

EXCHANGE-TRADED FUNDS AND EXCHANGE-TRADED NOTES – SUSTAINABLE INVESTING APPLICATIONS

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Abstract: This paper, which summarizes the findings of a recently published book, outlines the main characteristics and functioning of exchange-traded notes (ETNs), including their scale, issuers, assets, listing venues, benchmarks, fee structures, and investment objectives, as well as their interconnections with other segments of the financial system. It analyzes comprehensive empirical evidence covering the full universe of ETNs worldwide, documenting their properties at both the individual instrument and country levels. The study situates ETNs within a dominant trend in modern investment practice—the growing emphasis on sustainability and environmental, social, and governance (ESG) considerations. It evaluates the extent to which ETNs comply with sustainability criteria and explores their potential role in ESG-oriented investment strategies, drawing on selected case studies. In this context, the advantages and limitations of ETNs are critically assessed through comparisons with alternative investment vehicles and the regulatory environments of the jurisdictions in which they are listed.

Keywords: sustainable investing, ESG investing, exchange-traded products, exchange-traded funds, exchange-traded notes.

INTRODUCTION

The paper investigates the role, characteristics, risks, markets, and sustainable finance potential of exchange traded notes (ETNs) within the broader ecosystem of exchange traded products (ETPs). Despite the global growth of ETPs—especially ETFs—ETNs remain understudied in academic and professional literature. The primary purpose is to offer the first comprehensive, global and comparative assessment of ETNs with a special focus on their applicability in sustainable/ESG investing. The core aim is to evaluate ETNs as instruments for sustainable investing and to assess their micro and macro level implications for sustainable development. Supplementary objectives include:

1. Identifying and analysing key attributes, mechanisms, and categories of ETNs, and evaluating global and regional ETN market development.
2. Examining determinants shaping the development of ETN markets and analysing the impact of ETNs on financial systems, especially their potential to affect volatility.
3. Offering empirical, country level evidence on ETN markets, including structures, time paths, and substitution with ETFs and ETCs.
4. Assessing ETN features that enable or limit their application in sustainable/ESG investing, including detailed reviews of existing sustainability related ETNs.

METHODOLOGY

The methodology combines:

1. Comprehensive Literature Review

The study synthesizes all available academic and industry research on ETNs, their mechanisms, risks, exposures, and market structures. It also reviews literature on sustainable finance, ESG assessment methods, sustainable ETPs, and regulatory developments.

2. Empirical Global Dataset Analysis

A unique global database of over 1300 ETNs was constructed using LSEG/Refinitiv data. ETNs were classified according to strict definitional criteria; ambiguous products were cross verified using provider documentation.

Analytical procedures include:

- global, regional, and country level ETN market assessment (assets, listings, domicile, exposures, time evolution),
- cross product comparisons between ETNs, ETFs, ETCs, and ETVs,
- case studies of representative ETNs,
- examination of tracking performance and mispricing mechanisms,
- sustainability assessment through analysis of ETN investment aims, index composition, and regulatory classifications (SFDR).

3. Qualitative Analysis of Regulatory and Sustainability Frameworks

The study interprets EU and global sustainability regulations (SFDR, EU Taxonomy, NFRD, UNPRI, GFANZ) to evaluate their applicability to ETNs.

FINDINGS

1. ETNs: Structure, Mechanisms, and Distinctiveness

ETNs are debt securities offering passive exposure without holding underlying assets. They include features such as long maturities (20–30 years), redemption clauses, and exposure replication via derivatives. Users face issuer credit risk, closure risk, and potentially large bid–ask spreads. ETNs structurally resemble synthetic ETFs but introduce additional counterparty risk.

2. Global Market Features: Small, Fragmented, Niche Driven

Global ETN assets peaked in 2013–2015 (>20 bn USD) but fell below 5 bn USD by 2022. The US market remains dominant (≈4.4 bn USD), followed by Italy, Germany, and the UK, but all are small relative to ETF markets (>9 trn USD).

ETNs represent <1% of global ETP assets, indicating niche appeal, usually tied to specialized exposures such as volatility, commodities, currencies, crypto assets, and MLPs.

3. Categories of ETNs: Wide but Uneven Development

Key exposure categories include:

- Currency ETNs, including crypto ETNs (fastest growing segment in Europe).
- Equity ETNs, often tracking sectors such as energy infrastructure.
- Volatility ETNs (VIX linked), central in recent market events.
- Commodity ETNs, especially in the US.
- Alternative investment ETNs (hedge funds, MLPs, private equity).

There are very few ESG or sustainability linked ETNs, and many earlier products were later redeemed.

4. Determinants of ETN Market Development

Demand side drivers include access to hard to reach assets (e.g., volatility, crypto, currency exposures), speculative motives, liquidity preferences, and tax considerations. Supply side factors include availability of underlying derivatives, issuer profit motives, regulatory permissiveness, and clearing/settlement rules. Certain national cases (South Korea, Israel) show how local regulatory or market features can strongly accelerate or suppress ETN development.

5. Risks and Microstructure Issues

ETNs exhibit frequent mispricing, persistent tracking errors, and arbitrage limitations arising from infrequent creation/redemption.

Volatility ETNs, through rebalancing and hedging mechanisms, can affect underlying futures prices, contributing to market instability.

A major example is Volmageddon (5 February 2018), where inverse VIX ETNs collapsed, amplifying volatility spikes through mechanical rebalancing flows.

6. ETNs in Sustainable/ESG Investing: Very Limited but Non Zero Potential

Only a handful of ETNs qualify as ESG focused, typically tracking indexes linked to carbon markets, gender equity, or disability inclusion.

Most ETNs (e.g., commodity or currency notes) are not directly ESG aligned, though indirect sustainability channels exist—for example, ETNs tracking carbon emissions markets or clean energy related commodity baskets.

The SFDR classification confirms the minimal sustainability penetration: all ETNs with available designations are classified as Article 6 (non ESG), with Articles 8 or 9 effectively absent.

CONCLUSIONS

Discussion

1. ETNs as Financial Innovation with Mixed Systemic Implications

ETNs contribute to financial innovation by broadening access to complex exposures. Yet their complexity, issuer dependency, and sometimes destabilizing market effects highlight the trade offs of their expansion. The volatility ETN segment exemplifies this duality: while enabling investor access to volatility risk premia, it has repeatedly generated systemic spillovers, as seen during Volmageddon.

2. Sustainability Perspectives: Structural Barriers

ETNs face inherent barriers to widespread ESG adoption:

- They are debt products, not fund structures, limiting ESG disclosure applicability.
- They lack diversified underlying portfolios—often tracking derivatives or single commodities—making ESG evaluation difficult or irrelevant.
- Regulatory frameworks (e.g., SFDR) do not require or encourage sustainability disclosures for ETNs as strongly as for ETFs.

These factors explain why ESG ETNs represent only a microscopic segment of the ETN universe.

3. Strategic Advantages: Niche Opportunities

Despite limitations, ETNs can serve specific sustainable investing niches:

- Carbon market ETNs provide direct exposure to emission allowances.
- Renewables linked commodity ETNs support energy transition financing.
- Social theme ETNs (e.g., disability or gender indices) represent early but notable experiments.

Thus, ETNs can complement—but not substitute—ESG ETFs in advanced sustainable finance portfolios.

Limitations

- Low data availability: Many ETNs lack consistent information on assets, exposures, and sustainability metrics; some markets (e.g., France, Canada, Norway) show missing or unreliable data.
- Limited ESG disclosure: Sustainable classifications cannot be consistently assigned to ETNs, leading to reliance on index descriptions and provider statements.
- Market size constraints: Due to small global ETN markets, especially in ESG relevant categories, econometric analysis was not feasible.
- Product heterogeneity: Differences in ETN structures, exposures, liquidity, and regulatory treatment complicate cross market comparisons.

Practical Implications

For Investors

- ETNs offer unique exposures valuable for diversification (volatility, crypto, commodities, currencies) but require awareness of credit risk, closure risk, and tracking deviations.
- ESG oriented investors may use the limited set of carbon market ETNs or social/leadership themed ETNs for thematic allocations.

For Asset Managers and Issuers

- There is significant room for innovation in ESG ETNs, especially in climate related exposures, biodiversity markets, and socially oriented indexes.
- ETN structures can support precise thematic exposure where ETF implementation would be too costly or complex.

For Regulators

- Volatility ETNs demonstrate that transparent regulation of rebalancing mechanisms and early redemption clauses is essential to prevent systemic stress events.
- Harmonizing sustainability disclosure standards for ETNs could enable clearer assessment of their ESG alignment.

Impact on Society and Policy

- ETNs may indirectly support sustainable development, particularly through carbon allowance ETNs and commodity ETNs linked to energy transition.
- However, volatility ETNs may undermine financial stability, posing broader social risks by magnifying market stress and affecting retirement portfolios and institutional investors.
- ETNs' limited ESG penetration suggests they currently play only a minor social role in steering capital toward sustainable outcomes; policy incentives could alter this.

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