

VIETNAM CARBON TRADE EXCHANGE PILOT PREPARATION WITH MINISTRY OF FINANCE

Deliverable 3: Report on Assessment of Potential Impacts of the Proposed Carbon Trade Exchange Pilot Model in Vietnam

November 2025

1. Introduction of Deliverable 3

2. Regulatory and institutional baseline

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1. Introduction of Deliverable 3 (1)

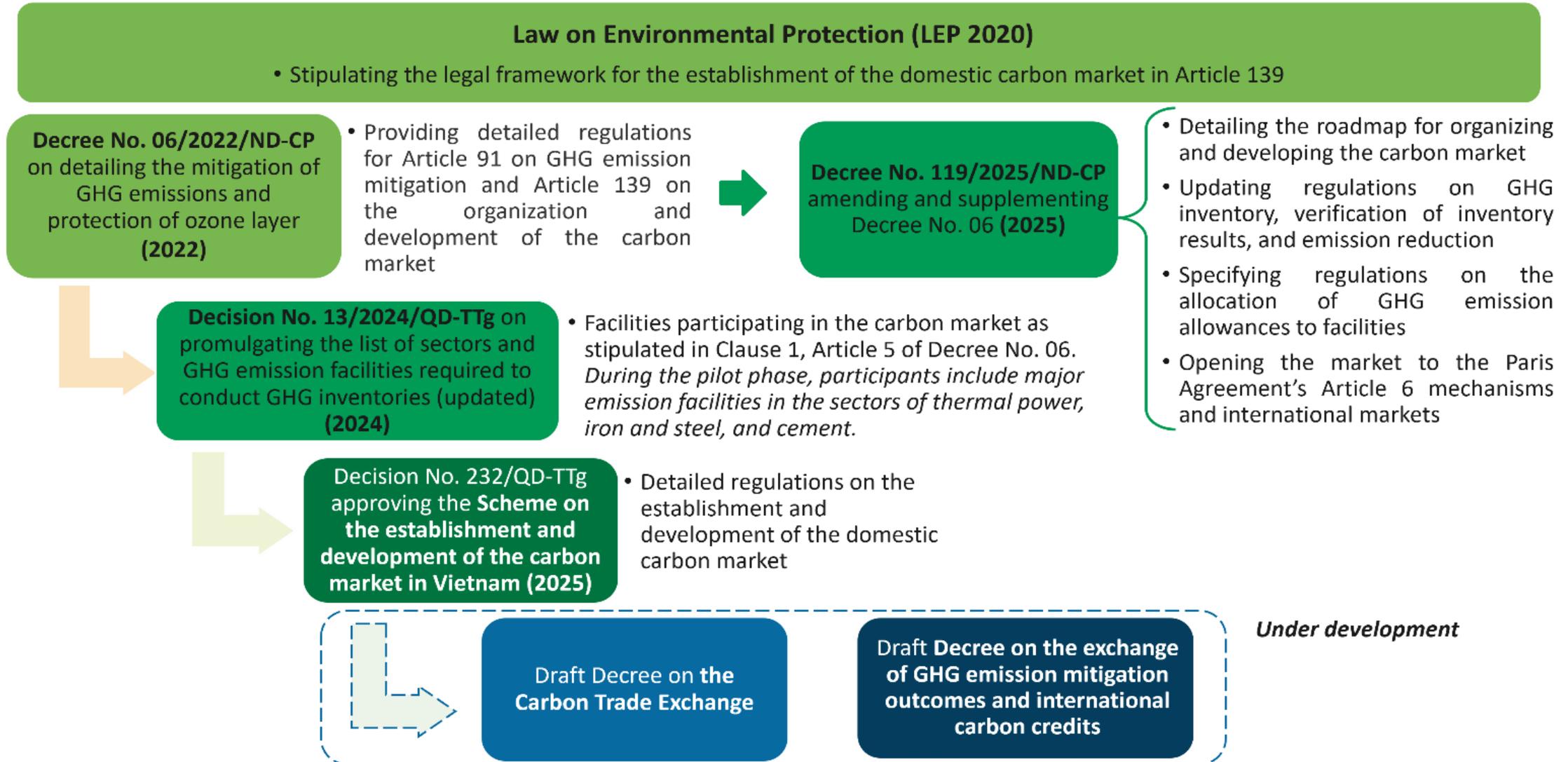
- **Objective:** Evaluate policy impacts of Vietnam's proposed pilot CTX to inform evidence-based policymaking and support its effective development and implementation.
- **Regulatory basis:** Assessment follows the 2024 Law on Public Investment (Article 77), requiring initial, mid-term, and final evaluations for public-investment projects.
- **Scope of evaluation:**
 - **Socio-technical status:** Review CTX operational structure and ETS policies under different NDC scenarios to form assumptions for financial, socio-economic, and environmental analysis.
 - **Socio-economic impacts:** Assess financial performance and wider socio-economic effects (employment, income, prices, gender, etc.) during pilot (2025–2028) and full operation (2029–2030).
 - **Environmental impacts:** Examine effects on GHG reductions and green transition under updated NDC scenarios (conditional & unconditional).
 - **Project sustainability:** Evaluate financial sustainability, including fee/non-fee mechanisms and allowance auctions, and determine appropriate investment scale.
 - **Lessons learned:** Review experience from investment policy, project decisions, implementation, and CTX operation.

1. Introduction of Deliverable 3 (2)

- **Methodology**
 - **Mixed-method approach:** Combines qualitative and quantitative methods to ensure scientific rigor and practical relevance.
 - **Regulatory review:** Examines existing laws, decrees, and policies; identifies overlaps/gaps; assesses alignment with international commitments.
 - **Cost-Benefit & Effectiveness Analysis (NPV, ENPV):**
 - Monetises CTX costs (CAPEX, OPEX), revenues, and indirect benefits (GHG reduction, co-benefits, compliance costs).
 - Uses NPV/ENPV, scenarios, and sensitivity analysis to assess financial and socio-economic feasibility.
 - **Data sources:** Legal documents, domestic/international experience, and detailed datasets in Section 3 & Annexes.
 - **Stakeholder consultation:** Workshops and expert discussions with MOF, MAE/DCC, HNX, and domestic/international specialists.
 - **SWOT analysis:** Identifies strengths, weaknesses, opportunities, and threats affecting CTX implementation.
 - **Policy benchmarking:** Compares Vietnam's design with international ETSs to identify gaps, administrative impacts, and improvement opportunities.

2. Regulatory and Institutional baseline (1)

Overview of the legal framework for the development of the carbon market in Vietnam



2. Regulatory and Institutional baseline (1)

Summary of roles of key CTX actors

Entity	Core Roles	Relevance to Cost-Benefit Analysis
MAE	Market oversight; carbon-unit integrity; inspections	Drives compliance-cost assumptions & commodity-integrity requirements
SSC (MOF)	Financial supervision; co-inspections; receives bank incident reports	Creates surveillance/reporting obligations → operator OPEX
VNX	Issues rulebook; supervises HNX & trading members	Recurring OPEX; basis for future fee schedule
VSDC	Depository & settlement; supervises depository members	CAPEX/OPEX for settlement infrastructure; post-pilot fee items
HNX	Operates trading system; front-line surveillance	Trading-engine & data-system CAPEX/OPEX
Settlement banks	Payment processing; incident reporting	Transaction-related costs & working-capital assumptions
Securities firms (trading/depository members)	Client access; order validation; asset segregation	Basis for liquidity assumptions & feasible fee design

3. Economic impact (1)

Investment-cost profile

ID	Component (Operator)	Scope of procurement / configuration	Key deliverables (outputs)	Key interfaces
A	Trading system build-out (HNX)	Configure instruments, order workflows (incl. negotiated trades), controls, reporting, testing, training	Matching & order handling; price bands/halts; trade reports; basic market data (Scenario A) / real-time feed (Scenario B)	HNX → VSDC (trade feed); MAE/NRS (unit eligibility)
B	NRS integration (MAE)	Eligibility checks; account sync; data exchange; APIs	Registry connectors; eligibility validation; periodic synchronisation	NRS ↔ HNX; NRS ↔ VSDC
C	VSDC & settlement-bank integration (VSDC)	DvP flows; reconciliation; exception handling	DvP interface; settlement confirmations; exception queues	HNX ↔ VSDC; VSDC ↔ settlement banks
D	Market-surveillance tooling (HNX/VNX)	Rules engine, alerts, case management, audit trails	Threshold & pattern rules; alert triage; case files; audit logs	HNX ↔ VNX; reports to SSC/MAE
E	Cybersecurity & hardening (HNX/VSDC)	IAM/PAM, key management, penetration tests, disaster recovery	IAM/PAM; PKI/HSM setup; pen-test reports; DR runbooks	All CTX components
F	Market data & analytics (HNX)	Real-time feed, tick history, operator dashboards	Pub/sub feed; tick store; ops dashboards	HNX → members/VNX; archival
G	Member onboarding portal & documentation (HNX/VSDC)	Onboarding workflows; KYC/AML hooks; API docs; sandbox	Portal; developer docs; test environment	Members ↔ HNX/VSDC
H	Training & change management (HNX/VSDC/MAE)	Run-books; member training; cutover exercises	Training packs; SOPs/run-books; go-live rehearsal	All operators & members
I	Project management, QA & UAT (Project team)	Planning; test management; acceptance; go-live	Project plan; test cases; UAT sign-off; cutover checklist	All vendors & operators
J	Platform infrastructure (HNX/VSDC)	Hardware/cloud provisioning; networks	Compute/storage/network; observability	All CTX components
K	Contingency (Project)	Budget for integration variance and security fixes	Change budget; issue remediation	Cross-cutting

✓ **Scenario A delivers essentials (negotiated trades, end-of-day reporting, threshold-based surveillance).**

✓ **Scenario B adds real-time data, pattern-based surveillance, enhanced resilience and security.**

3. Economic impact (2)

Implementation scenarios

No	Title of cost item	Feature		Costs (USD)		Sources
		Scenario A	Scenario B	Scenario A	Scenario B	
1	Trading Platform	Minimum viable emissions trading platform with core/essential functions; simple configuration, no complex customisations.	Comprehensive platform with advanced features, higher throughput processing, and customisations for market requirements.	40,000	250,000	World Bank, 2025
2	Development Process	Fixed end-to-end software development process	Fixed end-to-end software development process (same as low scenario).	30,000	30,000	RisingMax, 2024
3	User Interface / User Experience Design for a Centralized Exchange (UI/UX for CEX)	Basic UI/UX for clarity and ease of use without premium customisations.	Premium, fully customised UI/UX with professional charting tools (e.g., TradingView) and performance tuning.	20,000	50,000	Innowise, 2025
4	Blockchain Infrastructure	Minimum public blockchain setup to enhance transparency and prevent double-counting of carbon credits.	More robust public blockchain with customisations/optimisations for performance and scalability.	40,000	50,000	RisingMax, 2024
5	Security and Encryption for a Centralized Exchange	Essential controls: DDoS protection, two-factor authentication (2FA).	Enterprise-grade controls: cold storage, smart-contract auditing (if blockchain is applied), and advanced data-protection protocols.	50,000	150,000	Innowise, 2025
6	Deployment and Hosting for a Centralized Exchange	Basic deployment/hosting on dedicated servers or entry-level cloud services.	Scalable cloud deployment with load balancing and redundancy for high traffic and transaction volumes.	10,000	50,000	Innowise, 2025
7	Total Capital Expenditure (CAPEX)	Basic CTX features for a cost-minimising pilot while ensuring operational capability.	High investment vs low scenario; advanced features, comprehensive security, and modern infrastructure geared to international-standard operations.	40,000	250,000	World Bank, 2025
Total CAPEX				190,000	580,000	

3. Economic impact (3)

Operating cost profile

CTX cost items and features under each Scenario

No	Title of cost item	Feature	
		Scenario A	Scenario B
1	Personnel Costs	Salaries and benefits for the CTX operation, management, and support team. This item assumes the average staff salary cost, with a reference level from the average salary of Ho Chi Minh City Stock Exchange (HoSE) employees in 2021. A 5% annual increase is applied to adjust for inflation and career development.	
2	Office Rental Costs	Expenses for office space or facilities for the exchange's operations. This analysis is based on an assumed office area of 400 m ² , calculated according to the standard office space allocation per staff member and the additional area required for common facilities such as meeting and function rooms. This rental price is based on average statistical data for Hanoi.	
3	Software Maintenance and Updates (CEX):	<ul style="list-style-type: none"> Recurring costs to maintain, fix bugs, and upgrade the exchange's centralized software system. Ongoing costs to protect the system from cyberattacks and ensure data security. 	
		Basic maintenance costs, with an assumed cost of USD 120,000/year (equivalent to USD 10,000/month).	More frequent updates, complex system upgrades, and more in-depth technical support, necessary to maintain competitiveness and comply with new standards, with an assumed cost of USD 360,000/year (equivalent to USD 30,000/month).
4	Technology Maintenance and Upgrades	Represents a minimum investment in basic security protocols, with a cost of USD 20,000/year.	High Scenario: Reflects the implementation of comprehensive, continuously updated security solutions, which may include external security audit services, with a cost of USD 100,000/year.
5	Marketing and Advertising:	Costs to attract carbon credit buyers and sellers and enhance brand recognition for the exchange. This expenditure aims to attract participants (carbon credit buyers and sellers) and build brand recognition for the exchange.	
		Scenario A has a cost of USD 20,000/year	Scenario B has a cost of USD 500,000/year, reflecting a more aggressive and comprehensive marketing strategy.

3. Economic impact (4)

OPEX items and total estimated under each Scenario

	Item	Unit	Year 0 (2025)	2026	2027	2028	2029	2030	Source
I	Scenario A								
Personnel and Premises	Personnel Costs	USD/year		118,588	124,518	130,744	137,281	144,145	Le Quang Hung, 2021
	Office Rental Costs	USD/year	96,627	96,627	96,627	96,627	96,627	96,627	Thu Vien Phap Luat, 2025
Technology Maintenance and Upgrades	Software Maintenance and Updates (CEX)	USD/year		120,000	120,000	120,000	120,000	120,000	Innowise, 2025
	Cybersecurity and Data Protection	USD/year		20,000	20,000	20,000	20,000	20,000	Henry Sheykin, 2025
Marketing and Market Development Costs	Marketing and Advertising	USD/year	20,000	20,000	20,000	20,000	20,000	20,000	Henry Sheykin, 2025
Total OPEX (Scenario A)		USD/year	116.627	375.216	381.145	387.371	393.908	400.772	
II	Scenario B								
Personnel and Premises	Personnel Costs	USD/year		142,306	149,421	156,892	164,737	172,974	Le Quang Hung, 2021
	Office Rental Costs	USD/year	96,627	96,627	96,627	96,627	96,627	96,627	Thu Vien Phap Luat, 2025
Technology Maintenance and Upgrades	Software Maintenance and Updates (CEX)	USD/year		360,000	360,000	360,000	360,000	360,000	Innowise, 2025
	Cybersecurity and Data Protection	USD/year		100,000	100,000	100,000	100,000	100,000	Henry Sheykin, 2025
Marketing and Market Development Costs	Marketing and Advertising	USD/year	500,000	500,000	500,000	500,000	500,000	500,000	Henry Sheykin, 2025
Total OPEX (Scenario B)		USD/year	596,627	1,198,933	1,206,049	1,213,520	1,221,364	1,229,601	

3. Economic impact (5)

Revenue analysis

Key revenue and sources used in the analysis

No	Title of revenue item	Feature
1	Carbon Trading Members' management fees	<ul style="list-style-type: none"> This revenue stream comes from recurring fees paid by organizations or individuals to maintain membership on the exchange. The fee level is assumed to be VND 20 million, equivalent to the amount stipulated in Decision 1541/QD-BTC dated 2025 by the Minister of Finance on Service Fees in the Securities Sector applicable at the VNX and its subsidiaries, and the VSDC. The number of participating members is assumed at 538 that is projected to increase 20% annually. This total is used to scale access, onboarding, and potential fee base (the details of estimation for 538 are presented in Section 3.4.1).
2	Initial Carbon Credit Trading Registration Fees	This fee is assumed to be VND 10 million/enterprise, equivalent to the amount stipulated in Decision 1541/QD-BTC dated 2025 by the Minister of Finance on Service Fees in the Securities Sector applicable at the VNX and its subsidiaries, and the VSDC.
3	Carbon Credit/ Allowance Trading Fees on the Exchange	This revenue stream is assumed based on a rate of 0.0027% of the total transaction value, according to Decision 1541/QD-BTC dated 2025. An assumed credit/allowance price of USD 2.6 per ton is adopted (for 30% offset -ETS30), informed by analysis of Vietnam's carbon credit trading and mitigation outcomes under alternative scenarios from a separate ETP project (Loan, N., et al., 2025b).
4	Carbon Credit Trading Fees on the Exchange	This revenue stream is structured based on Joint Circular 58/2008/TTLT-BTC-BTN&MT, guiding Decision 130/2007/QD-TTg on some financial mechanisms and policies for investment projects under the Clean Development Mechanism. Accordingly, a fee of 1.2% of the total credits sold is applied.
5	National Allocation Carbon Allowance Auction Fees	This auction fee is applied at a rate of 0.013%, similar to the provision in Decision 1541/QD-BTC dated 2025. This revenue stream is only assumed to apply from 2029.

3. Economic impact (6)

Assumptions in CTX investment efficiency assessment

1. The CTX investment-efficiency assessment is based on NPV and ENPV for the pilot period 2025–2028 and the initial operational period 2029–2030, covering direct costs and revenues as well as externalities such as emission reductions and air-quality co-benefits.
2. Participation is estimated at around **538** entities in 2025–2026, with assumptions on average transaction prices (USD **2.6/tCO₂**), allocation design, compliance mechanisms, and the auctioning schedule starting in 2029.
3. CAPEX/OPEX scenarios, trading-volume assumptions, post-2029 fee schedules, and macroeconomic parameters (**10% discount rate, 7.3% GDP growth**) are integrated into the model to determine the financial and economic effectiveness of the CTX.

Overview of Potential Trading on the Carbon Market Platform

Year	Potential Market Transactions				Potential Revenue			
	Unconditional NDC Implementation		Conditional NDC Implementation		Unconditional NDC Implementation		Conditional NDC Implementation	
	Carbon credit (MtCO ₂ e)	Allowance (MtCO ₂ e)	Carbon credit (MtCO ₂ e)	Allowance (MtCO ₂ e)	Carbon credit (MtCO ₂ e)	Allowance (MtCO ₂ e)	Carbon credit (MtCO ₂ e)	Allowance (MtCO ₂ e)
2025	11.31	0	15.40	4.3	18.10	-	30.79	8.55
2026	15.55	0	16.44	4.8	20.21	-	26.31	7.73
2027	15.38	0	17.74	5.4	19.99	-	28.38	8.64
2028	15.30	0	18.10	6.0	18.36	-	30.76	10.14
2029	15.32	0	17.98	6.5	16.85	-	37.75	13.71
2030	15.43	0	17.66	7.1	15.43	-	38.85	15.61
Total	88.28	0.00	103.31	34.09	108.94	0.00	192.85	64.38

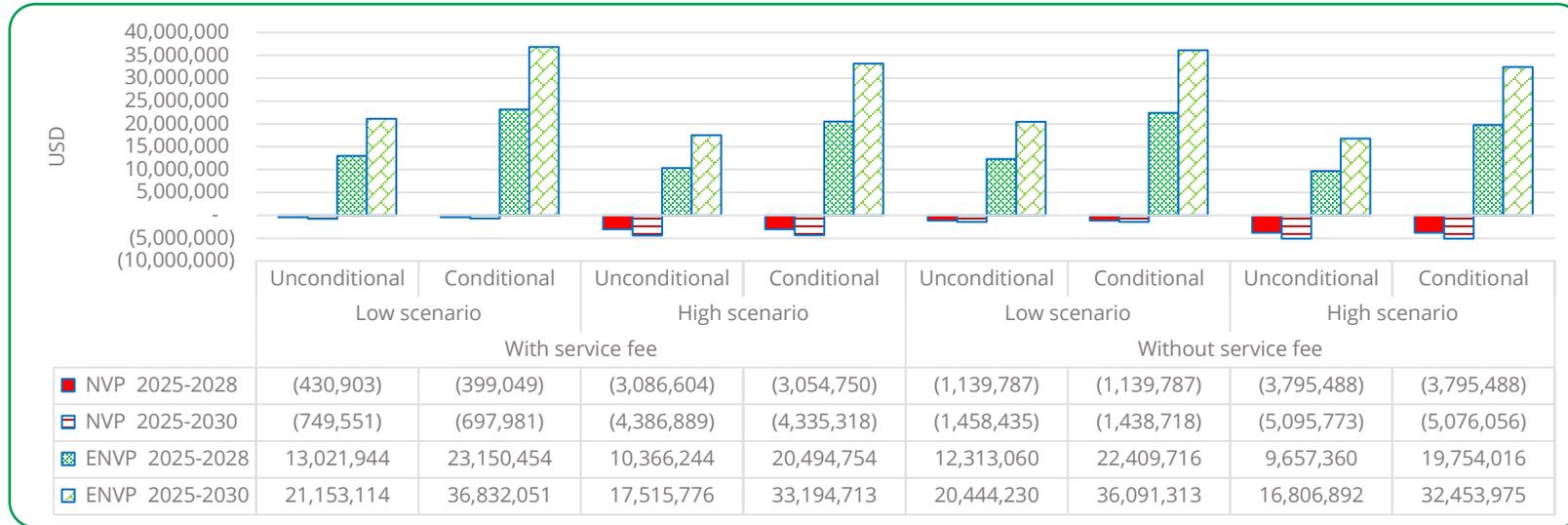
Source: Loan, N., et al., 2025a

ETS30 slightly reduces GDP losses (about **0.001 %/year**), with **greater benefits under the Conditional NDC (0.0019 – 0.0021 %/year)**. GDP grows from **USD 511 billion (2025)** to **USD 727 billion (2030)**, and **GDP gains from CTX/ETS are higher under the Conditional NDC**.

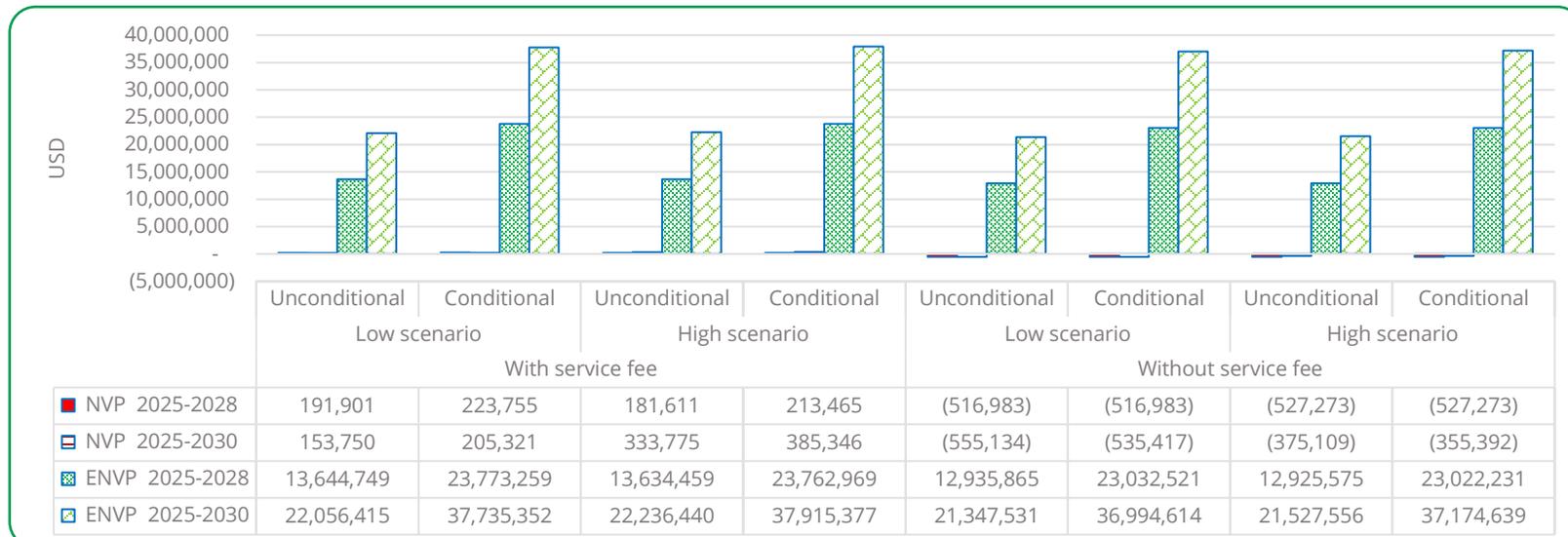
3. Economic impact (7)

Analysis results

Comparison of Financial and Economic Effectiveness Across Option 1



Comparison of Financial and Economic Effectiveness Across Option 2



4. Social impact (1)

1. Labour Market Impacts

- CTX pilot creates **120–150 new specialised jobs** across MAE, MOF/SSC, HNX, VSDC, and enterprises (MRV, registry, trading oversight, verification, brokerage).
- Builds **new human-capital niches** in carbon accounting, environmental finance, and market supervision.
- Economy-wide employment effects **cannot yet be quantified** due to limited sectoral coverage (power, cement, steel) and lack of granular labour data.

2. SME Distributional Effects

- ETS may raise consumer prices by **0.02–0.05%**, with SMEs most exposed due to thin margins and low energy efficiency.
- SMEs risk higher input costs (electricity, materials), affecting liquidity and competitiveness.
- Requires **targeted support**: information, technical assistance, and green-finance access to manage indirect cost pressures.

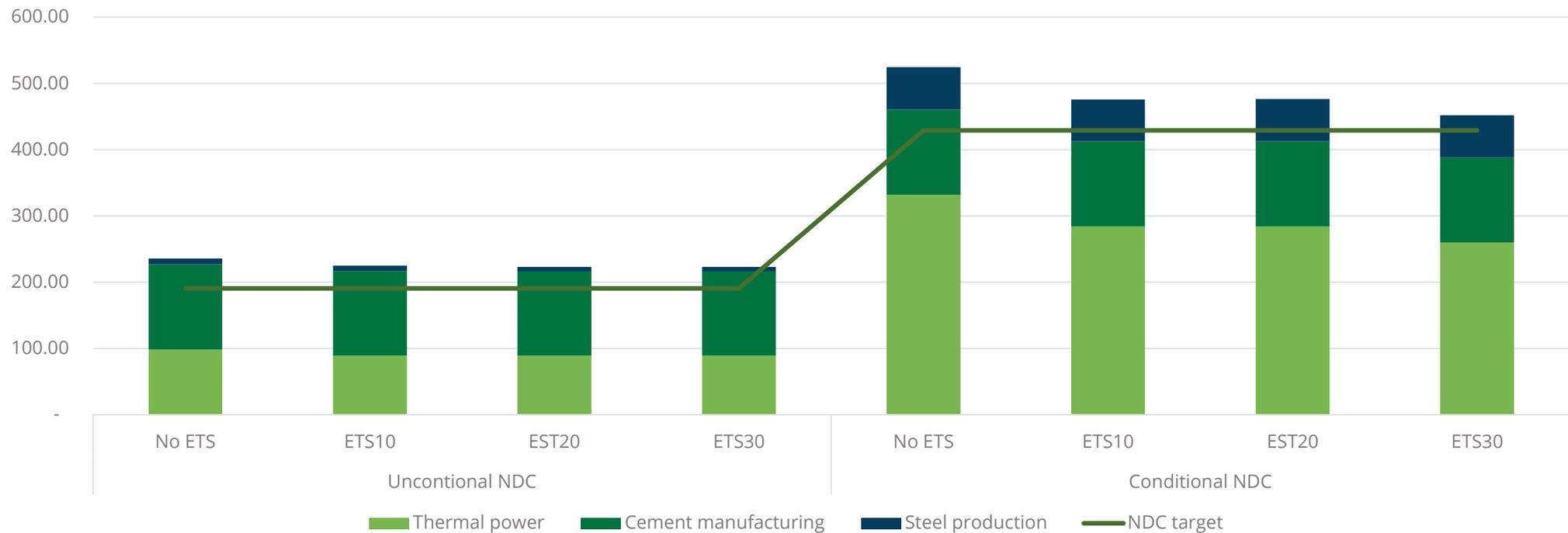
3. Gender Equality Implications

- Pilot sectors are **male-dominated** (women \approx 19–23% of workforce), limiting direct gender effects.
- CTX creates new roles (MRV, data, verification, finance) with **higher gender-balance potential**.
- Gender-responsive measures needed: **30%+ female participation** in training, targeted recruitment, partnerships with universities, and gender-disaggregated monitoring.

5. Enviroment impact (1)

GHG - reduction

- All scenarios (ETS10/20/30) meet or exceed NDC targets.
- Unconditional NDC reductions:
 - No ETS: **235.84 MtCO₂**
 - ETS10: **225.07** | ETS20: **223.32** | ETS30: **223.32-223** (projected)
- Conditional NDC reductions:
 - No ETS: **524.41 MtCO₂**
 - ETS10: **475.92** | ETS20: **476.44** | ETS30: **452.17 MtCO₂**



GHG emission reductions under policy scenarios

5. Environment impact (2)

Co-benefits

- 1. Environmental & health benefits:** Reduces SO₂, NO_x, and PM_{2.5} through cleaner production; helps lower healthcare costs and health risks in industrial regions—where air pollution contributes to ~60,000 premature deaths annually.
- 2. Industrial upgrading & export competitiveness:** Stimulates investment in low-carbon technologies and energy efficiency; helps Vietnamese exporters (especially steel and cement) prepare for the EU CBAM through better MRV systems and transparent emissions data.
- 3. Green-finance development:** The CTX builds core market infrastructure, enabling future financial instruments such as carbon-linked bonds and sustainability-linked loans, while enhancing transparency and financial-sector capacity.
- 4. Improved governance & public awareness:** Strengthens inter-agency coordination, data reliability, and evidence-based policymaking, building trust in Vietnam's low-carbon transition.

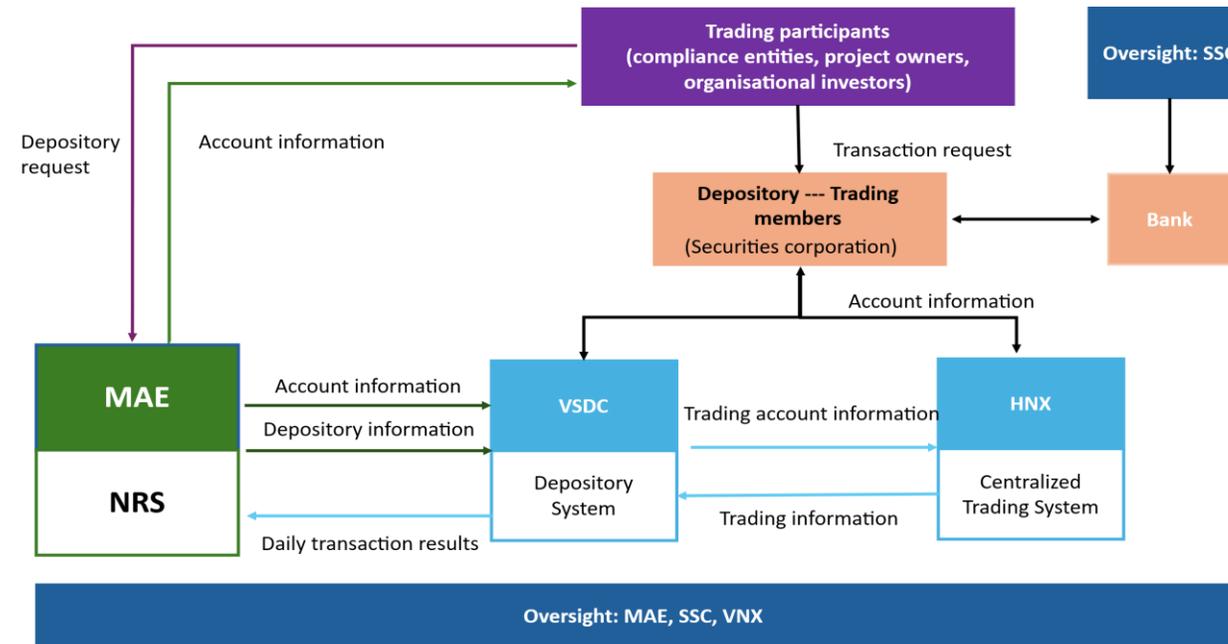
Although near-term impacts are modest, the ETS/CTX pilot serves as a catalyst for cleaner air, better health, stronger competitiveness, and financial innovation—supporting a sustainable and inclusive green transition.

6. Administrative & Legal impact (1)

1. Institutional & Governance impact

The CTX establishes a new climate-governance structure, requiring strong coordination between MAE, MOF/SSC, HNX, and VSDC.

Institutional arrangement to establish and operate the CTX in the pilot phase



Source: Elaborated by Consultant based on the draft Decree

2. Administrative impact

- The draft Decree sets a coherent set of procedures for registration, depository, trading, settlement, and membership management.
- Procedures use consistent legal terminology and clearly identify regulated entities and competent authorities.
- However, administrative processes remain complex and lack standardised templates, timelines, and documentation requirements.

6. Administrative & Legal impact (2)

3. International Obligations & WTO Alignment

- CTX must align with Vietnam's NDC, with transparent MRV and strong environmental-integrity safeguards.
- Market rules must comply with WTO disciplines (GATT/TBT/SCM/GATS): non-discrimination, benchmark-based and time-limited free allocation, and neutral rules for brokers, depositories, and settlement banks.
- Methodologies and unit-eligibility criteria should be publicly disclosed.

4. Legal & Regulatory Impacts

- The legal nature of carbon units remains undefined; clarification is needed for taxation, accounting, collateral, and liability.
- Dispute-resolution mechanisms across MAE-SSC-HNX-VSDC are not yet established.
- Detailed rules on auctions, fees, credit eligibility, MRV, and compliance timelines remain under preparation.
- Stronger legal alignment is required across environmental, financial, and trade laws.

5. International & Geopolitical Impacts

- Enhances Vietnam's credibility in NDC implementation and improves access to climate finance.
- Helps exporters prepare for and mitigate EU CBAM impacts, strengthening trade competitiveness.
- Establishes a foundation for Article 6.2 cooperation and future linkage with regional carbon markets (ASEAN/Asia).
- Supports green-finance development and increases global investor confidence, while requiring careful management of cross-border risks.

7. Recommendation (1)

1. Fiscal transition plan & diversified revenue sources

- **Introduce phased service fees** starting from 2029 (listing & transaction fees).
- **Establish allowance-auction revenues** (5–10% of allowances) beginning in 2029.
- **Reinvest compliance-related revenues** (penalties, late payment interest, fines) into a **Carbon Market Development Fund**.
- **Mobilise international climate finance** to support system upgrades and training during transition.

2. Liquidity enhancement & market confidence

- **Adopt price-stabilisation tools:** Auction Reserve Price (ARP) and Cost Containment Mechanism (CCM).
- **Expand credit supply** by accelerating approval of offset methodologies and streamlining MAE project registration.
- **Consider accrediting market makers** (brokers/financial institutions) during full operation.

3. Efficiency & digital-infrastructure improvements

- **Automate NRS-HNX-VSDC linkage** for real-time data exchange and reconciliation.
- **Offer value-added digital services** (analytics, emissions tracking, compliance tools).
- **Contract specialised cybersecurity providers** via performance-based agreements.

7. Recommendation (2)

4. Institutional & governance strengthening

- **Formalise cost-sharing via SLAs** between MAE, MOF/SSC, HNX, and VSDC.
- **Adopt performance-based budgeting** tied to KPIs (trading volume, compliance rate, uptime, audits).
- **Enhance transparency** through annual publication of CTX financial statements and trading statistics.

5. Legal foundations

- **Clarify the legal classification of carbon units** (for taxation, accounting, collateral, insolvency treatment, etc.).

6. Mid-term review & adaptive regulation

- **Conduct a comprehensive mid-term evaluation in 2027** on fiscal sustainability, market performance, and regulatory impact.
- **Adjust fee schedules and operational rules** based on review findings.
- **Coordinate with Deliverable 4** to strengthen transaction monitoring, market supervision, and risk management.

THANK YOU!

