Drawn into a broader perspective, the flow of green funding at the subnational level is aligned with SDG targets covering clean energy (SDG 7), sustainable cities (SDG 11), water sanitation (SDG 6), and climate action (SDG 13). Jakarta and other C40 member cities have collectively established implementative targets to cut emissions by 22% from the 1990 baseline (C40 Cities Climate Leadership Group, 2016), reaffirming that subnational political actors are not merely complements but the main backbone in realizing global climate ambitions.

Challenges and Barriers in Implementation

Despite the achievements documented above, the execution of green financing instruments in the subnational realm faces intertwined structural traps. The most fundamental obstacle is rooted in institutional capacity disparity and resource asymmetry among local governments. Not all regencies or cities possess capable fiscal postures, technical proficiencies, or human capital to design eligible projects, model financial scenarios, and negotiate convincingly with global investors. This creates a pronounced divide: metropolitan cities with DPRD support and capable BAPPEDA institutions freely absorb green capital, while peripheral regions are increasingly marginalized from climate funding access.

This capacity gap is compounded by regulatory tangles and the fragility of vertical coordination nodes between central and regional governments. Overlapping inter-agency authorities and interpretation biases at the local level trigger operational bottlenecks. A recurring tension exists between the central government's centralized distribution controls and local governments' specific project priority lists, a tension that is often mediated (or exacerbated) by DPRD deliberations that may not fully appreciate green finance technicalities. The absence of pragmatic conflict-resolution mechanisms between the central and regional levels ultimately hampers green fund absorption.

From the financial ecosystem side, the literacy and readiness of local market players towards green instruments remains limited. Otoritas Jasa Keuangan (OJK) (2023) data indicates that many institutional investors lack adequate analytical instruments to integrate ESG principles into their portfolios. For local governments, the issuance process is viewed as too complex and costly, and the lack of standardized technical guidelines further impedes escalation. Additionally, a gaping hole exists between ambitious Climate Action Plans and ground-level execution, often due to budget restrictions, local political turbulence within DPRD, and technical gridlocks.

Strategies and Recommendations for Strengthening the Role of Paradiplomatic Actors

As an absolute prerequisite to addressing the structural challenges above, strengthening institutional capacity and technical expertise at the regional level must be a top priority. A structured training program is needed to equip BAPPEDA officials and DPRD members with pragmatic proficiencies: identifying eligible projects, financial feasibility modeling, and designing environmental sustainability monitoring systems. This can be accelerated through twinning schemes (inter-city partnerships) where leading cities transfer knowledge directly, and through a dedicated central

government technical mentoring task force incubating local governments from project design to green sukuk issuance.

On the regulatory aspect, harmonizing cross-jurisdictional standards becomes a pressing agenda to dampen market fragmentation and cut transaction costs. The most ideal approach is formulating a comprehensive national regulatory framework, while still leaving flexibility for local governments to adjust to their spatial urgencies. This step must be accompanied by the adoption of a Green Taxonomy calibrated with international standards, such as the International Capital Market Association (ICMA) guidelines, without ignoring domestic socio-economic realities (Otoritas Jasa Keuangan (OJK), 2022). This policy orchestration demands the presence of a formal and permanent coordination forum between the center and regions, specifically tasked with synchronizing implementation directions and mediating potential priority clashes between levels of government.

Furthermore, the future and credibility of green sukuk rely heavily on upholding the pillars of post-issuance accountability and transparency. To maintain investor confidence levels and mitigate the risk of eco-friendly image manipulation (greenwashing), the government must enforce a uniform impact reporting framework. This report must be able to dissect financial performance while simultaneously precisely measuring the project's ecological footprint. The involvement of independent verifiers (second-party opinions) is absolutely necessary as third-party auditors guaranteeing that the fund flow truly hits its targets (World Bank, 2020).

Additionally, the space for public participation must be opened as widely as possible; involving civil society and local environmental communities in the supervision process will inject strong moral legitimacy into these green financing policies. Finally, the paradiplomatic maneuvers of local governments will not achieve maximal economies of scale without strategic involvement from the private sector. The government needs to mature the green Public-Private Partnership (PPP) framework to entice private capital into local infrastructure projects. Fiscal and non-fiscal incentives also need to be specifically designed to encourage commercial banks to be willing to formulate financing products accessible to pro-environment Micro, Small, and Medium Enterprises (MSMEs) in the regions. This series of interventions must be perfected with an aggressive investor education program. The synergistic combination of bureaucratic capacity building, harmonious regulations, layered supervision, and targeted market incentives is believed to be capable of transforming paradiplomatic actors into the primary catalysts attracting green capital in an implementative and sustainable manner.

CONCLUSION

This research convincingly affirms that the global green financial architecture, particularly the architecture overseen through the G20 agenda, will not reach maximal effectiveness without strong orchestration from paradiplomatic actors operating at a distinctly local political level. Local governments and subnational entities have transformed from mere policy objects into primary catalysts that materialize international macro commitments into pragmatic climate mitigation actions. Crucially, this study demonstrates that the effectiveness of such transformation hinges on concrete local political factors: the strategic vision of governors and mayors, the green budget mandates passed by DPRD, and the project-identification capacity of BAPPEDA. Through active participation in C40 Cities and UCLG-ASPAC, provincial governments (DKI Jakarta and Jawa Barat) and municipal governments (Surabaya and Bandung) in Indonesia have bridged the gap between global ambitions and grassroots needs, evidenced by the successful integration of regional project proposals into the sovereign green sukuk portfolio, which has reduced 130,316.39 tonnes of CO_2 equivalent per year and spurred a 2,712% surge in BEV sales between Q1 2022 and Q1 2023.

However, multi-level governance in Indonesia's green financing ecosystem remains trapped in structural hurdles. The escalation pace of green bond and green sukuk instruments at the subnational level is held back by institutional capacity asymmetries, where peripheral areas tend to be marginalized compared to metropolitan cities with politically empowered DPRD and technically capable BAPPEDA. This condition is exacerbated by regulatory tangles, overlapping central-regional authorities, and low local market player literacy towards sustainable investment principles. The full potential of green financing paradiplomacy can only be realized through integrated structural revamps:

regulatory synchronization, standardized technical capacity building for regional apparatuses, enforcing allocation transparency involving strict public supervision, and institutionalizing local political leadership as a recognized driver, rather than a mere executor, of Indonesia's green finance agenda.

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