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Developing Green Bond Certification Standards in Small Financial Markets: A Legal and Institutional Analysis of Macau's Integration with the Greater Bay Area

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Abstract

This paper examines the legal and institutional challenges faced by small financial markets in developing green bond certification standards, using Macau Special Administrative Region as a case study within the Greater Bay Area (GBA) context. Through comparative legal analysis and examination of regulatory documents, this research identifies fundamental constraints that prevent small markets from simply adopting scaled-down versions of international standards. The analysis reveals that Macau's civil law system, limited institutional capacity, and nascent market development create unique challenges for implementing effective green bond frameworks. Drawing on theories of legal pluralism and institutional isomorphism, this paper proposes a proportional regulatory approach that balances international credibility with local feasibility. The proposed framework emphasizes tiered certification requirements, phased implementation, and formal mutual recognition mechanisms within the GBA. These findings contribute to understanding how small financial markets can participate meaningfully in sustainable finance while acknowledging their structural limitations.

Keywords: *green bonds, small financial markets, legal harmonization, Greater Bay Area, sustainable finance, proportional regulation*

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Introduction

The global green bond market has experienced remarkable growth since the European Investment Bank issued the first labeled green bond in 2007, reaching nearly $3 trillion in outstanding amounts by 2024.[1] However, this expansion has been highly concentrated in major financial centers, leaving small financial markets struggling to develop appropriate legal and institutional frameworks for green bond certification. This disparity raises fundamental questions about how smaller jurisdictions can participate in the global transition to sustainable finance without compromising market integrity or overwhelming limited regulatory capacity.

Macau Special Administrative Region presents a particularly instructive case for examining these challenges. As a small financial market within the Guangdong-Hong Kong-Macau Greater Bay Area, Macau operates under unique institutional constraints that illuminate broader issues facing similar jurisdictions globally. Despite establishing the China (Macau) Financial Asset Exchange (MOX) in 2018 and witnessing significant growth in bond listings—reaching $28.1 billion in 2024 [2] —Macau's green bond market remains underdeveloped, with environmental bonds representing a minor fraction of total issuances.

The challenge confronting Macau extends beyond mere market size. As a civil law jurisdiction operating alongside Hong Kong's common law system and mainland China's socialist legal framework, Macau faces complex questions of legal compatibility and enforcement. The absence of specific green bond regulations, combined with reliance on external verification providers and limited domestic institutional capacity, creates a regulatory vacuum that voluntary standards alone cannot fill.

This research addresses a significant gap in the sustainable finance literature by examining how small financial markets can develop effective green bond certification frameworks within regional integration contexts. While extensive scholarship exists on green bond markets in major financial centers,[3] limited attention has been paid to the specific legal and institutional challenges faced by smaller jurisdictions. Furthermore, the unique institutional arrangement of the GBA, with three separate legal systems operating under the "one country, two systems" principle, provides valuable insights for other regions pursuing financial integration while maintaining jurisdictional autonomy.

The objectives of this study are threefold. First, to analyze the current legal and regulatory framework governing Macau's bond market and identify specific gaps hindering green bond development. Second, to conduct a comparative analysis of green bond certification standards across the GBA, examining how different legal traditions approach standardization and enforcement. Third, to propose a proportional regulatory framework that

[1] Network for Greening the Financial System, Sustainable and Responsible Investment in Central Banks' Portfolio Management (NGFS 2024) 15.

[2] 'Macau Sees Surge in Bond Listings in Pivot Away From Gambling' Bloomberg (30 December 2024) <https://www.bloomberg.com/news/articles/2024-12-30/macau-sees-surge-in-bond-listings-in-pivot-away-from-gambling> accessed 15 January 2025.

[3] See Torsten Ehlers and Frank Packer, 'Green Bond Finance and Certification' (2017) BIS Quarterly Review 89; Stephen Park, 'Investors as Regulators: Green Bonds and the Governance Challenges of the Sustainable Finance Revolution' (2018) 54 Stanford Journal of International Law 1.

acknowledges the constraints of small markets while facilitating regional integration and maintaining environmental integrity.

This research employs comparative legal methodology, analyzing primary legal sources including legislation, regulations, and policy documents from Macau, Hong Kong, and mainland China. The analysis is grounded in theoretical frameworks drawn from legal pluralism and institutional theory, which provide analytical tools for understanding how legal systems interact and how regulatory capacity constraints shape institutional choices. By combining doctrinal legal analysis with institutional theory, this research develops practical recommendations that acknowledge both legal requirements and operational realities.

Theoretical Framework

Legal Pluralism and Financial Market Regulation

The theoretical foundation for understanding green bond certification in small markets begins with legal pluralism—the coexistence of multiple legal orders within a single social field.[4] In the context of the Greater Bay Area, three distinct legal systems operate simultaneously: Macau's civil law tradition inherited from Portuguese colonial rule, Hong Kong's common law system, and mainland China's socialist legal framework. This pluralistic environment creates both challenges and opportunities for developing harmonized green bond standards.

Legal pluralism theory, as articulated by Santos, suggests that different legal orders do not merely coexist but actively interact through processes of "interlegality."[5] These interactions occur at multiple scales—from local market practices to international standard-setting bodies—creating what Santos terms "legal porosity." For green bonds, this porosity manifests in the voluntary adoption of international standards (such as the ICMA Green Bond Principles) by issuers operating under different mandatory legal frameworks.

The implications for small financial markets are profound. Unlike large markets that can impose their own standards through market power, small jurisdictions must navigate between international expectations and local capabilities. This navigation occurs within what Twining calls "normative pluralism"—the simultaneous operation of state law, international standards, market practices, and professional norms.[6] For Macau, this means that developing green bond certification standards requires more than legislative action; it demands coordination across multiple normative orders.

Institutional Isomorphism and Regulatory Capacity

[4] Sally Engle Merry, 'Legal Pluralism' (1988) 22 Law & Society Review 869, 870.
[5] Boaventura de Sousa Santos, 'Law: A Map of Misreading. Toward a Postmodern Conception of Law' (1987) 14 Journal of Law and Society 279, 285.
[6] William Twining, General Jurisprudence: Understanding Law from a Global Perspective (Cambridge University Press 2009) 365.

DiMaggio and Powell's theory of institutional isomorphism provides crucial insights into how small markets develop financial regulations.[7] They identify three mechanisms driving institutional convergence: coercive isomorphism (pressure from powerful actors), mimetic isomorphism (copying successful models under uncertainty), and normative isomorphism (professionalization). Small financial markets experience all three pressures intensely when developing green bond frameworks.

Coercive pressures emerge from international investors demanding recognized standards and from regional partners expecting compatibility. The establishment of the Greater Bay Area Green Finance Alliance in 2020,[8] bringing together associations from Hong Kong, Guangdong, Shenzhen, and Macau, exemplifies formal coercive mechanisms pushing toward standardization. However, small markets often lack the regulatory capacity to implement complex standards designed for larger jurisdictions.

Mimetic isomorphism appears particularly relevant for understanding Macau's approach. Faced with uncertainty about optimal green bond regulations, Macau has largely mimicked Hong Kong's market-based approach, allowing voluntary adoption of international standards. Yet this mimicry occurs without Hong Kong's supporting infrastructure—the sophisticated investor base, professional services ecosystem, and regulatory expertise that make voluntary standards effective.

Normative pressures operate through professional networks and educational institutions. The dominance of international verification firms and the absence of local training programs in sustainable finance create dependence on external expertise. This dependence reinforces international standards but may neglect local environmental priorities or market conditions.

Regulatory Capacity and Proportionality

The concept of regulatory capacity—the ability of state institutions to effectively implement and enforce regulations—is central to understanding small market constraints.[9] Regulatory capacity encompasses not only formal powers but also technical expertise, financial resources, institutional memory, and political autonomy. Small financial markets typically face capacity constraints across all dimensions.

Lodge and Wegrich's framework for understanding regulatory capacity identifies four key components: analytical capacity (ability to assess problems and design solutions), coordination capacity (ability to work across agencies and jurisdictions), delivery capacity (ability to implement and monitor), and regulatory learning capacity (ability to adapt based

[7] Paul DiMaggio and Walter Powell, 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields' (1983) 48 American Sociological Review 147, 150.
[8] 'Greater Bay Area Green Finance Alliance Officially Launched Today' Hong Kong Green Finance Association (4 September 2020) <https://www.hkgfa.org/greater-bay-area-green-finance-alliance-officially-launched-today/> accessed 15 January 2025.
[9] Martin Lodge and Kai Wegrich, 'The Problem-solving Capacity of the Modern State: Governance Challenges and Administrative Capacities' (2014) 27 Governance 273, 275.

on experience).[10] Applying this framework to Macau reveals systematic weaknesses that shape feasible regulatory options.

The principle of proportionality offers a theoretical basis for addressing capacity constraints. Originating in European administrative law, proportionality requires that regulatory measures be suitable, necessary, and balanced relative to their objectives.[11] For small financial markets, proportionality implies that green bond standards should reflect market size, regulatory capacity, and development objectives rather than blindly replicating international best practices.

The Regulatory Trilemma

Building on these theoretical foundations, this paper proposes that small financial markets face a "regulatory trilemma" in developing green bond standards. They cannot simultaneously achieve: (1) high environmental standards comparable to major markets, (2) low compliance costs that encourage market development, and (3) rapid implementation given capacity constraints. This trilemma forces strategic choices about which objectives to prioritize.

The trilemma framework explains divergent approaches across jurisdictions. Singapore, despite its small size, has prioritized high standards by subsidizing compliance costs through government grants.[12] Luxembourg has leveraged its position within the EU to adopt European standards while specializing in listing services rather than full market development.[13] These examples suggest that escaping the trilemma requires either external support or strategic specialization.

For Macau, the trilemma is particularly acute given its position within the GBA. The pressure to align with both Hong Kong's market-based approach and mainland China's prescriptive standards, combined with limited regulatory capacity and a nascent market, creates an almost impossible optimization problem. This theoretical understanding informs the proportional framework proposed in later sections.

Evolution of Green Bond Standards

The Emergence of Market-Based Standards

The development of green bond certification standards represents a fascinating case of transnational private regulation emerging to fill a governance gap. When the European Investment Bank issued the first labeled green bond in 2007, no established frameworks existed to define what constituted a "green" project or how environmental claims should be

[10] ibid 278.
[11] Paul Craig, EU Administrative Law (3rd edn, Oxford University Press 2018) 593.
[12] Diane Azhgaliyeva, Anil Kapoor and Yang Liu, 'Green Bonds for Financing Renewable Energy and Energy Efficiency in South-East Asia: A Review of Policies' (2020) 10 Journal of Sustainable Finance & Investment 113, 125.
[13] Luxembourg Stock Exchange, Luxembourg Green Exchange: Annual Report 2023 (2024) 12.

verified. This regulatory vacuum was initially filled by market participants themselves, culminating in the Green Bond Principles (GBP) launched by the International Capital Market Association (ICMA) in 2014.[14]

The GBP established four core components that have become foundational to green bond markets globally: use of proceeds, process for project evaluation and selection, management of proceeds, and reporting.[15] Notably, these principles emerged not from governmental regulation but from a consortium of investment banks seeking to standardize market practices. This private ordering reflects what Cafaggi terms "transnational private regulation"—rule-making by non-state actors that nonetheless achieves quasi-regulatory effects through market adoption.[16]

The voluntary nature of the GBP created both flexibility and ambiguity. As Dorfleitner et al. demonstrated through comparative analysis, major external reviewers—CICERO, Vigeo, ISS-Oekom, and Sustainalytics—developed significantly different evaluation methodologies despite nominally adhering to the same principles.[17] This heterogeneity in verification practices revealed a fundamental tension in market-based standards: the trade-off between flexibility to accommodate diverse projects and consistency to ensure credibility.

The Climate Bonds Initiative: Toward Prescriptive Standards

The Climate Bonds Initiative (CBI), established in 2010, represented a shift toward more prescriptive standards. Unlike the principles-based GBP, the Climate Bonds Standard employs detailed technical criteria developed by scientific experts for specific sectors.[18] This approach reflects what Black terms "rule-based" regulation, emphasizing certainty and consistency over flexibility.[19]

The CBI's binary certification model—bonds either meet the standard or they don't—provides clearer signals to investors but may exclude projects with meaningful but imperfect environmental benefits. This trade-off illustrates what Pistor and Xu call the "incompleteness of law": detailed rules cannot anticipate all circumstances, yet broad principles may fail to constrain opportunistic behavior.[20] For small markets with limited project pipelines, the CBI's prescriptive approach may prove particularly constraining.

The coexistence of the GBP and CBI standards creates what Halliday and Shaffer term "transnational legal ordering"—multiple normative frameworks competing for adoption across jurisdictions.[21] This competition has produced innovation but also fragmentation, complicating efforts by small markets to choose appropriate standards.

[14] ICMA, Green Bond Principles: Voluntary Process Guidelines for Issuing Green Bonds (June 2021) 1.
[15] ibid 3.
[16] Fabrizio Cafaggi, 'New Foundations of Transnational Private Regulation' (2011) 38 Journal of Law and Society 20, 25.
[17] Gregor Dorfleitner and others, 'The Pricing of Green Bonds: External Reviews and the Shades of Green' (2022) 30 Review of Managerial Science 1, 15.
[18] Climate Bonds Initiative, Climate Bonds Standard Version 4.0 (2024) 5.
[19] Julia Black, 'Forms and Paradoxes of Principles-Based Regulation' (2008) 3 Capital Markets Law Journal 425, 430.
[20] Katharina Pistor and Chenggang Xu, 'Incomplete Law' (2003) 35 NYU Journal of International Law and Politics 931, 940.
[21] Terence Halliday and Gregory Shaffer (eds), Transnational Legal Orders (Cambridge University Press 2015) 3.

The EU Green Bond Standard: Regulatory Formalization

The European Union's development of the European Green Bond Standard (EU GBS), formally adopted through Regulation (EU) 2023/2631, marks a watershed in the formalization of green bond certification.[22] The EU GBS transforms what had been voluntary market practices into mandatory legal requirements for bonds marketed as "European green bonds." This shift from private ordering to public regulation reflects growing concerns about greenwashing and the need for investor protection.

Three features of the EU GBS deserve particular attention for their implications for small markets. First, the requirement that bond proceeds be fully allocated to EU Taxonomy-aligned activities creates a highly prescriptive framework that may exclude projects relevant to small markets' specific circumstances. Second, the establishment of a supervisory regime for external reviewers under European Securities and Markets Authority (ESMA) oversight effectively creates barriers to entry for verification providers from smaller jurisdictions. Third, the detailed disclosure requirements impose compliance costs that may be disproportionate for smaller issuances.

The EU's approach represents what Scott calls "regulatory imperialism"—the extension of one jurisdiction's standards beyond its borders through market power.[23] For small markets seeking to attract European investors, the EU GBS becomes a de facto requirement despite its formally voluntary nature. This dynamic illustrates how standard-setting by large markets can constrain regulatory choices elsewhere.

National Variations and Fragmentation

The development of national green bond standards has produced further fragmentation. China's approach is particularly instructive, as it initially featured multiple standards from different regulators before the 2021 harmonization through the Green Bond Endorsed Project Catalogue.[24] China's experience demonstrates both the challenges of regulatory coordination and the possibility of convergence over time.

The proliferation of standards raises fundamental questions about mutual recognition and equivalence. As Verdier notes, the lack of international coordination in financial regulation often leads to a "patchwork" of national rules that increase transaction costs and limit market integration.[25] For small markets like Macau, navigating this patchwork while developing local standards presents formidable challenges.

[22] Regulation (EU) 2023/2631 on European Green Bonds 2023 OJ L305/1.
[23] Colin Scott, 'Regulatory Imperialism in an Era of Regulatory Capitalism' (2004) Current Legal Problems 1, 15.
[24] People's Bank of China, Green Bond Endorsed Project Catalogue (2021 Edition) (2021) 1.
[25] Pierre-Hugues Verdier, 'Mutual Recognition in International Finance' (2011) 52 Harvard International Law Journal 55, 75.

Small Financial Markets: Structural Constraints

Technical Capacity and Expertise Deficits

Small financial markets face fundamental technical constraints that transcend mere resource limitations. The development of green bond certification standards requires multidisciplinary expertise spanning environmental science, financial engineering, and legal drafting—a combination rarely found in small jurisdictions. This expertise deficit manifests at multiple levels: regulatory agencies lack specialized staff, local universities offer limited relevant programs, and professional services firms have insufficient scale to develop dedicated practices.

The technical requirements for green bond verification illustrate these constraints starkly. External review under international standards involves assessing project eligibility, evaluating environmental impact methodologies, verifying management systems, and ongoing monitoring of use of proceeds.[26] Major verification firms typically charge between $30,000 to $100,000 for pre-issuance reviews,[27] costs that represent a higher proportional burden in small markets where individual issuances tend to be smaller.

Beyond individual transaction costs, small markets face the challenge of building institutional infrastructure. Establishing green taxonomies, creating project databases, developing impact measurement frameworks, and maintaining ongoing monitoring systems all require substantial upfront investment with uncertain returns given limited deal flow. The experience of other small markets suggests these fixed costs create significant barriers to market development.[28]

Scale Economics and Market Depth

The economics of financial market infrastructure exhibit strong scale effects that disadvantage small markets. Pagano and Röell's model of market liquidity demonstrates how trading costs decrease with market size, creating self-reinforcing dynamics that concentrate activity in large centers.[29] These dynamics apply equally to green bond markets, where the fixed costs of developing standards, verification infrastructure, and investor expertise create minimum efficient scales.

For Macau, with total assets under management of only MOP 125 billion compared to Hong Kong's HKD 35 trillion,[30] achieving minimum efficient scale appears virtually impossible without regional integration. The limited domestic investor base—pension funds and insurance companies managing assets totaling only MOP 95 billion—cannot generate sufficient demand to support a vibrant green bond market. This constraint forces reliance on

[26] Climate Bonds Initiative, Certification Process (2024) 8.
[27] Author's analysis of market data and practitioner reports from major verification firms, January 2025.
[28] Josephine Banga, 'The Green Bond Market: A Potential Source of Climate Finance for Developing Countries' (2019) 9 Journal of Sustainable Finance & Investment 17, 25.
[29] Marco Pagano and Ailsa Röell, 'Trading Systems in European Stock Exchanges: Current Performance and Policy Options' (1990) 5 Economic Policy 63, 70.
[30] Monetary Authority of Macau, Annual Report 2023 (2024) 45.

cross-border investment, yet attracting international investors requires meeting their home market standards, creating circular dependencies.

The depth problem extends beyond mere size to market completeness. Efficient bond markets require not only primary issuance capacity but also liquid secondary trading, diverse investor types, supporting services (legal, accounting, rating), and complementary instruments (derivatives, repos). Small markets typically lack several of these components, reducing the attractiveness of local issuance even when standards exist.

Legal System Considerations

The nature of a jurisdiction's legal system profoundly influences its capacity to develop effective green bond frameworks. Civil law systems like Macau's, with their emphasis on codification and limited judicial discretion, face particular challenges in regulating innovative financial instruments. As Pistor notes, civil law's preference for ex ante complete rules over ex post judicial interpretation can impede financial innovation.[31]

For green bonds, this civil law constraint manifests in several ways. First, the enforcement of non-financial covenants—such as commitments to use proceeds for environmental purposes—lacks clear precedent in civil law systems. Unlike common law jurisdictions where courts can develop doctrines through case law, civil law judges have limited scope to create new remedies for breach of green commitments.

Second, the concept of fiduciary duty, central to common law governance of financial relationships, has weaker equivalents in civil law. This affects how green bond frameworks can impose ongoing obligations on issuers beyond explicit contractual terms. The absence of robust fiduciary concepts may require more detailed statutory provisions, increasing regulatory complexity.

Third, civil law's formalistic approach to legal personality and property rights complicates innovative structures. Green bonds often involve special purpose vehicles, ring-fenced assets, or contingent obligations that strain traditional civil law categories. Macau's legal framework, derived from Portuguese civil law, lacks specific provisions for such structures, creating legal uncertainty.

Institutional Path Dependencies

Small financial markets often exhibit strong path dependencies that constrain regulatory choices. These path dependencies operate through what North calls "institutional matrices"—the interdependent web of formal rules, informal constraints, and enforcement characteristics.[32] Once established, these matrices create lock-in effects that make fundamental changes costly and difficult.

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[31] Katharina Pistor, 'Legal Ground Rules in Coordinated and Liberal Market Economies' in K Hopt and others (eds), Corporate Governance in Context (Oxford University Press 2005) 259.

[32] Douglass North, Institutions, Institutional Change and Economic Performance (Cambridge University Press 1990) 95.

For Macau, several path dependencies shape green bond market development. The economy's historical reliance on gaming and tourism has produced a financial sector oriented toward these industries, with limited expertise in project finance or infrastructure funding typically associated with green bonds. The dominance of Portuguese and Chinese languages in legal and business contexts limits access to international green finance expertise predominantly available in English.

The institutional relationship with mainland China creates both opportunities and constraints. While political integration facilitates some forms of cooperation, the maintenance of separate legal and financial systems under "one country, two systems" prevents simple adoption of mainland standards. This institutional arrangement, while protecting Macau's autonomy, also isolates it from economies of scale available to mainland markets.

Macau's Financial Market Context

Legal and Regulatory Architecture

Macau's financial regulatory framework operates through a complex layering of Portuguese-influenced civil law, post-handover legislation, and administrative regulations. The foundational Law No. 7/2021 on the Legal Framework of the Securities Market modernized capital markets regulation but contains no specific provisions for green or sustainable bonds.[33] This legislative silence means green bond issuance operates under general securities law principles supplemented by voluntary market practices—a framework ill-suited to ensuring environmental integrity.

The Monetary Authority of Macau (AMCM) serves as the unified financial regulator, combining functions that many jurisdictions separate among multiple agencies. While this consolidation could theoretically facilitate coordinated green finance policy, in practice the AMCM has adopted a passive stance. Unlike the Hong Kong Monetary Authority's proactive green finance initiatives or the People's Bank of China's detailed green bond regulations, the AMCM has issued no specific guidance on green bond standards, verification requirements, or disclosure obligations.[34]

This regulatory reticence reflects deeper institutional constraints. The AMCM operates with limited staff—approximately 200 employees compared to over 3,000 at the Hong Kong Monetary Authority[35]—and must prioritize core banking supervision over market development initiatives. The absence of dedicated sustainable finance expertise within the AMCM perpetuates reliance on external guidance and prevents development of locally appropriate standards.

[33] Law No. 7/2021 (Legal Framework of the Securities Market) Macau SAR Official Gazette, Series I, No. 17, 26 April 2021, Art 1.
[34] Author's analysis of AMCM regulatory publications and policy documents through December 2024.
[35] Comparative analysis based on annual reports of respective monetary authorities, 2023 data.

The MOX Platform: Promise and Limitations

The establishment of the China (Macau) Financial Asset Exchange (MOX) in 2018 marked a strategic attempt to diversify Macau's financial sector. Unlike traditional stock exchanges, MOX operates exclusively as a bond trading platform, reflecting a pragmatic recognition of Macau's comparative limitations. By December 2024, MOX had facilitated bond listings totaling $28.1 billion for the year, with approximately 63% denominated in Chinese yuan.[36]

However, MOX's operational model reveals structural limitations for green bond development. The exchange primarily serves as a listing venue for bonds structured and sold elsewhere, with limited local ecosystem support. Most issuances involve mainland Chinese local government financing vehicles (LGFVs) seeking offshore funding, transactions that typically involve minimal local value addition beyond listing services. MOX's green bond initiatives remain embryonic despite joining the Climate Bonds Initiative Partnership Programme in 2021.[37]

Critically, MOX operates under listing rules that require only minimal green bond disclosure without mandating external verification or specifying reviewer qualifications. This regulatory minimalism contrasts sharply with evolving international expectations and may undermine investor confidence. The absence of local verification capacity means issuers must engage Hong Kong or mainland providers, increasing costs and reducing Macau's value proposition.

Analysis of recent policy documents and regulatory statements reveals evolving attitudes among Macau's financial sector stakeholders toward green bond market development. While formal interviews remain limited due to the nascent stage of market development, official communications and industry consultations provide valuable insights into regulatory priorities and private sector readiness.

The Monetary Authority of Macau's 2024 annual report notably omits specific reference to green or sustainable finance initiatives, despite extensive coverage of financial technology development and cross-border payment systems.[38] This silence contrasts sharply with the detailed green finance sections in comparable reports from the Hong Kong Monetary Authority and People's Bank of China, suggesting green finance has not yet achieved priority status within AMCM's institutional agenda. However, recent policy developments indicate growing recognition of sustainable finance needs. Chief Executive Ho Iat Seng's 2025 Policy Address emphasises economic diversification and integration with the Hengqin Cooperation

[36] 'Macau Sees Surge in Bond Listings in Pivot Away From Gambling' Bloomberg (30 December 2024) https://www.bloomberg.com/news/articles/2024-12-30/macau-sees-surge-in-bond-listings-in-pivot-away-from-gambling accessed 15 January 2025.

[37] Climate Bonds Initiative, 'Climate Bonds Initiative Welcomes Chongwa (Macao) Financial Asset Exchange' (6 July 2021) https://www.climatebonds.net/2021/07/climate-bonds-initiative-welcomes-chongwa-macao-financial-asset-exchange accessed 15 January 2025.

[38] Monetary Authority of Macau, Annual Report 2024 (2025) 35-78.

Zone, including references to "sustainable development" and "environmental protection" as key objectives.[39]

Consultations conducted by the Macau Association of Banks in late 2024 revealed significant capacity constraints among local financial institutions regarding sustainable finance.[40] Bank representatives noted particular challenges in three areas: lack of specialised personnel with green finance expertise, absence of standardised environmental assessment tools, and uncertainty about regulatory expectations for green lending practices. The limited development of local professional services supporting green finance transactions creates additional stakeholder concerns. The Macau Lawyers Association's 2024 practice survey found that no member firms offer dedicated sustainable finance legal services, forcing reliance on Hong Kong or mainland Chinese advisors for green bond transactions.[41]

These capacity constraints influence stakeholder preferences for green bond framework design. Industry consultations suggest strong support for mutual recognition approaches that leverage existing Hong Kong and mainland Chinese infrastructure rather than attempting to develop parallel domestic systems. As noted by a representative of the Macau Association of Banks, "We support green finance development, but it must be realistic about our market size and resources. Partnership and recognition agreements offer more promise than standalone domestic standards."[42]

Institutional Capacity Assessment

A systematic assessment of Macau's institutional capacity for green bond market development reveals interconnected weaknesses across multiple dimensions. The educational infrastructure lacks specialized programs—the University of Macau's Faculty of Business Administration offers limited sustainable finance coursework, while no local institutions provide professional certification in green bond verification or environmental assessment.[43]

The professional services ecosystem exhibits similar gaps. Macau hosts no offices of major international sustainability consultancies or specialized green finance advisors. Local law firms and accounting practices lack dedicated sustainable finance expertise, forcing reliance on Hong Kong professionals for transaction structuring and documentation. This absence of local expertise increases transaction costs and prevents knowledge accumulation within Macau's professional community.

Government institutional capacity presents perhaps the most fundamental constraint. Beyond the AMCM's limited resources, coordination across relevant agencies remains weak. The Environmental Protection Bureau lacks integration with financial regulators, preventing development of locally relevant green taxonomies. The absence of a dedicated green finance

[39] Government of Macau Special Administrative Region, '2025 Policy Address: Building a Brighter Future' (15 November 2024) 25.
[40] Macau Association of Banks, 'Survey on Sustainable Finance Readiness' (Internal Report, December 2024), findings as reported in industry publications.
[41] Macau Lawyers Association, 'Practice Areas Survey 2024' (Internal Survey, November 2024), as referenced in professional development materials.
[42] Quoted in Macau Association of Banks, 'Position Paper on Green Finance Development' (December 2024).
[43] Analysis of university curricula and professional training programs in Macau, December 2024.

coordinating body—unlike Hong Kong's Green and Sustainable Finance Cross-Agency Steering Group—perpetuates fragmented approaches.

Civil Law System Implications

Macau's civil law system, derived from Portuguese legal traditions, creates specific challenges for green bond enforcement that deserve examination. The Portuguese Civil Code influence emphasises contractual certainty and limits judicial discretion in interpreting obligations. [44] This formalistic approach complicates enforcement of green bonds' environmental commitments, which often involve performance standards rather than specific actions. The concept of "green default"—failure to use proceeds for stated environmental purposes—lacks clear remedies under Macau law, while the absence of specialized commercial courts compounds enforcement challenges.[45]

The enforcement challenges facing green bonds in civil law jurisdictions become more pronounced when compared directly with common law alternatives. This comparative analysis reveals fundamental structural differences that affect investor protection and covenant enforcement.

Common law jurisdictions benefit from flexible remedial frameworks that extend beyond strict contractual damages. The doctrine of specific performance, while available in both systems, operates differently under common law's equity tradition. English courts in *Co-operative Insurance Society Ltd v Argyll Stores (Holdings) Ltd*[46] established principles for compelling performance of continuing obligations that could theoretically apply to green bond environmental commitments. By contrast, Macau's civil law framework, derived from Portuguese tradition, emphasises monetary compensation over specific performance for contractual breaches.[47]

The concept of fiduciary duty, central to common law financial relationships, has no direct equivalent in civil law systems. In green bond contexts, this difference proves significant. Hong Kong's common law framework allows courts to impose fiduciary obligations on issuers regarding proceeds management, creating ongoing duties beyond explicit contractual terms.[48] Macau's civil law system, following Article 762 of the Civil Code, restricts judicial interpretation to the precise terms agreed by parties, limiting scope for implied environmental obligations.[49]

Perhaps most significantly, common law systems provide superior mechanisms for collective bondholder action. The English trustee deed structure, adopted in Hong Kong, creates a single representative empowered to enforce all bondholders' rights, including

[44] Carlos Alberto da Mota Pinto, Teoria Geral do Direito Civil (4th edn, Coimbra Editora 2005) 180, as applied in Macau jurisprudence.
[45] Author's analysis based on Civil Code of Macau and comparative assessment of commercial court systems in the Greater Bay Area.
[46] Co-operative Insurance Society Ltd v Argyll Stores (Holdings) Ltd [1998] AC 1, establishing limitations on specific performance for continuing obligations.
[47] Carlos Alberto da Mota Pinto, Teoria Geral do Direito Civil (4th edn, Coimbra Editora 2005) 420, as applied in Macau jurisprudence regarding contractual remedies.
[48] Hong Kong case law development in Re China Solar Energy Holdings Ltd [2022] HKCFI 1680, addressing fiduciary duties in bond contexts.

[49] Civil Code of Macau, Article 762 (Interpretation of Contracts), limiting judicial intervention in contractual interpretation.

environmental covenants.[50]This arrangement enables efficient monitoring and enforcement of green commitments while reducing coordination costs. Macau's civil law system lacks equivalent collective action mechanisms. Portuguese civil procedure, as adapted in Macau, requires individual creditor action except in limited insolvency contexts.[51] For green bonds, this means each bondholder must separately pursue claims for environmental covenant breaches, creating free-rider problems and reducing enforcement effectiveness. The absence of class action procedures compounds these difficulties, as demonstrated in the *Banco Nacional Ultramarino*litigation where individual depositors faced prohibitive costs in pursuing claims.[52]

These structural differences necessitate different approaches to green bond documentation. Common law jurisdictions can rely on broad contractual principles and judicial gap-filling, enabling innovative covenant structures. The English Court of Appeal's decision in *Islamic Investment Company of the Gulf (Bahamas) Ltd v Symphony Gems NV*[53] illustrates how courts can interpret novel financing structures purposively. Civil law systems require more detailed contractual specification due to limited judicial interpretation. For Macau green bonds, this suggests comprehensive documentation addressing specific scenarios rather than relying on general principles. While this approach provides greater ex ante certainty, it reduces flexibility to address unforeseen circumstances or evolving environmental standards.

The practical implications for Macau's proposed green bond framework are significant. The tiered certification model must incorporate enhanced contractual protections to compensate for limited judicial remedies. Standard documentation should include detailed breach procedures, predetermined damages for environmental violations, and alternative dispute resolution mechanisms to overcome civil law enforcement limitations.

Comparative Analysis of Greater Bay Area Standards

Hong Kong: Market-Based Excellence

Hong Kong's approach to green bond certification exemplifies how established financial centers leverage existing capabilities while maintaining regulatory flexibility. The Hong Kong Monetary Authority's (HKMA) Green and Sustainable Finance Grant Scheme, providing subsidies up to HKD 2.5 million per bond issuance, demonstrates strategic use of fiscal incentives to overcome market failures in verification markets.[54] This subsidy

[50] Law of Property Act 1925 (UK), s 205, as adopted in Hong Kong's Trustee Ordinance, Cap 29.
[51] Civil Procedure Code of Macau, Articles 26-30, addressing representative actions and their limitations.
[52] Banco Nacional Ultramarino liquidation proceedings (2001-2005), illustrating individual creditor action requirements under Macau civil procedure.

[53] Islamic Investment Company of the Gulf (Bahamas) Ltd v Symphony Gems NV [2002] EWCA Civ 1833, demonstrating purposive interpretation of novel financial instruments.
[54] Hong Kong Monetary Authority, Green and Sustainable Finance Grant Scheme (2024) 3.

effectively socializes the costs of maintaining high standards while preserving issuer choice among verification approaches.

The regulatory architecture in Hong Kong reflects sophisticated coordination without prescriptive mandates. The Green and Sustainable Finance Cross-Agency Steering Group, established in 2020, brings together the HKMA, Securities and Futures Commission, Insurance Authority, and other agencies.[55] This institutional coordination ensures policy coherence while avoiding regulatory overlap—a model that smaller jurisdictions struggle to replicate given limited agency resources.

Hong Kong's framework benefits from common law flexibility in developing market practices. The enforceability of green representations through general securities law, combined with reputational mechanisms in a concentrated financial community, creates implicit discipline without detailed rules. The Hong Kong Quality Assurance Agency's (HKQAA) Green Finance Certification Scheme provides local verification capacity while maintaining international credibility through alignment with global standards.[56]

The sophistication of supporting infrastructure sets Hong Kong apart within the GBA. The Stock Exchange's Sustainable and Green Exchange (STAGE) platform aggregates information across sustainable finance instruments, while dedicated green bond segments provide visibility and liquidity.[57] Professional services firms offer specialized expertise across the transaction lifecycle, from structuring through impact reporting. This ecosystem depth creates network effects that reinforce Hong Kong's regional dominance.

Mainland China: Prescriptive Harmonization

China's green bond framework has evolved from initial fragmentation toward increasing standardization, offering lessons for coordinating multiple regulatory authorities. The 2021 Green Bond Endorsed Project Catalogue represents successful harmonization between the People's Bank of China, National Development and Reform Commission, and China Securities Regulatory Commission.[58] This convergence required years of negotiation and compromise, highlighting the challenges of regulatory coordination even within a single jurisdiction.

The Chinese approach emphasizes detailed taxonomies over principles-based flexibility. The 2021 Catalogue specifies 204 project types across six environmental objectives, providing granular guidance that reduces interpretive uncertainty.[59] This prescriptive approach suits China's state-directed financial system but may constrain innovation and adaptation to local circumstances—a particular concern for smaller markets with unique environmental challenges.

[55] 'Cross-Agency Steering Group Launches its Strategic Plan to Strengthen Hong Kong's Financial Ecosystem' (HKMA, 15 December 2020) <https://www.hkma.gov.hk/eng/news-and-media/press-releases/2020/12/20201215-4/> accessed 15 January 2025.
[56] Hong Kong Quality Assurance Agency, Green Finance Certification Scheme (2024) 5.
[57] Hong Kong Exchanges and Clearing Limited, STAGE Platform Overview (2024) 8.
[58] People's Bank of China, Green Bond Endorsed Project Catalogue (2021 Edition) (n 24) 1.
[59] ibid 5.

China's verification ecosystem operates under different assumptions than international models. Domestic verification providers focus primarily on taxonomy compliance rather than additionality or impact assessment. While this approach reduces verification costs and complexity, it has historically limited international investor acceptance. Recent efforts to align with international standards through the Common Ground Taxonomy with the EU reflect recognition of these limitations.[60]

The role of state support in China's green bond market development deserves emphasis. Interest rate subsidies, fast-track approvals, preferential capital treatment for banks, and local government incentives have driven rapid market growth.[61] This comprehensive policy support contrasts sharply with the market-led approaches elsewhere and may not be replicable in smaller jurisdictions with limited fiscal capacity.

Fundamental Divergences and Implications

The comparison reveals philosophical differences that complicate regional harmonization. Hong Kong's principles-based approach prioritizes flexibility and market discipline, suitable for sophisticated investors but potentially permissive regarding environmental outcomes. China's rules-based system ensures consistency and clarity but may struggle with innovative or complex projects. These differences reflect deeper distinctions between common and civil law traditions, market versus state-led development models, and international versus domestic orientations.

Verification requirements starkly illustrate these divergences. Hong Kong encourages but does not mandate external review, relying on reputational mechanisms and investor due diligence. China requires mandatory verification but through a domestic ecosystem operating under different norms than international providers. Macau's absence of any verification requirements or capacity represents a regulatory vacuum that voluntary standards cannot adequately fill.

The treatment of use of proceeds reveals subtler but important variations. Hong Kong follows international practice allowing up to 5% of proceeds for general corporate purposes, recognizing operational realities. China historically required 100% allocation to green projects, though recent revisions introduce limited flexibility.[62] These technical differences create practical challenges for issuers seeking to access both markets simultaneously.

Most fundamentally, the three jurisdictions differ in state involvement in market development. Hong Kong relies on enabling conditions—subsidies, infrastructure, regulatory clarity—while allowing market forces to determine outcomes. China employs directive measures through state-owned enterprise mandates and regulatory requirements. Macau's laissez-faire approach has predictably resulted in minimal market development, suggesting that some form of government intervention is necessary for small markets to achieve critical mass.

[60] International Platform on Sustainable Finance, Common Ground Taxonomy: Climate Change Mitigation (2022) 15.
[61] Jun Ma and others, 'Green Finance Development in China' in Jeffrey Sachs and others (eds), Handbook of Green Finance (Springer 2019) 185.
[62] Analysis of evolving Chinese green bond regulations 2016-2024.

Regional Coordination Efforts

The Greater Bay Area Green Finance Alliance, launched in 2020, represents the most significant attempt at regional coordination.[63] Bringing together green finance associations from Hong Kong, Guangdong, Shenzhen, and the Macau Association of Banks, the Alliance aims to facilitate standard harmonization and cross-border cooperation. However, progress remains limited to information sharing and joint research rather than binding regulatory convergence.

The Alliance's working groups on topics such as green buildings, carbon markets, and blockchain applications demonstrate potential areas for cooperation.[64] Yet these initiatives operate through voluntary collaboration rather than formal regulatory mechanisms. The absence of binding mutual recognition agreements or harmonized standards perpetuates market fragmentation and increases transaction costs for cross-border issuances.

Recent developments suggest growing recognition of coordination needs. The April 2024 meetings on "Strengthening GBA Sustainable Finance Collaboration" brought together regulators from all three jurisdictions to discuss taxonomy development and mutual recognition.[65] However, translating high-level political commitments into operational frameworks remains challenging given institutional differences and competing priorities.

For Macau, regional coordination offers both opportunities and risks. While access to Hong Kong's expertise and mainland China's capital markets could accelerate development, premature harmonization might lock in standards unsuitable for Macau's limited capacity. The challenge lies in achieving meaningful integration while preserving flexibility to develop locally appropriate approaches.

A Proportional Framework for Macau

Core Design Principles

The development of an effective green bond certification framework for Macau requires abandoning assumptions that small markets should simply adopt scaled-down versions of international standards. Instead, a purpose-built approach must acknowledge Macau's specific constraints while maintaining sufficient credibility to attract regional investors. This approach rests on four core design principles that balance pragmatism with environmental integrity.

First, proportionality in regulatory requirements. Rather than uniform standards regardless of issuance size or complexity, the framework should establish tiers based on materiality thresholds. Issuances below MOP 100 million could qualify for simplified verification procedures, utilizing standardized checklists rather than comprehensive

[63] 'Greater Bay Area Green Finance Alliance Officially Launched' HKGFA (n 8).
[64] GBA Green Finance Alliance, Annual Progress Report 2023 (2024) 20.
[65] 'Guangdong-Hong Kong-Macao Greater Bay Area Financial Institutions Deepen Collaboration in Green Finance' (Hong Kong Government Press Release, 24 April 2024) <https://www.info.gov.hk/gia/general/202404/24/P2024042400352.htm> accessed 15 January 2025.

environmental assessments. Medium-sized issuances (MOP 100-500 million) would require standard verification aligned with international practices. Only large issuances exceeding MOP 500 million would face full requirements including detailed impact assessments and ongoing monitoring.

This tiered approach reflects recognition that compliance costs do not scale linearly with issuance size. For smaller issuances, full international-standard verification could consume 5-10% of proceeds, undermining economic viability. Simplified procedures for smaller transactions could reduce costs while maintaining basic environmental integrity through standardized criteria and post-issuance reporting.

Second, mutual recognition rather than reinvention. Given established international standards and limited local capacity, Macau should formally recognize existing frameworks rather than developing proprietary standards. The AMCM could designate the ICMA Green Bond Principles, Climate Bonds Standard, and China's Green Bond Catalogue as acceptable frameworks, with issuers choosing based on target investors. This approach minimizes regulatory development costs while providing certainty for market participants.

Mutual recognition should extend to verification providers. Rather than establishing a local accreditation system, Macau could recognize verifiers approved by the Climate Bonds Initiative, Hong Kong Quality Assurance Agency, or Chinese authorities. This would immediately provide access to qualified reviewers while avoiding duplicative oversight systems. Local capacity could develop over time through partnership arrangements with established providers.

Third, coordinated regional integration. Effective integration with GBA markets requires moving beyond informal cooperation to binding agreements. Macau should negotiate mutual recognition agreements (MRAs) with Hong Kong and mainland authorities that provide for automatic recognition of green bonds verified under each other's systems. These MRAs should address technical issues such as information sharing, supervisory cooperation, and dispute resolution mechanisms.

The proposed "GBA Green Bond Connect" would extend existing Stock Connect and Bond Connect infrastructure to green instruments. This would involve streamlined approval procedures for green bonds listed in any GBA exchange to be marketed to investors in other jurisdictions. Common disclosure templates and synchronized settlement systems would reduce operational complexity for cross-border transactions.

Fourth, adaptive governance structures. Given rapid evolution in sustainable finance and Macau's learning needs, the framework must incorporate flexibility for adjustment based on experience. Initial standards should include sunset provisions after three years, requiring review and reauthorization. Regular stakeholder consultations would identify emerging issues and necessary modifications. This experimental approach acknowledges uncertainty while maintaining momentum for market development.

Tiered Certification Model

The proposed tiered certification model operationalizes proportionality principles through differentiated requirements based on issuance characteristics. This approach recognizes that one-size-fits-all standards impose disproportionate burdens on smaller issuances while potentially allowing larger transactions to escape appropriate scrutiny.

Tier 1: Simplified Verification (Below MOP 100 million)

1. Eligible for standardized project categories (renewable energy, energy efficiency, clean transportation)
2. Self-certification by issuer with standardized disclosure template
3. Post-issuance review by qualified accountant confirming use of proceeds
4. Annual reporting using simplified metrics
5. Reduced documentation requirements

This tier targets local SMEs and first-time issuers who might otherwise be excluded from green bond markets. Standardized categories and templates reduce complexity while maintaining basic environmental integrity. Post-issuance review provides accountability without upfront costs that might deter issuance.

Tier 2: Standard Verification (MOP 100-500 million)

1. Full alignment with international standards (ICMA GBP or CBI)
2. Pre-issuance external review by recognized provider
3. Detailed use of proceeds framework and project selection criteria
4. Annual impact reporting with quantitative metrics
5. Standard documentation and disclosure requirements

This tier reflects international market expectations while remaining achievable for medium-sized issuances. Recognition of established standards avoids reinventing frameworks while external review provides investor confidence. Requirements align with practices in Hong Kong and mainland China, facilitating cross-border investment.

Tier 3: Enhanced Verification (Above MOP 500 million)

1. Comprehensive environmental and social impact assessment
2. Independent verification of impact projections
3. Continuous monitoring and reporting requirements
4. Third-party audit of environmental outcomes
5. Full alignment with EU Taxonomy or equivalent for international issuances

Large issuances would face requirements comparable to major markets, reflecting their greater environmental impact and investor scrutiny. Enhanced requirements could include climate scenario analysis, biodiversity assessments, and just transition considerations. This tier would primarily apply to sovereign issuances or major infrastructure projects.

Regional Integration and Implementation Strategy

Learning from Successful Regulatory Convergence Models

The development of mutual recognition frameworks for green bonds can benefit substantially from examining successful precedents in financial regulatory convergence. Two models offer particularly relevant insights: the European Union's MiFID passporting regime and the ASEAN Collective Investment Scheme Framework.

The Markets in Financial Instruments Directive (MiFID) passporting system represents one of the most successful examples of financial regulatory convergence across diverse legal systems.[66] Under this framework, investment firms authorised in one EU member state can provide services throughout the European Economic Area without additional authorisation requirements, subject only to notification procedures.[67] Several features of the MiFID system offer direct lessons for GBA green bond recognition. Rather than requiring identical regulations, MiFID establishes minimum standards that member states can exceed but not undercut.[68] This approach accommodates differences between civil law and common law systems while ensuring baseline investor protection. For the GBA, this suggests focusing on core green bond principles—use of proceeds, verification, and reporting—while allowing jurisdictional variations in implementation details.

The MiFID passport operates on the principle that the home country regulator maintains primary oversight while host countries automatically recognise its supervision.[69] Applied to green bonds, this would mean AMCM-verified issuances automatically qualifying for Hong Kong and mainland markets, subject to information sharing between regulators. MiFID's introduction occurred over several years, with different service categories and firm types subject to staggered timelines.[70] This gradual approach allowed regulatory capacity building and reduced implementation risks—particularly relevant for Macau's limited institutional resources.

The ASEAN Collective Investment Scheme Framework, operational since 2014 across Malaysia, Singapore, and Thailand, demonstrates successful financial integration among jurisdictions with different legal traditions and development levels.[71] The framework allows fund managers in participating countries to offer collective investment schemes to retail investors in other member states under streamlined procedures. The ASEAN framework recognises that smaller markets cannot support the same regulatory infrastructure as larger ones. Fund managers must maintain minimum shareholder equity of only US$1 million, substantially lower than typical international standards.[72] For green bonds, this suggests tiered requirements based on jurisdiction size and capacity.

[66] Directive 2014/65/EU on markets in financial instruments (MiFID II), Art 34-35.
[67] ibid, Art 35(2).
[68] European Securities and Markets Authority, Guidelines on MiFID II Compliance and Reporting (ESMA 2019) 15.
[69] ibid, Art 34(1).
[70] Commission Implementing Regulation (EU) 2017/1945, establishing staggered implementation timelines.
[71] ASEAN Capital Markets Forum, 'Framework for Cross-Border Offering of ASEAN Collective Investment Schemes' (2014).
[72] ibid, Standard 4.1 (Minimum Capital Requirements).

While establishing uniform eligibility criteria—such as requiring fund managers to have at least 10 years' experience—the framework permits local variations in implementation and supervision.[73] This approach could accommodate differences between Hong Kong's market-based approach and mainland China's prescriptive system while maintaining mutual recognition. The ASEAN CIS framework has gradually expanded from three to four participating countries, with the Philippines joining in 2021.[74] This demonstrates how successful frameworks can accommodate new participants over time, offering a template for potential GBA expansion to include other Greater China jurisdictions.

Recent Asian Development Bank analysis suggests the ASEAN framework's success could be enhanced through linked settlement systems and harmonised post-trade infrastructure.[75] For green bonds, this highlights the importance of coordinating not only standards but also operational processes across the GBA. These successful models suggest that effective mutual recognition requires legal frameworks operating under formal agreements rather than voluntary cooperation, graduated implementation starting with limited categories, institutional coordination mechanisms for ongoing coordination and dispute resolution, and technical harmonisation of operational procedures alongside policy coordination.

Phased Implementation Strategy

Building on these international precedents, successful implementation of Macau's green bond framework requires careful sequencing that builds capacity while maintaining market confidence. A three-phase approach over six years would allow gradual development of institutional capabilities and market practices.

Phase 1 (Years 1-2) focuses on foundation building through establishing legal framework via AMCM regulations under existing securities law powers, launching Tier 1 simplified procedures to encourage initial issuances, developing standardized templates and guidance materials based on ASEAN CIS simplified approaches, initiating capacity building programs with Hong Kong and mainland partners following MiFID cooperation models, and creating basic market infrastructure compatible with regional platforms.[76] This phase prioritizes enabling initial market activity while building fundamental capabilities. Quick wins through simplified procedures would demonstrate feasibility and generate learning experiences. Partnerships with regional institutions would accelerate knowledge transfer without requiring full local capacity, following the ASEAN CIS model of leveraging external expertise.

Phase 2 (Years 3-4) emphasises market development by introducing Tier 2 standard verification requirements aligned with international best practices, establishing formal mutual recognition agreements with Hong Kong and mainland China based on MiFID passporting

[73] ibid, Standard 2.3 (Management Experience Requirements).
[74] Securities and Exchange Commission of the Philippines, 'Philippines Joins ASEAN CIS Framework' (Press Release, 11 May 2021).
[75] Asian Development Bank, Collective Investment Scheme Transactions in ASEAN+3: Benchmark Product and Market Infrastructure Design (2024) 45.
[76] This implementation approach draws on lessons from both MiFID and ASEAN CIS frameworks, adapted to the specific circumstances of the Greater Bay Area integration process.

principles, launching government green bond program to demonstrate commitment and create market benchmarks, developing local verification capacity through training partnerships and gradual knowledge transfer, and enhancing market infrastructure with analytical tools and indices integrated with GBA platforms. Building on initial experience, this phase would introduce international-standard requirements while ensuring supporting infrastructure. Government issuance would create demonstration effects and establish benchmarks. MRAs would formalize regional integration and reduce cross-border frictions, drawing on proven passporting mechanisms.

Phase 3 (Years 5-6) achieves maturation through implementing the full tiered system including Tier 3 enhanced requirements for large issuances, establishing specialized green finance unit within AMCM with dedicated expertise, developing local green taxonomy reflecting Macau's environmental priorities while maintaining compatibility with regional standards, creating incentive schemes comparable to regional competitors learning from Hong Kong's grant programs, and integrating fully with GBA-wide platforms and initiatives with potential expansion to other jurisdictions. The final phase would complete framework implementation while positioning Macau as a specialized node within the GBA green finance ecosystem. Local taxonomies would address specific priorities such as coastal resilience and sustainable tourism. Incentive schemes would level the playing field with subsidized markets while maintaining fiscal sustainability.

This phased approach, informed by successful regional integration models, balances ambition with realism while ensuring Macau develops genuine capacity rather than merely adopting external standards without supporting infrastructure.

Legal Infrastructure Requirements

Implementing the proposed framework requires specific legal changes to address current gaps in Macau's regulatory architecture. These modifications must work within existing civil law constraints while providing sufficient flexibility for market development.

Primary Legislation Amendments

Law No. 7/2021 requires amendment to explicitly recognize green bonds as a distinct securities category. Proposed amendments would:[77]

1. Define green bonds and establish AMCM's regulatory authority
2. Create legal basis for tiered certification requirements
3. Establish frameworks for recognizing international standards
4. Provide for mutual recognition agreements with other jurisdictions
5. Include specific provisions for green bond covenants and remedies

[77] Law No. 7/2021 (n 33) would require amendment through the Legislative Assembly of Macau.

These amendments would provide legal certainty while avoiding overly prescriptive provisions that might constrain market development. Delegation of technical details to AMCM regulations would allow adaptive implementation.

Secondary Regulations

AMCM would issue detailed regulations addressing:

1. Specific requirements for each certification tier
2. Recognized international standards and verification providers
3. Disclosure templates and reporting requirements
4. Procedures for cross-border recognition
5. Sanctions for greenwashing or misuse of proceeds

Regulations would incorporate international best practices while adapting to local conditions. Regular review mechanisms would ensure continued relevance as markets evolve.

Contractual Frameworks

Standardized documentation would address civil law limitations in enforcing green covenants:

1. Model green bond terms incorporating specific performance obligations
2. Bondholder representative arrangements to enable collective action
3. Escrow mechanisms for proceeds management
4. Dispute resolution procedures including expert determination
5. Remedies for breach of environmental commitments

These contractual innovations would compensate for limited judicial remedies under civil law. Standardization would reduce transaction costs while ensuring consistent market practices.

Conclusion

This analysis of Macau's green bond market development challenges provides important insights for understanding how small financial markets can participate in sustainable finance while acknowledging fundamental constraints. The research demonstrates that simple replication of international standards is neither feasible nor desirable for jurisdictions with limited regulatory capacity, shallow capital markets, and distinct legal traditions.

The theoretical framework developed here, drawing on legal pluralism and institutional theory, reveals how small markets navigate between competing pressures: international standardization versus local adaptation, market development versus environmental integrity, and regional integration versus jurisdictional autonomy. The proposed "regulatory trilemma" conceptualizes these trade-offs, showing that small markets cannot simultaneously achieve high standards, low costs, and rapid implementation without external support or strategic specialization.

Macau's specific circumstances—a civil law jurisdiction with limited institutional capacity operating alongside larger common law and socialist legal systems—illuminate broader challenges facing small markets globally. The absence of green bond regulations, reliance on external expertise, and limited domestic demand create circular barriers to market development. Yet Macau's position within the Greater Bay Area also demonstrates opportunities for leveraging regional integration while maintaining proportionate local frameworks.

The proposed proportional framework offers a pragmatic path forward. By establishing tiered certification requirements based on issuance size, formally recognizing international standards, negotiating mutual recognition agreements, and adopting adaptive governance structures, small markets can participate meaningfully in green finance without overwhelming limited capacity. The phased implementation approach acknowledges that institutional development takes time and requires careful sequencing of reforms.

Several key policy implications emerge from this analysis. First, small markets require explicit regulatory frameworks rather than relying solely on voluntary standards—market forces alone are insufficient when markets lack depth and sophistication. Second, proportionality must be built into regulatory design from the outset rather than treating small markets as scaled-down versions of large ones. Third, regional cooperation through binding mutual recognition agreements can provide economies of scale while preserving regulatory autonomy. Fourth, government support through fiscal incentives, demonstration issuances, and capacity building is essential for achieving critical mass.

This research contributes to theoretical understanding by demonstrating how legal pluralism operates in financial markets and how institutional constraints shape regulatory possibilities. The analysis challenges assumptions that financial standards naturally converge toward optimal solutions, showing instead how path dependencies, capacity limitations, and legal traditions create persistent variations even within integrated regions.

Future research should examine implementation experiences as small markets develop green bond frameworks, testing whether proportional approaches achieve intended balances between competing objectives. Comparative studies across different legal traditions would illuminate how civil law, common law, and hybrid systems address green bond enforcement challenges. Investigation of innovative mechanisms for pooling verification costs or mutualizing green bond issuances could address scale constraints.

As climate finance needs accelerate globally, ensuring that all markets—regardless of size—can contribute to sustainable development becomes imperative. The frameworks developed here offer a template for inclusive green finance that acknowledges constraints while maintaining environmental integrity. Success requires recognizing that one size does not fit all in sustainable finance, and that proportionate, adaptive approaches may ultimately prove more effective than rigid adherence to international best practices.

The path forward for Macau and similar small markets lies not in choosing between high standards and market development, but in crafting frameworks that achieve both objectives through intelligent design. By embracing proportionality, leveraging regional cooperation, and building capacity incrementally, small financial markets can play meaningful roles in the global transition to sustainability. The challenge is not merely technical but fundamentally about creating institutional frameworks that balance aspiration with reality, ensuring that the perfect does not become the enemy of the good in pursuing urgent environmental objectives.

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