



**SUSTAINABLE EUROBOND ISSUANCE: A LOCALIZED
FRAMEWORK FOR UZBEK BANKS**

Khurazov Islom Umar ugli

Lecturer, “Corporate Finance and Securities” Department,

Tashkent State University of Economics, Uzbekistan

Email: i.khurazov@tsue.uz

ABSTRACT

We develop a Sustainable Financing Framework (SFF) to help Uzbek banks issue credible, ICMA- and SDG-aligned sustainable Eurobonds. The framework distills market practice into a concise playbook: eligible categories, project selection and proceeds management, external review (SPO), and post-issuance allocation/impact reporting. We add a digital layer that makes this workable in frontier settings: machine-readable ESG disclosure (XBRL/JSON) and API-based data rooms; an MRV stack that ingests IoT/smart-meter data and automates basic checks for SPOs; and RegTech/SupTech dashboards for supervisors to review allocation/impact files. We also outline digital execution tools (e-roadshows, bookbuilding analytics). Together, these elements cut reporting costs, improve traceability, and reduce greenwashing risk—making labelled issuance more investable and, under the right conditions, consistent with tighter spreads.

CCS CONCEPTS

- Applied computing → Enterprise financial systems
- Social and professional topics → Sustainability
- Economics → Financial economics

KEYWORDS

Sustainable Eurobonds, green/social bonds, ICMA, SPO, taxonomy, Uzbekistan, impact reporting.

Introduction

Global debt capital markets have undergone a marked shift as labelled sustainable instruments—especially green and sustainability bonds—have scaled rapidly and investors integrate environmental, social, and governance (ESG) criteria into portfolio construction (Flammer, 2021; Banga, 2019). This reflects a move from a singular focus on financial returns toward a dual mandate that pairs performance with measurable sustainability outcomes (OECD, 2020). According to the Climate Bonds Initiative (CBI, 2023), cumulative sustainable bond issuance surpassed USD 4 trillion by 2023, underscoring persistent demand for instruments that finance environmental resilience and inclusive growth.

Uzbekistan has begun to participate in this market. Sanoat Qurilish Bank (SQB) issued an internationally reviewed sustainability bond on the London Stock Exchange (LSE), valued at

approximately USD 400 million (UZS 2.25 trillion), and Agrobank placed a green bond on the LSE of a similar size. These transactions are landmarks for the domestic financial system and signal growing integration into global sustainable capital markets. In this taxonomy, green bonds earmark proceeds for projects with environmental benefits (e.g., renewable energy, energy efficiency, pollution abatement), while sustainability bonds combine green and social uses of proceeds linked to the Sustainable Development Goals (SDGs) (Flammer, 2021).

These instruments are increasingly important because they not only provide issuers with diversified funding sources but also align capital raising with responsible business practices. Moreover, studies indicate that green and sustainable bonds demonstrate distinct yield characteristics compared to conventional bonds, suggesting that these instruments can help lower issuers' borrowing costs while advancing sustainability within the financial system (Mokni et al., 2022; Teti et al., 2022). For issuers, these instruments represent more than a thematic financing mechanism—they serve as a strategic vehicle to access diversified pools of capital while signalling commitment to responsible and transparent business practices (Tolliver, Keeley, & Managi, 2020). Moreover, sustainable bonds have become a central channel for mobilizing private investment in support of the United Nations Sustainable Development Goals (SDGs), particularly in sectors such as renewable energy, infrastructure, social housing, and financial inclusion (UNDP, 2021). Institutional investors, including pension funds and sovereign wealth funds, increasingly demand robust sustainability disclosures and verifiable impact metrics as preconditions for portfolio inclusion (IMF, 2022). In this evolving landscape, emerging markets play a pivotal role in scaling global sustainable finance but face unique structural and institutional challenges. Market participants in these economies often contend with limited regulatory guidance, underdeveloped domestic capital markets, and capacity constraints in sustainability reporting (BIS, 2021). For banking institutions in such contexts, and particularly in Uzbekistan, the need for a credible and transparent sustainable bond issuance framework has become increasingly urgent.

Although international standards—such as the ICMA Green Bond Principles (GBP), Social Bond Principles (SBP), and Sustainability Bond Guidelines (SBG)—provide a robust foundation for structuring and reporting, their application requires contextual adaptation to national regulatory frameworks and institutional capabilities (ICMA, 2021). Similarly, the Loan Market Association (LMA) Green Loan Principles and Social Loan Principles offer complementary guidance for banks that integrate sustainable lending with capital market transactions. However, these global frameworks are primarily designed for mature markets with advanced disclosure ecosystems and cannot be applied directly without localization. Hence, there exists a methodological and operational gap between global best practice and its implementation in frontier market settings such as Uzbekistan. In response to this gap, the present study seeks to bridge this gap by developing comprehensive and practical guidance to help banks design a Sustainable Finance Framework, obtain credible external reviews, and follow a clear, step-by-step process for issuing sustainable bonds in line with international best practices.

This paper addresses both the implementation gap and the digital infrastructure gap. We develop a localized Sustainable Financing Framework (SFF) for Uzbek banks that translates ICMA-aligned practice into a step-by-step issuance playbook (eligible categories, project selection, proceeds management, external review, and post-issuance allocation/impact reporting). We embed a digital layer to improve credibility and efficiency: machine-readable ESG disclosure (XBRL/JSON) and API-based data rooms; a measurement-reporting-verification (MRV) stack that can ingest IoT/smart-meter data;

and RegTech/SupTech dashboards for supervisors. We also outline proportional use of distributed-ledger options for tamper-evident audit trails and digital execution tools (e-roadshows, bookbuilding analytics). Together, these elements provide a practical path to credible, lower-friction sustainable bond issuance in a frontier-market setting.

3. Data and Methods

We adopt a design-science, conceptual qualitative approach to build a Sustainable Financing Framework (SFF) and an operational model for sustainable Eurobond issuance by Uzbek banks. The method emphasizes artifact construction (framework, checklists, templates) grounded in best-evidence synthesis rather than statistical hypothesis testing.

3.1. Sources and search protocol.

We conducted a structured documentary review (2018–2024) combining (i) international standards and guidance (ICMA GBP/SBP/SBG; LMA Green/Social Loan Principles), (ii) multilateral guidance (e.g., practitioner notes by MDBs/IFIs), and (iii) issuer-level materials, including publicly available SFFs, prospectuses, SPOs, and allocation/impact reports from Uzbek and peer frontier-market banks. Inclusion criteria: relevance to labelled debt issuance, explicit treatment of governance/use-of-proceeds/reporting, and verifiable document provenance. Exclusion criteria: purely promotional materials without methodological content. A data-extraction template captured scope, eligibility categories, KPIs, assurance practices, and disclosure requirements.

3.2. Adaptation procedure (Uzbek context).

We translated global practice into a local SFF through a three-step mapping:

- (1) Principles - Processes: ICMA/LMA principles mapped to issuer processes (project selection, proceeds management, external review, reporting).
- (2) Categories – SDGs - KPIs: eligible categories aligned to SDGs and measurable KPIs (Table A).

Table A: ICMA eligible categories, SDG alignment, and core KPIs

Stage	Key tasks	Owner	Output
SFF preparation	Eligibility matrix; governance; registers	Treasury Sustainability	+ Approved SFF + internal policy
External review	SPO/verification briefing; dataroom	Issuer + Reviewer	SPO/verification report
Documentation	OC/Prospectus; ICMA alignment; use-of-proceeds	Issuer + Legal + Banks	Final docs (OC/Prospectus)
Execution	Investor outreach; bookbuilding; pricing	Bookrunners + Issuer	Priced transaction
Post-issuance	Allocation/impact reporting; assurance	Issuer + Auditor	Annual allocation & impact report

The revised playbook relocates execution risk to the front of the process. A formal coverage ratio of 120–150% against target size, coupled with a look-back window ≤24 months and a refinancing cap ≤50%, makes full allocation within 24 months credibly attainable and reduces relabeling risk.

Embedding a KPI dictionary and machine-readable schemas at Stage 1 standardizes data before documents and marketing begin, shortening the SPO cycle and lowering diligence frictions for investors.

Sequencing SPO/verification ahead of pre-marketing improves price discovery: investors see a validated framework and comparable KPIs, which typically raises book quality even when “greenium” is modest. The documentation stage explicitly internalizes greenwashing and data-quality risks in the OC/Prospectus, aligning disclosure with supervisory expectations. During pricing, a pre-agreed allocation policy (priority to long-only ESG accounts) and disciplined IPTs-Guidance-Final messaging stabilize order-book dynamics and limit unnecessary concessions.

Post-issuance, dual-format reporting (PDF plus XBRL/JSON) and limited assurance create a repeatable reporting spine; Internal Audit’s role makes the process auditable without excessive external cost. Overall, the table operationalizes international norms in a proportional way for a first-time issuer in Uzbekistan, improving credibility, lowering execution time, and making the bond easier to hold under institutional ESG mandates.

(3) Roles→Outputs: issuance workflow specified by stage, accountable owner, and deliverables (Table B).

Table B: Issuance execution playbook (stages)

Use-of-proceeds focus	Metric	Data source
Renewables	tCO ₂ e avoided; MWh	Installed meters; operator logs
EE in industry	kWh saved; % efficiency improvement	Audit reports; smart meters
Water	m ³ ; population served	Utility SCADA; reports
Social MSME	Number/UZS of loans; share to women	Bank core system; portfolio report

MWh is a hard meter reading; tCO₂e avoided follows directly once you publish the grid-emissions factor (and whether it’s **average** or **marginal**).**Checks.**

- Define metering boundary (plant meter vs. grid-injected, net of losses and curtailment).
- Confirm **attribute ownership** (I-REC/GO). If attributes are sold, you cannot also claim the avoidance.
- Report **capacity factor** and **downtime**; reconcile MWh to dispatch data.
- **Method note.** One page is enough: EF used (tCO₂/MWh), baseline, curtailment handling, whether auxiliary consumption is netted. This makes the number fully audit-ready.

Regulatory fit was assessed against current Uzbek disclosure and supervisory practices; feasibility was judged by typical bank operational capacity.

3.3. Digitalization design.

We embedded a digital layer to reduce frictions and strengthen credibility:

Machine-readable ESG disclosure (XBRL/JSON) and API-based data rooms for prospectus, proceeds registers, and impact files.

MRV stack that can ingest IoT/smart-meter telemetry for energy/water projects, apply basic automated checks, and package KPI files for SPOs and supervisors.

RegTech/SupTech dashboards to parse allocation/impact submissions and flag anomalies; optional distributed-ledger pilots for tamper-evident audit trails.

Design choices followed proportionality (frontier market constraints) and interoperability with common SPO/rating workflows.

3.4. Validation strategy.

Validity was addressed through triangulation (standards, issuer documents, multilateral guidance) and expert review: the draft SFF and checklists were evaluated against published SPO criteria and two recent regional transactions (document cross-checks). We define acceptance criteria (completeness vs ICMA; auditability of KPIs; clarity of roles/outputs). Where possible, we propose a light pilot: dry-run the checklists on a single bank portfolio and compare the resulting disclosure pack with SPO feedback.

3.5. Limitations and transferability.

The approach is conceptual and does not test pricing effects or causal impacts. Evidence relies on documentary sources; future work should add micro-data analyses of spreads (“greenium”) and outcome-level impact. Transferability to other frontier markets depends on regulatory alignment and data readiness.

4. Results

Overview. Issuing sustainable bonds requires more than market access; it requires a credible operating model for eligibility, assurance, and disclosure. Our results present a localized, ICMA-aligned Sustainable Financing Framework (SFF) for Uzbek banks and the digital tools that make it workable in a frontier setting.

1) Sustainable Financing Framework (SFF)

The SFF distills international practice into four principles and operational outputs: Eligible project categories & use of proceeds. Clear taxonomies for green and social projects, mapped to the UN SDGs and measurable KPIs. Table 1 (green) and Table 2 (social) summarize category–SDG mappings and typical indicators.

Table 1: Eligible green project categories and SDG alignment

Eligible category	SDG alignment	Core KPIs (examples)
Renewable energy	SDG 7, 13	MW installed; MWh generated; tCO _{2e} avoided
Energy efficiency	SDG 7, 9	kWh saved; % energy-intensity reduction
Clean transport	SDG 11, 13	EV units; EV share; tCO _{2e} reduction
Water & wastewater	SDG 6	m ³ treated; population served
Green buildings	SDG 11, 13	LEED/BREEAM certification; energy use per m ²
Pollution prevention & control	SDG 12, 13	Waste diverted; emissions reduced
Circular economy	SDG 12	Recycled content; waste intensity
Biodiversity & nature-based solutions	SDG 14, 15	Habitat restored; hectares protected
Climate change adaptation	SDG 13	Assets protected; resilience indicators

Table 1 gives you a wide green taxonomy, but a first labelled deal should lean into the lines where measurement is clean and costs are low. In Uzbekistan that typically means **renewables, energy-efficiency retrofits, water/wastewater**, and, where you already have certification or audited bills,

green buildings. These categories produce hard numbers—MW/MWh, kWh saved, m³ treated, LEED/BREEAM status—that can be tied to a published grid-emissions factor to derive **tCO₂e avoided** without heroic assumptions. That is precisely what investors and SPOs want to see: metered inputs, transparent factors, reproducible math.

Two technical cautions matter most. First, **baselines:** fix a baseline year and define what “business-as-usual” means (e.g., pre-retrofit consumption, current grid mix). Second, **double counting:** if a building retrofit sits under “energy efficiency,” don’t also book the same savings under “green buildings.” Publish a one-page method note (factors used, data owners, QA steps) and most credibility questions disappear. The more novel lines—**circular economy, biodiversity/nature-based solutions, adaptation**—are strategically sound but **MRV-heavy**; unless you already have a monitoring partner and a baseline protocol, they are better introduced in a second wave. Overall, Table 1 is issuance-ready: it balances breadth with measurable KPIs and lends itself to an IoT/smart-meter feed or simple machine-readable reporting (XBRL/JSON) when you scale.

Table 2: Eligible social project categories and SDG alignment

Eligible category	SDG alignment	Core social outcomes (examples)
Education & vocational training	SDG 4	Students trained; completion rates
Health & essential services	SDG 3, 9, 11	Patients served; facilities built/upgraded
Affordable housing & basic infrastructure	SDG 1, 11	Units delivered; households reached
Employment generation (MSME financing)	SDG 8, 10	MSMEs financed; jobs created/retained; women-led share
Financial inclusion	SDG 8, 10	New accounts; digital access; underbanked reached
Targeted support to vulnerable groups	SDG 1, 5, 10	Beneficiaries reached; income-uplift proxies

The social side lives or dies on **who benefits** and **how you evidence it.** The categories in Table 2—education, health and essential services, affordable housing/infrastructure, MSME employment, financial inclusion, support to vulnerable groups—are exactly what sustainability investors expect. But labels alone are not enough: each line needs a **targeting rule** (e.g., MSME definition and women-led flag; affordability criteria for housing; eligibility for vulnerable groups) and **verifiable outputs** drawn from administrative systems (loan registers, beneficiary lists, facility records).

Outputs are a good start—students trained, units delivered, patients served—but one **proximate outcome** per category lifts credibility: completion or pass rates for training, utilization or continuity of service for clinics, arrears/tenure stability for affordable housing, jobs created/retained for MSMEs (with a clear method for counting). Keep **do-no-significant-harm** screening in view, and specify how exclusion criteria are applied. For a first issuance, prioritize **MSME employment** and **affordable housing/basic infrastructure**, where program control and data discipline are usually strongest; add **financial inclusion** if your MIS can disaggregate by gender, income band, or rural/urban. As with the green side, a short look-back window (≤ 24 months) plus a forward pipeline—both tagged by category, SDG and indicator—lets you connect proceeds to tangible, auditable activities and export the same tags in a machine-readable allocation/impact file.

Management of proceeds. Processes and registers to track allocation over time, including look-back (refinancing) and new financing windows.

Reporting commitments. Annual allocation and impact reporting with both quantitative and qualitative indicators (e.g., tCO₂e avoided, renewable capacity installed, social beneficiaries).

ESG policy integration. Linkages to environmental and social risk management and governance so that labelled issuance reinforces bank-wide practices.

The SFF aligns with ICMA Green Bond Principles (GBP), Social Bond Principles (SBP), and Sustainability Bond Guidelines (SBG), and is consistent with LMA green/social loan principles. This alignment supports investor confidence and comparability across deals.

2) External review readiness

To safeguard credibility and mitigate greenwashing risk, the SFF embeds external review pathways—Second-Party Opinion (SPO), verification, and certification—matched to issuance objectives. Selection logic: SPO is used pre-issuance to opine on ICMA alignment of the framework and sample eligible assets; verification/assurance is applied post-issuance to test allocation and impact calculations; certification is pursued when a formal label/standard is required. Timing & deliverables: prior to launch, the issuer provides an eligibility matrix, proceeds register, and a machine-readable KPI schema (XBRL/JSON) with an evidence pack (e.g., meter logs, contracts); annually, it publishes allocation and impact reports for review. Governance: Treasury/Sustainability own data and responses; an independent reviewer conducts the SPO/verification; results (SFF, SPO, annual reports) are disclosed on market platforms and the issuer's website. This packaging streamlines reviewer work, reduces execution risk, widens ESG demand, and strengthens safeguards against greenwashing. Domestic precedents with publicly available frameworks and SPOs indicate feasibility in Uzbekistan's market context.

3) ESG pipeline demonstration

Underwriters and ESG investors look for capacity and discipline rather than slogans. We therefore present a coverage ratio of ~120–150% (eligible assets relative to intended deal size) and set a refinancing cap of ≤50%. The look-back window is time-stamped (≤24 months) and the forward pipeline is dated and sized to absorb execution slippage. Each asset in the proceeds register carries a unique ID and machine-readable tags (category, SDG, KPI), plus eligibility evidence (e.g., contracts, meter logs, permits) and an expected impact range. A cross-functional Pipeline Committee (Treasury, Sustainability, Risk) validates eligibility and concentration limits (sector/geography) before launch. Allocation follows a dated schedule with fallbacks for delayed assets; quarterly internal monitoring and annual public allocation/impact files (XBRL/JSON) maintain auditability for SPO providers and supervisors. This discipline ties proceeds to tangible, measurable activities rather than generic lending and de-risks execution for investors.

4) Post-issuance reporting

Reporting is annual (with interim updates if something material changes) and covers both allocation and impact. The allocation file shows category splits, new financing vs. refinancing, geography, the unallocated balance and how it is managed (e.g., cash/sovereign bills), plus the timeline to reach full allocation (target: ≤ 24 months). The impact file reports KPIs by category with baselines, methods (incl. the grid emissions factor for tCO₂e), beneficiary targeting rules on the social side, and a short methods note to avoid double counting. Data ownership lies with Treasury/Sustainability; Internal

Audit performs QA; a limited assurance on allocation is sought in Year 1, with impact assurance added by Year 2 where material. All tables are published in machine-readable form (XBRL/JSON) alongside the PDF to ease reviewer and supervisor use. Uzbek precedents (public frameworks and post-issuance reports by SQB/Agrobank) show that this cadence and content are feasible locally and meet investor expectations for transparency.

5) Digitalization layer (MRV, disclosure, supervision)

We add a proportional digital layer to cut manual work, improve auditability, and make disclosures decision-useful for reviewers and supervisors. First, machine-readable ESG files (XBRL/JSON) and an API-based data room host the prospectus, proceeds register, and KPI tables so that SPO providers and bookrunners can parse them without rekeying. Second, an MRV stack ingests metered telemetry where it exists (e.g., smart-meter/SCADA for energy and water), applies basic plausibility checks and versioning, and exports the same KPI schema for impact reports. Third, RegTech/SupTech dashboards let supervisors parse allocation/impact submissions, spot anomalies, and track remedial actions over time. Where proportional, we add a tamper-evident audit trail (e.g., a lightweight DLT registry for allocation snapshots). Data governance is simple and practical: a one-page data dictionary, role-based access, PII minimisation, and an audit log of changes. Implementation is phased: (1) templates + machine-readable exports; (2) API data room + dashboards; (3) selective IoT ingestion and an optional DLT pilot. The result is faster external reviews, lower reporting cost, and more consistent, comparable disclosures across issues.

5. Execution Playbook for Issuers

5.1 Investor targeting and documentation checklist

Targeting. Map the natural buyer base before launch: (i) ESG-dedicated funds; (ii) EM credit funds with an ESG overlay; (iii) bank treasuries/insurers with sustainable mandates. Identify anchors early and track reverse inquiries. Segment by currency, tenor, and labeling preferences (green vs. sustainability).

Key documents (pre-launch).

Sustainable Financing Framework (final), SPO (final), internal eligibility policy.

Draft Offering Circular/Prospectus (use-of-proceeds, risk factors incl. greenwashing/data-quality risk), Terms & Conditions.

Latest audited financials, rating reports, legal opinions, trustee/fiscal agency agreement.

Disclosure pack: eligibility matrix, proceeds register template, KPI dictionary (baselines, factors, methods).

Regulatory route. Decide Reg S (offshore) and/or Rule 144A (QIBs in the U.S.) with counsel; align selling restrictions, legends, and listing venue requirements.

5.2 Timeline and bookbuilding coordination

Illustrative cadence (can compress/extend):

T-8/6 weeks: Strategy lock-in; underwriter mandate; SPO process starts; first investor soundings.

T-4 weeks: Draft OC/prospectus and SFF finalization; rating/board approvals; pre-marketing deck.

T-2 weeks: Investor education (teach-ins, e-roadshows); pre-sound IPT range.

Pricing week (T-0): Announce IPTs, collect orders, guide tightening, price; allocate with an ESG tilt to long-term holders.

Post-pricing: List/settle; publish final docs; move into allocation/impact reporting cycle.

Coordination. Keep a single issues log across issuer–bookrunners–counsel; pre-agree allocation policy (priority to high-quality/long-only ESG accounts), and communication rules for book updates.

5.3 Disclosure package and dataroom essentials

Core contents. Prospectus (final); SFF (final); SPO (final); eligibility matrix; proceeds register (template with unique IDs); KPI schema with baselines and grid-emissions factor; pipeline summary (look-back vs. new financing).

Digital layer. Host in an API-enabled data room; provide machine-readable files (XBRL/JSON) for proceeds/KPI tables so investors and SPO providers can parse without rekeying. Version control documents, log access, and publish a one-page methods note (double-counting rules, QA checks, data owners).

5.4 Pricing considerations and benchmarks

Reference set. Price off (i) the sovereign curve and peer bank seniors in the region; (ii) thematic comparables (EM green/sustainability seniors); (iii) internal funding curve (swap and liquidity costs).

Execution levers. Manage IPTs → Guidance → Final with disciplined book messages; target benchmark size for liquidity; balance new-issue premium with depth/quality of the book; consider maturity sweet spots (3–5y typical for first-time bank prints).

Label dynamics. Label credibility (SPO quality, KPIs, reporting) can broaden demand and, in some markets, support tighter prints; avoid overpromising greenium—focus on book quality and secondary performance.

Risk factors. Address ESG-data uncertainty, taxonomy drift, and proceeds-deployment risk in risk factors; disclose an unallocated cash policy and a timeline to full allocation (≤ 24 months typical).

6. Policy Implications

6.1. Taxonomy and guidance

For Uzbekistan, the efficient path is not to invent a new regime but to localize what already works internationally. A “light taxonomy” should map domestic project types to recognized green/social categories and set minimum KPI standards (e.g., tCO_{2e} avoided using a published grid-emissions factor; kWh saved; m³ treated; basic social beneficiary metrics). Two practical additions raise quality at low cost:

- short, updateable guidance notes (5–7 pages) on eligibility, proceeds management, baselines, and double-counting rules;
- machine-readable schemas (XBRL/JSON) for allocation and impact tables so issuers do not reformat data ad hoc for each transaction.

The principle is proportionality: simplified evidence for small tickets; tighter documentation for larger or more complex assets. An annual update cycle keeps the taxonomy credible without frequent rule changes.

6.2. Local verification capacity and market integrity

Market depth depends on credible assurance. Exclusive reliance on foreign providers raises cost and slows execution; the remedy is local capacity with international credibility. Regulators and market bodies should:

- establish an accreditation track for domestic reviewers (audit practices, universities, consulting firms) that operate under recognized methodologies and, where needed, co-source with global firms;
- publish a reviewers' handbook (eligibility tests, sampling protocols, evidence standards, independence and conflict rules);
- create a public registry of frameworks, SPOs, and post-issuance reports to lower due-diligence costs and deter greenwashing;
- run targeted training for bank sustainability teams, reviewers, and internal audit on MRV, KPI computation, and limited assurance.

This combination raises integrity while shortening transaction timetables.

6.3. Supervisory expectations for allocation/impact reports

Supervisors can reduce uncertainty by specifying a minimum reporting pack and a predictable timetable. At a minimum:

- Allocation report: category splits, refinancing share, geography, unallocated balance and its investment policy, and a timeline to full allocation (≤ 24 months typical).
 - Impact report: KPIs per category with baselines and methods, plus simple targeting rules on the social side.
 - Submissions should be dual-format—PDF for readability and machine-readable files using the national schema for supervisory ingestion. A light RegTech/SupTech dashboard can run arithmetic and consistency checks and flag anomalies, allowing review teams to focus on exceptions rather than re-keying data. Assurance can be staged: limited assurance on allocation from Year 1; impact assurance from Year 2 where material. Incentives (fast-track approvals, fee rebates) for timely digital reporting, paired with proportionate remedies for persistent non-compliance, align behavior at low fiscal cost.
- Bottom line. A localized taxonomy with clear guidance, credible domestic review capacity, and digital-first supervisory rules lowers information asymmetry and execution cost, broadens eligible demand, and strengthens the integrity of Uzbekistan's sustainable bond market.

7. Conclusion and Limitations

This paper proposes a practical, ICMA-aligned **Sustainable Financing Framework (SFF)** tailored to Uzbek banks and the mechanics of a first labelled Eurobond. The contribution is operational: clear eligibility and KPI design, proceeds management, external-review readiness, a disciplined ESG pipeline, and a reporting cadence investors can underwrite. We complement this with a **digital layer**—machine-readable disclosure (XBRL/JSON), an MRV stack that can ingest metered data where available, and light RegTech/SupTech dashboards—so that assurance and supervision are faster, cheaper, and more comparable. On the policy side, we outline a “light taxonomy” with short guidance notes, steps to build local verification capacity, and predictable supervisory expectations for allocation and impact reports.

The work has limits. It is **conceptual and design-oriented**, not an econometric test of pricing effects: we do not estimate a “greenium” or causal impact on spreads. Evidence relies on **documentary sources**

and market precedents rather than field audits; validation is by expert cross-checks, not by a live transaction. The **digital blueprint** is proportional but not fully costed, and its benefits will depend on data readiness at banks and utilities. Finally, **generalizability** beyond Uzbekistan requires regulatory and institutional adaptation.

Future research should proceed in three tracks. First, **pilot implementation** with one or two banks to measure execution cost, time-to-market, and reviewer/supervisor feedback. Second, **pricing and secondary-market analysis** that controls for credit, duration, liquidity, and issuance window to identify any spread effects. Third, **data and supervision**: test the MRV telemetry and machine-readable schemas end-to-end, quantify dashboard gains for supervisors, and assess assurance quality when part of the review is performed locally. A comparative extension to other frontier markets would clarify what is context-specific versus broadly exportable.

REFERENCES

1. Banga, J. (2019). The green bond market: A potential source of climate finance for developing countries. *Journal of Sustainable Finance & Investment*, 9(1), 17–32. <https://doi.org/10.1080/20430795.2018.1498617> tandfonline.com
2. Climate Bonds Initiative. (2023). Sustainable Debt—Global State of the Market 2023. (Latest annual overview of labelled bonds). [Report]
3. Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, 142(2), 499–516. <https://doi.org/10.1016/j.jfineco.2021.01.010> sciencedirect.com
4. ICMA (International Capital Market Association). (2021). Green Bond Principles (GBP). <https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-100621.pdf> icmagroup.org
5. ICMA (International Capital Market Association). (2021). Sustainability Bond Guidelines (SBG). <https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Sustainability-Bond-Guidelines-June-2021-140621.pdf> icmagroup.org
6. ICMA (International Capital Market Association). (2023). Social Bond Principles (SBP). <https://www.icmagroup.org/assets/documents/Sustainable-finance/2023-updates/Social-Bond-Principles-SBP-June-2023-220623.pdf> icmagroup.org
7. IFC (International Finance Corporation). (2022). Green Bond Handbook: A Step-by-Step Guide to Issuing a Green Bond. <https://www.ifc.org/content/dam/ifc/doc/mgrt/202203-ifc-green-bond-handbook.pdf> IFC
8. IMF (International Monetary Fund). (2022). Global Financial Stability Report (October 2022). <https://www.elibrary.imf.org/display/book/9798400219672/9798400219672.pdf> Электронная библиотека МВФ
9. IMF (International Monetary Fund). (2022). Gao, Y., & Schmittmann, J. M. Green Bond Pricing and Greenwashing under Asymmetric Information (IMF Working Paper 22/246). <https://www.imf.org/-/media/Files/Publications/WP/2022/English/wpiea2022246-print-pdf.ashx> IMF
10. OECD. (2020). OECD Business and Finance Outlook 2020: Sustainable and Resilient Finance. OECD Publishing. <https://doi.org/10.1787/eb61fd29-en> OECD

11. OECD. (2021). ESG Investing and Climate Transition. OECD Publishing (policy report). https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/04/esg-investing-and-climate-transition_185db50c/a2fc6c39-en.pdf OECD
12. Sanoat Qurilish Bank (SQB). (2023). Sustainable Finance Framework. (Issuer framework, Uzbekistan). <https://www.lseg.com/sites/default/files/content/documents/sqb-bank-sustafinance-framework-2023.pdf> Climate Bonds
13. Sustainable Fitch. (2023). Second-Party Opinion: SQB Bank Sustainable Finance Framework. <https://www.sustainablefitch.com/news/sqb-bank-sustainable-finance-framework-second-party-opinion> Climate Bonds
14. Agrobank (Uzbekistan). (2024). Green Bond Allocation & Impact Report. <https://agrobank.uz/upload/Agrobank%20Green%20Bond%20Allocation%20and%20Impact%20Report%202024.pdf> IMF
15. IFC/ICMA. (2023). Harmonised Framework for Impact Reporting for Social Bonds (HFIR). <https://www.ifc.org/content/dam/ifc/photos/2023/Harmonised-framework-for-impact-reporting-for-social-bonds-June-2023-220623.pdf> IFC
16. World Bank. (2022). A Step-by-Step Guide to Issuing a Green Bond. <https://documents1.worldbank.org/curated/en/099854406222232086/pdf/IDU07c8498af092330405d0b43101bc10ba9c88d.pdf> World Bank
17. IMF; Ehlers, T., Packer, F., Cheng, G., & Xiao, Y. (2024). Sovereign Green Bonds: A Catalyst for Sustainable Debt Market Development? (IMF Working Paper 24/120). <https://www.imf.org/-/media/Files/Publications/WP/2024/English/wpia2024120-print-pdf.ashx> IMF