# Fagri Digital: Executive Summary

# Revolutionizing Carbon Markets for a Sustainable Future

The global effort to mitigate climate change critically relies on the efficacy of carbon markets. However, the current landscape is significantly hindered by systemic challenges, including the pervasive issues of double counting, the deceptive practice of greenwashing, and a fundamental lack of data integrity and transparency. These deficiencies undermine the credibility and effectiveness of climate initiatives, leading to misallocated resources and delayed meaningful action.

Fagri Digital is positioned to fundamentally transform this environment by strategically leveraging Distributed Ledger Technology (DLT), with a particular focus on its proprietary **G8Chain**, which is based on EVM-compatible blockchain technology. This technological foundation is designed to establish a new paradigm for CO2 legislation compliance, enhanced traceability, and expanded market accessibility. The platform offers an immutable, verifiable, and transparent ecosystem for carbon accounting and trading, directly addressing the identified market failures. With a meticulously planned rollout commencing in Italy, progressing across Europe, and ultimately aspiring to establish a unique global standard, Fagri Digital is committed to democratizing carbon markets. This initiative aims to enable broad participation for all stakeholders, ranging from large corporations to small and medium-sized enterprises (SMEs) and individual investors, fostering a truly trustworthy and impactful global carbon economy.

## II. The Global Regulatory Landscape for CO2 and Digital Innovation

The imperative for advanced CO2 management solutions is underpinned by a rapidly evolving legal and policy environment that increasingly integrates digital technologies. This section details the international, European, and Italian frameworks shaping climate action and the role of innovation.

### A. International Frameworks for Climate Action

International cooperation on climate change has progressed through several landmark agreements, each building upon its predecessor to establish a global response.

The **United Nations Framework Convention on Climate Change (UNFCCC)**, adopted in 1992 at the Earth Summit, stands as the foundational international treaty for addressing climate change. Its core objective is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system, within a timeframe that allows ecosystems to adapt naturally and enables sustainable development.1 Under the UNFCCC, parties convene regularly at the Conference of Parties (COP) to advance climate action and address emerging challenges.3 A guiding principle of the UNFCCC is "common but differentiated responsibilities," which underscores the leading role developed countries are expected to play in combating climate change.1

Building on the UNFCCC, the **Kyoto Protocol**, adopted in 1997 at COP3, represented a significant step forward by legally binding a limited set of developed countries to specific greenhouse gas emission reduction targets. These commitments spanned two periods: 2008-2012 and 2013-2020.2 Notably, the United States chose not to ratify the Protocol, primarily due to its legally-binding nature, which contributed to challenges in subsequent international climate negotiations.1 Despite its limitations, the Kyoto Protocol highlighted the critical need for robust accounting mechanisms in international climate agreements.

The **Paris Agreement**, adopted on December 12, 2015, at COP21, marked a pivotal moment in global climate governance. This legally binding international treaty superseded the Kyoto Protocol in setting comprehensive global climate goals.2 Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century "well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius".1 The Agreement introduced a "bottom-up" approach, where all 195 UNFCCC participating member states and the European Union submit their own Nationally Determined Contributions (NDCs), outlining their respective climate action plans.1 Key provisions of the Paris Agreement include a collective greenhouse gas mitigation framework, an accountability framework to track progress, requirements for adaptation planning, and a collective financial obligation for developed countries to provide at least $100 billion annually to developing countries by 2025.1 Furthermore, Article 6.2 of the Paris Agreement specifically addresses "corresponding adjustments" to prevent double claiming in international carbon trading, a crucial mechanism for maintaining market integrity.5

**Emerging International Climate Law and Accountability:** Recent developments indicate a growing trend towards legal accountability in climate action, moving beyond purely political negotiations. The International Court of Justice (ICJ) is issuing an advisory opinion on nations' legal obligations to address climate change and the consequences they may face for inaction. This significant case is backed by over 130 countries, including vulnerable island nations like Vanuatu, which are already experiencing severe climate impacts.6 While the ICJ's opinion will not be legally binding, it holds substantial weight as it could significantly shape future efforts to hold major emitters accountable and serve as a powerful basis for other legal actions, including domestic lawsuits.6 This development follows recent rulings from other international bodies, such as the Inter-American Court of Human Rights and the European Court of Human Rights, which have affirmed countries' legal duties to protect their populations and ecosystems from the consequences of climate change.7

The increasing engagement of international and regional courts in climate matters signals a profound shift from traditional political negotiations to a more legally-driven accountability framework. This evolution is particularly important because it moves beyond the challenges encountered with previous treaties, like the Kyoto Protocol, which struggled with universal adoption and enforcement due to its legally-binding nature for a limited set of countries.3 The potential for an ICJ advisory opinion to inform domestic lawsuits 7 creates a powerful ripple effect, meaning that states and corporations may face increased legal risk if their actions, or lack thereof, contribute to climate harm. This underscores the escalating importance of transparent and verifiable emissions data, as such data would become crucial evidence in any legal proceedings. Fagri Digital's DLT-based solution directly addresses this need for verifiable data, positioning it as a tool for proactive legal risk mitigation in a world where climate commitments are increasingly subject to judicial scrutiny.

### B. European Union's Ambitious Climate and Digital Agenda

The European Union has positioned itself as a global leader in climate action, enacting comprehensive policies and actively exploring digital innovations to achieve its ambitious environmental goals.

At the core of the EU's climate strategy is the **European Green Deal**, an overarching initiative aiming for climate neutrality by 2050. To achieve this, the EU introduced the **"Fit for 55" Package**, a set of legislative proposals designed to revise existing EU legislation to cut net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.4 It is important to note that the "net" reduction target includes carbon sinks, such as forests, which some critics argue may lead to a lower actual reduction in active emissions, potentially around 50-53%.9

A central pillar of the EU's climate policy is the **EU Emissions Trading System (EU ETS)**. Launched in 2005, it is the world's largest multi-national cap-and-trade scheme, covering approximately 45% of the EU's greenhouse gas emissions.10 Under this system, a maximum cap is set on the total amount of greenhouse gases that can be emitted by participating installations. Emission allowances, each permitting the holder to emit 1 tonne of CO2, are then either auctioned off or allocated for free, and can subsequently be traded.10 Operators are mandated to monitor and report their CO2 emissions and ensure they surrender enough allowances to cover their emissions. Failure to comply results in a penalty of €100 per tonne of excess emissions, and the names of penalized operators are publicly disclosed.8

The "Fit for 55" package significantly expands the scope and ambition of the EU ETS:

* **ETS2 (from 2027):** A new, separate Emissions Trading System (ETS2) will be introduced to cover CO2 emissions from the fuel supply to buildings and road transport. Under ETS2, accredited fuel suppliers placing fuel on the EU market will be obliged to cover these emissions upstream.8 This new system is projected to cover an additional 40% of the EU's greenhouse gas emissions.10
* **Maritime Transport:** Emissions from large ships (above 5,000 gross tonnage) calling at an EU port for voyages within the EU (intra-EU) and 50% of emissions from voyages starting or ending outside the EU (extra-EU voyages) are included in the ETS cap from 2024.8
* **Aviation:** Free emission allowances for the aviation sector will be gradually phased out, with a complete phase-out proposed from 2027 onwards.8
* **Energy-Intensive Industries:** Industrial sectors such as oil refineries, steel works, and the production of aluminum, cement, and glass will see their free allocation of allowances phased out between 2026 and 2034.8
* **Carbon Border Adjustment Mechanism (CBAM):** To prevent "carbon leakage"—where companies might move carbon-intensive production abroad to countries with less stringent climate policies—CBAM will apply from 2026, following a transitional phase from 2023 to 2025.8 This mechanism imposes tariffs on carbon-intensive imports (e.g., cement, iron and steel, aluminum, fertilizers, electricity, and hydrogen), requiring EU importers to buy CBAM certificates priced according to the weekly average auction price of EU ETS allowances.8

The **Corporate Sustainability Reporting Directive (CSRD)**, adopted in November 2022, marks a substantial expansion of mandatory sustainability reporting, replacing the less stringent Non-Financial Reporting Directive (NFRD).16

* **Scope and Timeline:** The CSRD mandates detailed Environmental, Social, and Governance (ESG) reporting for large enterprises (those with over 500 employees, €40 million in turnover, or €20 million in total assets) starting for fiscal year 2024, with reports due in 2025.17 The scope expands to include other large companies (over 250 employees, €50 million net revenue, or €25 million in assets) for fiscal year 2025 (reports in 2026), and listed SMEs for fiscal year 2026 (reports in 2027).17 By 2029, non-EU parent companies with significant EU revenues will also be covered.18
* **Reporting Requirements:** Companies are required to report detailed information on environmental, social, and governance aspects, including Scope 1, 2, and 3 value chain carbon emissions.16 The directive introduces the concept of "double materiality," which requires companies to report not only on how their activities impact sustainability issues but also on how sustainability risks and opportunities influence their financial performance.20
* **Role of Technology:** The CSRD explicitly recognizes that technology, including artificial intelligence and machine learning, will be critical for speeding up data gathering and calculations necessary for compliance.18

**EU Initiatives Promoting DLT for Climate Action:** The European Commission actively supports the use of blockchain technologies to help combat climate change, acknowledging their significant potential to improve the transparency, accountability, and traceability of greenhouse gas emissions.22 Blockchain can provide accurate, reliable, standardized, and real-time data on carbon emissions, and can be utilized through smart contracts to better calculate, track, and report on the reduction of the carbon footprint across the entire value chain.22

A key initiative in this regard is the **European Blockchain Sandbox**, launched in 2023. This program provides a pan-European framework for regulatory dialogue between regulators and innovators on Distributed Ledger Technologies (DLT) use cases.22 Its primary aim is to increase legal certainty and identify best practices for DLT solutions across various sectors.26 Significantly, CO2 reporting within the EU ETS and Measurement, Reporting, and Verification (MRV) processes are explicitly mentioned as focus areas for DLT applications within the sandbox dialogues, indicating a clear regulatory interest in leveraging blockchain for environmental compliance.27 Best practices reports are regularly published from these dialogues, sharing insights and lessons learned.22

The convergence of the EU's "Fit for 55" package, the Corporate Sustainability Reporting Directive, and its active support for the Blockchain Sandbox demonstrates a strong, multi-faceted regulatory push towards greater digital transparency and accountability in carbon accounting and environmental reporting. This is not merely a set of suggestions but an increasingly legal mandate accompanied by significant penalties for non-compliance, such as the €100 per tonne fine in the EU ETS.8 The expansion of mandatory reporting to encompass entire supply chains, including Scope 3 emissions under the CSRD 17, and the explicit strategic alignment of DLT with CO2 reporting in the European Blockchain Sandbox 27, create a powerful and growing demand signal for robust, verifiable digital solutions. Companies that can offer compliant, robust, and scalable DLT solutions, like those provided by Fagri Digital, will possess a significant competitive advantage. This comprehensive regulatory environment positions the EU as a global leader in mandating and enabling digital solutions for climate action, underscoring the increasing importance of data integrity as a critical element for compliance, risk management, and competitive differentiation for businesses operating within or with the EU.

**Table 1: Key International & European CO2 Legislation and their Relevance to DLT/Traceability**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agreement/Directive | Year | Key Provisions | Relevance to CO2/DLT/Traceability | Official Link (English/Italian) |
| UNFCCC | 1992 | Framework for climate action, GHG stabilization; Foundation for future agreements, emphasis on monitoring. | Establishes the global need for transparent and verifiable climate data. | [English](https://unfccc.int/process/the-convention/history-of-the-convention) |
| Kyoto Protocol | 1997 | Legally binding GHG reduction targets for developed countries. | Highlighted the need for robust accounting and verification in international climate efforts. | [English](https://unfccc.int/process/the-convention/history-of-the-convention) |
| Paris Agreement | 2015 | Global temperature goals (well below 2°C, pursue 1.5°C), NDCs, accountability framework, financial obligations. | Calls for transparency and verifiable progress; Article 6.2 addresses "corresponding adjustments" to prevent double claiming. | [English](https://en.wikipedia.org/wiki/Paris_Agreement) |
| European Green Deal | 2019 | Aims for climate neutrality by 2050. | Overarching strategy driving subsequent legislation for digital solutions in climate action. | [English](https://digital-strategy.ec.europa.eu/en/policies/blockchain-climate-action) |
| "Fit for 55" Package | 2021 (proposals) | Target 55% net GHG reduction by 2030, expands EU ETS, introduces CBAM. | Increases scope and stringency of carbon accounting; creates significant demand for verifiable, traceable emissions data. | [English](https://www.ice.com/energy/environmental/fitfor55) |
| EU ETS | 2005 (expanded) | Cap-and-trade for GHG emissions (power, industry, aviation, maritime, road transport, buildings), mandatory reporting, penalties. | Direct need for accurate, real-time, tamper-proof emissions data and allowance tracking; DLT can enhance integrity. | [English](https://en.wikipedia.org/wiki/European_Union_Emissions_Trading_System) |
| CSRD | 2022 (effective 2024/2025) | Mandatory sustainability reporting (including Scope 1, 2, 3 GHG emissions) for large companies and listed SMEs. | Requires robust data integrity, auditability, and transparency across complex supply chains, which DLT can provide. | [English](https://normative.io/insight/carbon-reporting-legislation/) |
| EU Blockchain Sandbox | 2023 | Facilitates dialogue between regulators and DLT innovators, identifies legal/regulatory issues and solutions. | Explicitly discusses DLT for CO2 reporting 27, demonstrating active EU exploration and support for DLT in climate action and seeking legal certainty. | [English](https://digital-strategy.ec.europa.eu/en/policies/blockchain-climate-action) |

### C. Italy's Progressive Stance on CO2 Legislation and DLT

Italy has demonstrated a forward-thinking approach to both climate legislation and the integration of Distributed Ledger Technology, creating a uniquely supportive environment for innovative solutions.

**Legal Recognition of DLT and Smart Contracts:** Italy has taken a pioneering step in providing explicit legal definitions for Distributed Ledger Technologies (DLT) and Smart Contracts. **Italian Law no. 12/2019**, also known as the "Decreto Semplificazioni," defines DLT as "technologies and IT protocols using a shared, distributed, replicable ledger accessible...[source](http://www.federicaromanelli.com/italian-law-defines-blockchain-smart-contracts/) of non-cryptographic data".32 It further defines a "Smart contract" as "a program for programmers that operates on technologies based on distributed ledgers and whose execution automatically binds two or more parties according to predefined terms".32 Crucially, the law specifies that a smart contract satisfies the requirement of being in writing if the parties are electronically identified, and the storage of a digital document via DLT produces the legal effects of electronic time validation, as per Article 41 of EU Regulation 910/2014.32 This legal clarity provides a strong foundation for DLT-based applications in the country.

**DLT for Traceability ("Made in Italy"):** The Italian Ministry of Economic Development (Mimit) has actively explored the practical applications of blockchain. The **Mimit document, "LA BLOCKCHAIN PER LA TRACCIABILITÀ DEL MADE IN ITALY: Origine, Qualità, Sostenibilità"**, delves into leveraging blockchain technology to enhance traceability, origin, quality, and sustainability, initially focusing on the textile sector.35 This document highlights blockchain's inherent ability to ensure secure and immutable tracking of transactions, enhance transparency, combat counterfeiting, and democratize the supply chain by placing all participants at the same level.35 The principles articulated in this document are directly applicable to CO2 emissions, enabling secure and immutable CO2 data, transparent emissions reporting, verified provenance of emissions, automated verification via smart contracts, and the potential to reward low-carbon practices.35

**Italian CO2 Reporting and Environmental Law:**

* **Constitutional Mandate:** A recent constitutional reform in Italy, **Constitutional Law 1/2022**, amended Articles 9 and 41 of the Italian Constitution. This reform establishes that the Republic safeguards the environment, biodiversity, and ecosystems "also in the interest of future generations," and mandates that private economic enterprise must not harm health or the environment.19 This provides a robust constitutional basis for environmental protection and sustainable economic activity.
* **National Climate Plan:** In 2023, Italy adopted the **National Plan on Adaptation to Climate Change (PNACC)**, which sets a comprehensive framework for adapting to the unavoidable impacts of climate change.19
* **Transposition of EU Directives:** Italy is diligently transposing key EU climate directives into national law. **Legislative Decree 147/2024** transposes EU Directives 2023/958 and 2023/959, modifying the existing EU ETS and introducing the new ETS2 in Italy.14 This decree mandates that regulated entities report their 2024 emissions by April 30, 2025.14 Furthermore,  
  **Legislative Decree 125/2024**, published in September 2024, transposes the EU's Corporate Sustainability Reporting Directive (CSRD), significantly expanding mandatory sustainability reporting obligations to a wider range of Italian companies, including listed SMEs.19
* **Digital Finance Initiatives:** Beyond environmental applications, Italy has also demonstrated broader governmental support for DLT in financial and economic contexts. The country saw the first issuance of a digital bond on blockchain under the "Decreto Fintech" (DL 25/2023).37

Italy's explicit legal definitions for DLT and smart contracts, combined with its proactive adoption of EU environmental directives and its governmental exploration of blockchain for traceability, collectively create a uniquely fertile ground for Fagri Digital's initial rollout. Unlike many jurisdictions where the legal status of DLT remains ambiguous, Italy provides a high degree of legal certainty for the underlying technology.32 The Mimit report 35 further demonstrates governmental awareness and interest in DLT for traceability, explicitly including environmental aspects. This means Fagri Digital is not merely operating in a legally permissive environment; it is operating in one that has actively endorsed and explored the very technological approach it champions. This significantly reduces regulatory risk and has the potential to accelerate adoption. The fact that Italy is also implementing the mandatory EU CSRD and ETS2 means there is a clear and growing market need for the precise DLT-based reporting and traceability solutions that Fagri Digital offers. This positions Fagri Digital's "Italy-first" strategy as not just a geographical choice, but a shrewd move to leverage a pioneering regulatory framework that de-risks initial deployment and provides a strong precedent for subsequent European and global expansion. Italy could serve as a vital testbed for DLT in environmental compliance, offering valuable lessons and a proven model for other nations.

**Table 2: Italian Legislation on DLT/Blockchain and Environmental Reporting**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Law/Decree/Document | Year | Key Provisions | Relevance to DLT/Smart Contracts/CO2 Reporting | Official Link (Italian/English) |
| Law no. 12/2019 (Decreto Semplificazioni) | 2019 | Defines DLT and Smart Contracts; grants legal validity to DLT-stored documents. | Provides legal certainty for Fagri Digital's core technology in Italy, foundational for legally recognized DLT applications. | [Italian](https://www.gazzettaufficiale.it/eli/gu/2019/02/12/36/sg/pdf) |
| Mimit Document "La Blockchain per la Tracciabilità del Made in Italy" | 2019 | Explores blockchain for traceability (textile sector); highlights secure/immutable tracking, transparency, anti-counterfeiting. | Explicitly notes applicability to environmental sustainability and supply chain transparency, directly supporting Fagri Digital's approach to CO2. | [Italian](https://www.mimit.gov.it/images/stories/documenti/IBM-MISE-2019-BC.pdf) |
| Constitutional Law 1/2022 (Articles 9 & 41) | 2022 | Safeguards environment, biodiversity, ecosystems; ensures private enterprise does not harm them. | Provides a high-level constitutional mandate for environmental action, underpinning all subsequent legislation and reinforcing sustainability goals. | [English](https://iclg.com/practice-areas/environmental-social-and-governance-law/italy) |
| Decreto Fintech (DL 25/2023) | 2023 | Facilitates digital bond issuance on blockchain. | Demonstrates broader governmental support for DLT in financial/economic contexts, relevant for future carbon credit tokenization and financing. | [Italian](https://www.bancaditalia.it/media/notizia/prima-emissione-in-italia-di-un-digital-bond-su-blockchain/) |
| Legislative Decree 125/2024 (CSRD transposition) | 2024 | Expands mandatory sustainability reporting to Italian companies, including detailed GHG emissions. | Creates a domestic compliance driver for Fagri Digital's solutions by mandating comprehensive carbon reporting. | [Italian](https://www.uniaudit.it/novita-per-la-rendicontazione-di-sostenibilita-in-italia/) |
| Legislative Decree 147/2024 (ETS/ETS2 transposition) | 2024 | Modifies ETS and introduces ETS2 in Italy; requires reporting of 2024 emissions by April 2025. | Further reinforces mandatory carbon reporting at the national level, increasing the demand for accurate and verifiable emissions data. | [Italian](https://www.roedl.com/insights/italien/ets-ets2-italy-new-european-emission-market-light-eu-directives-958-959-2023) |

## III. Addressing the Imperfections of the Current CO2 Market

The effectiveness and credibility of global carbon markets are significantly hampered by several systemic flaws. Understanding these imperfections is crucial to appreciating the transformative potential of new solutions.

### A. The Challenge of Double Counting in Carbon Credits

Double counting represents a fundamental flaw in carbon offsetting, occurring when a single carbon credit—representing one metric tonne of carbon avoided, reduced, or removed from the atmosphere—is counted multiple times.5 This issue severely undermines the integrity of carbon offsetting.

Various forms of double counting exist:

* **Double Selling:** This occurs when a single carbon credit is sold to more than one buyer, whether due to an honest mistake or intentional fraud.38
* **Double Issuance:** In this scenario, a single carbon benefit is certified under two different standards, leading to the issuance of two distinct certificates for the same environmental impact.5
* **Double Claiming:** This is arguably the most prevalent and complex form, where the same carbon credit is claimed by two different entities towards their emissions reduction goals. Typically, this involves the host country where a carbon project is located and the country or organization that finances the project.5 Article 6.2 of the Paris Agreement specifically addresses this problem by requiring "corresponding adjustments," which ensure that if a credit is used by one entity, it cannot simultaneously be claimed by another, akin to a bank transfer entry.5

The implications of double counting are severe for market credibility and actual climate impact. It leads to a misrepresentation and artificial inflation of environmental benefits, thereby undermining the true impact of climate initiatives.39 Consequently, buyers and investors lose confidence in the market, becoming hesitant to participate without reliable data management systems.39 Most critically, if a business purchases carbon credits that are double-counted, their offsetting efforts yield no additional real-world impact on climate change.5 This directly contributes to the risk of greenwashing, as the claimed environmental benefits are not genuinely achieved.

### B. Combating Greenwashing and Enhancing Credibility

Greenwashing is a deceptive practice where a company or product is portrayed as environmentally friendly without having genuinely reduced its environmental impact.40 This tactic presents a significant obstacle to effective climate action by promoting false solutions that distract from and delay concrete, meaningful efforts.42

Common tactics employed in greenwashing include:

* **Supporting Low-Quality Offset Projects:** Companies may claim carbon neutrality by investing in projects that are ineffective, overestimate their actual impact, or offer only temporary solutions. For example, Volkswagen faced accusations of greenwashing when investigations by Greenpeace revealed that its offsetting projects were of low quality and caused significant conflicts for local communities.40
* **Lack of Transparency in Communication:** Brands often intentionally withhold crucial information about how they sourced and selected their offset projects, making it challenging for stakeholders to verify their sustainability claims.40
* **Offsetting Without Genuine Emission Reduction:** Some companies use carbon offsets as a substitute for actively reducing their own emissions, a practice particularly common in high-emitting industries like aviation. Easyjet's "Destination Zero Emissions" campaign, for instance, focused heavily on carbon offsetting rather than immediate emission reductions, conveying an image of environmental consciousness without proportional action.40 Effective offsetting should always be part of a broader sustainability strategy that prioritizes measuring and reducing emissions first.40
* **PR and Marketing Activity:** Carbon offsetting initiatives are sometimes primarily used as flashy marketing campaigns to capitalize on growing climate-conscious consumer trends, rather than genuinely integrating sustainability into the brand's core operations.40
* **Misleading Language:** The use of vague plans ("we pledge to," "we plan to"), future-focused promises ("by 2050 we'll be net zero"), or unsubstantiated buzzwords ("carbon neutral," "eco-friendly," "sustainable") without concrete actions or binding commitments serves as a significant red flag. H&M, for example, was legally compelled to remove the term "conscious" from its clothing lines due to misleading claims about their environmental benefits.40

The impact of greenwashing on trust and effective climate action is profound. It severely erodes confidence in the carbon credit market and delays meaningful climate action by diverting financial resources away from projects that could genuinely make a difference.42 Ultimately, greenwashing misleads consumers, investors, and the general public, thereby hampering the ambition and collective action required to address the global climate crisis effectively.42

### C. Ensuring Data Integrity and Transparency

The integrity of data is paramount in the context of climate action and sustainability reporting. Data integrity refers to the accuracy, completeness, consistency, and trustworthiness of data throughout its lifecycle.44 Without reliable data, decisions about reducing carbon emissions can be ineffective at best and detrimental at worst, making data integrity the cornerstone of credible sustainability reporting and a powerful antidote to greenwashing.44

Current limitations and challenges in data reporting include:

* **Flawed and Manipulated Data:** Companies may report lower carbon emissions than they actually produce due to manipulated data. This not only misleads stakeholders but also hinders genuine efforts to reduce the company's environmental impact.44
* **Uncertainty and Variability:** Environmental data often inherently contains uncertainty, variability, and limitations. Unlike data collected in controlled laboratory settings, environmental data is subject to a wide range of external factors that can influence its accuracy and reliability, making consistent and precise measurement challenging.44
* **Complexity and Lack of Standardization:** Carbon offset projects are inherently complex, involving various stakeholders and methodologies. This complexity makes it difficult to track and verify emission reductions effectively. The absence of universally accepted standards for projects and verification processes further complicates comparisons and quality assessments across different initiatives.46
* **Limited Oversight and Regulation:** Insufficient oversight and fragmented regulation raise significant concerns about the credibility and transparency of offset projects, contributing to a lack of trust in the market.47
* **Anonymity in Reporting:** A substantial proportion (estimated 30-50%) of carbon credit retirements on major registries are performed anonymously or by intermediaries on behalf of their customers. This anonymity makes it exceedingly difficult to trace environmental claims back to specific credit retirements, hindering accountability.48
* **Privacy Concerns:** The flow of sensitive carbon data across international borders often lacks adequate privacy safeguards, creating vulnerabilities that can undermine market confidence and participant trust.49

The challenges of double counting, greenwashing, and data integrity are not isolated problems but are deeply interconnected symptoms stemming from a lack of robust, transparent, and verifiable infrastructure in the current carbon market. Flawed data directly fuels both double counting and greenwashing, which in turn erode trust and hinder effective climate action. The "tragedy of the commons" is a relevant underlying theme, where individual actors may not prioritize data integrity if there is no systemic incentive, leading to collective market failure.22 A truly effective solution must therefore address the foundational issue of data integrity and transparency first, as Fagri Digital aims to do with DLT. This approach positions Fagri Digital as a critical infrastructure provider, rather than just a service, for the future of carbon markets.

**Table 3: Current Carbon Market Challenges and Fagri Digital's DLT-Based Solutions**

|  |  |  |  |
| --- | --- | --- | --- |
| Challenge | Description | Consequences | Fagri Digital's DLT Solution (Specific Feature/Benefit) |
| **Double Counting** | A single carbon credit is counted multiple times (double selling, issuance, or claiming). | Inflated environmental benefits, undermined market credibility, investor distrust, no real climate impact from offsetting, increased greenwashing risk. | Immutable audit trails 16, decentralized verification 16, real-time tracking of carbon assets 24, unique digital identity for carbon credits, smart contracts for automated, transparent, and singular transactions.16 |
| **Greenwashing** | Misleading environmental claims; supporting low-quality projects; offsetting without genuine emission reduction; vague plans; misleading language. | Erodes trust in carbon markets, delays meaningful climate action, diverts funding from effective projects, misleads consumers/investors/public. | Immutable audit trails 16, verifiable credentials 50, transparent data records 22, automated verification of compliance 16, public accessibility of verified data 24, fostering trust through inherent transparency.24 |
| **Data Integrity** | Inaccurate, incomplete, inconsistent, or untrustworthy data; complexity, lack of standardization, limited oversight, privacy concerns. | Ineffective policies, misinformed decisions, compromised reporting, hindered progress towards sustainability goals, market confidence erosion. | Secure and immutable data storage 16, real-time data verification 22, standardized data collection and reporting via DLT 22, automated audit trails 16, enhanced transparency 22, robust data governance frameworks.44 |
| **Lack of Transparency** | Limited oversight, market fragmentation, difficulty tracking project information/pricing, anonymous credit retirements, complex methodologies. | Undermines market integrity, reduces trust among stakeholders, leads to inefficient markets, difficulty aligning with regulatory frameworks. | Shared, distributed, and simultaneously accessible ledger 32, public registry for carbon credits 5, real-time data insights 39, automated MRV (Measurement, Reporting, Verification) systems 24, democratizing access to information 35, fostering an open ecosystem.35 |

## IV. Fagri Digital's DLT-Powered Solution: A New Paradigm

Fagri Digital's innovative approach is centered on leveraging Distributed Ledger Technology (DLT) and its proprietary G8Chain, which is based on EVM-compatible blockchain technology, to provide a robust solution to the challenges plaguing the current carbon market. This section details how this technology forms the core of a new paradigm for CO2 management.

### A. DLT for Unprecedented Traceability and Information Integrity

Fagri Digital harnesses the inherent strengths of blockchain technology to revolutionize carbon accounting and trading. The European Commission explicitly recognizes blockchain as a powerful tool capable of significantly improving the transparency, accountability, and traceability of greenhouse gas emissions.22

The platform is designed to provide accurate and reliable data. It assists companies in generating more precise, dependable, standardized, and readily available data on carbon emissions.22 This is achieved by transitioning from traditional manual data collection to automated solutions that produce validated data sets. Such an approach inherently fosters trust and has the potential to attract increased investment into the sector, while actively mitigating the risk of greenwashing.24

A core feature is the implementation of immutable audit trails. Once sustainability information, such as emissions data or energy usage, is recorded on Fagri Digital's blockchain, it becomes permanent and unalterable.16 This immutable transaction history ensures that every piece of data carries a verifiable record of "who said what and when," drastically reducing the potential for fraud or manipulation.16 Should an error occur, a new transaction is recorded to correct it, with both the original and corrective entries remaining visible, thereby preserving a "Ground Truth" for all transactions.35

Fagri Digital also employs decentralized verification and real-time tracking. Instead of relying on a single central authority, the system operates on a decentralized network where multiple authorized parties, including regulators, auditors, and market participants, can verify new data entries.16 This decentralization is a fundamental design principle, enabling consensus on data entries from various sources and ensuring the integrity of the information.16 The platform facilitates real-time tracking of participants' emissions and provides verifiable credentials to validate emission allowances and carbon certificates throughout their entire lifecycle.22

Fagri Digital's approach to secure data management and access controls is comprehensive. While core data is designed to be transparent and verifiable on-chain, sensitive information is managed with appropriate privacy safeguards, striking a balance between transparency and legitimate privacy expectations.49 The platform facilitates a shift from individual company efforts to a networked approach, clearly pinpointing the contributions of individual actors to carbon footprint reduction across the entire supply chain, encompassing manufacturers, suppliers, distributors, and consumers.22

To further protect all stakeholders and users against fraud, scams, and other negative activities, Fagri Digital implements a **digital fingerprint** system. This ensures transparency on the platform while rigorously protecting privacy and data against misuse, complying with all relevant regulations and laws. Additionally, the platform utilizes **3FA (Three-Factor Authentication)**, one of the most important tools for protecting accounts against misuse and hackers. This advanced security measure ensures that only the devices the user connects to their account can access it, meaning even if a hacker obtains an email and password, they will still be unable to gain entry. This is particularly crucial given the increasing global incidents of hacks and stolen credentials sold on the dark web.

This DLT solution transforms carbon accounting from a mere compliance burden into a mechanism for value creation. By enabling precise, verifiable data, it builds trust, attracts investment, and incentivizes genuine climate action. The provision of accurate, reliable, standardized, and readily available data 22, along with validated data sets that generate trust 24, directly addresses the core issues of double counting, greenwashing, and data integrity that plague the current market. This reliability and trust can, in turn, drive more investment into the sector 24 and enable more accurate pricing of carbon offsets.52 When data is trustworthy, it facilitates better decision-making by policymakers and stakeholders 52 and provides strong incentives for actors to reduce their carbon footprint.22 This shifts the perception of carbon reporting from a necessary evil to a strategic asset that can attract capital and improve market efficiency. Fagri Digital is therefore not merely offering a technological tool; it is providing a foundational layer for a more mature, credible, and efficient carbon market, turning environmental compliance into an economic opportunity and fostering a competitive advantage for early adopters.

### B. G8Chain: The Foundation for a Global Standard

Fagri Digital's strategic choice of its proprietary **G8Chain**, based on EVM-compatible blockchain technology, is central to its ambition of establishing a unique global standard for CO2 management. While G8Chain leverages the robust and proven Ethereum Virtual Machine (EVM) technology, it is distinct from the public Ethereum network, offering unique advantages tailored for the global carbon market. EVM compatibility means that there are already over 500 million users worldwide who are familiar with the underlying technology, providing a vast addressable market for G8Chain's solutions.

**Key Features and Advantages of G8Chain:**

* **Cost-Effectiveness and Financial Planning Security:** G8Chain distinguishes itself with an exceptionally low transaction cost of **0.003%**, making it significantly more affordable than many other known EVM-compatible structures. This predictable and minimal cost structure provides complete financial planning security for all users on the Fagri Digital platform, removing a major barrier to participation for smaller entities.
* **Federated Node Structure and Decentralized Governance:** G8Chain operates on a federated node structure comprising **51 federated nodes**. This innovative design allows all members to participate, provided they pass a stringent KYC (Know Your Customer) program. This marks a groundbreaking shift, as it is the first time that small social projects, alongside large organizations, companies, and governments, can collectively control a blockchain structure and share responsibility for its operation. This horizontal, fair, and transparent approach contrasts sharply with large private blockchain networks that are centralized and controlled by a single entity. Instead, G8Chain ensures that 51 individual organizations from diverse sectors each control a node, fostering a deep understanding and shared oversight of network activities. This structure is specifically designed to fully comply with the legal requirements of MiCA (Markets in Crypto-Assets Regulation) and other relevant audit and accountability laws, addressing concerns about transparency and control often associated with large, anonymous public blockchains.
* **Sustainable and Secure Infrastructure:** The physical infrastructure of G8Chain's nodes is unparalleled. They are strategically located in **bunkers within the Swiss Alps**, leveraging the naturally cool environment to significantly reduce the need for artificial cooling. Furthermore, these nodes are powered by **100% renewable electricity from nearby rivers**, making G8Chain a truly **100% green** blockchain. This commitment to environmental sustainability sets G8Chain apart from other service providers, demonstrating a tangible dedication to climate goals.
* **Delegated Proof of Stake (DPoS) Consensus Algorithm:** G8Chain utilizes a DPoS consensus algorithm. This mechanism not only ensures efficient and secure transaction validation but also provides a unique incentive model. Researchers and operators participating in the network have the possibility to generate income and cover costs for R&D and new ideas by participating in the turnover of the needed G8 Coins and liquidity on the market. This fosters a collaborative and innovative ecosystem, encouraging continuous development and improvement from the community itself, rather than a top-down directive.
* **Interoperability and Developer Familiarity:** While distinct, G8Chain's EVM compatibility ensures seamless interoperability. Smart contracts developed for one EVM-compatible blockchain can be readily migrated to G8Chain with minimal code modifications.53 This leverages the vast global developer community already proficient in Solidity, Ethereum's programming language, accelerating development, reducing friction, and minimizing bugs.53 This widespread familiarity and talent pool are crucial for rapid innovation and widespread adoption of a global standard.
* **Proven Technology and Security:** The underlying EVM technology is time-tested and robust, providing a high level of security and resistance to tampering, which is crucial for sensitive applications like carbon accounting and trading.54 G8Chain inherits these security benefits while enhancing them through its federated and KYC-compliant node structure.
* **Flexibility and Customization:** G8Chain provides a flexible and customizable environment for building decentralized applications (dApps) and smart contracts, allowing Fagri Digital to tailor solutions to specific market needs, adapt to evolving regulations, and support diverse carbon credit types and methodologies.54

Fagri Digital's G8Chain is not merely an alternative to existing blockchains; it is a purpose-built solution designed to overcome the limitations of both large, anonymous public chains and centralized private networks. By combining the technical advantages of EVM compatibility with a unique, democratized, and environmentally sustainable federated node structure, G8Chain is uniquely positioned to establish a new, trustworthy, and accessible global standard for CO2 management. This approach directly addresses the issues of accountability and transparency that plague other providers who cannot fully track their thousands of nodes worldwide.

**Table 4: Technical Advantages of EVM-Compatible Blockchains for Carbon Markets**

|  |  |  |
| --- | --- | --- |
| Advantage | Description | Benefit for Fagri Digital / Carbon Markets |
| **Interoperability** | Easy migration of smart contracts across EVM-compatible chains; seamless interaction with Ethereum, enabling cross-chain solutions. | Provides flexibility, avoids vendor lock-in, leverages Ethereum's vast liquidity and user base, and facilitates broader adoption of Fagri Digital's global standard. |
| **Vast Developer Community** | Ethereum boasts the largest blockchain developer community, with widespread familiarity with Solidity programming. | Reduces development costs and time, accelerates innovation, minimizes bugs, provides access to a large talent pool, and enhances the potential for global standardization due to network effects. |
| **Scalability & Cost-Effectiveness** | EVM-compatible chains offer faster transaction times and lower fees compared to Ethereum, with ongoing innovations like parallel EVMs. | Enables efficient processing of high volumes of carbon data and transactions, makes the platform affordable for all users (including SMEs), and supports real-time market operations. |
| **Energy Efficiency (Proof-of-Stake)** | Ethereum's transition to PoS significantly reduces energy consumption (up to 99% reduction compared to PoW). | Addresses environmental concerns associated with blockchain, aligns with core climate action goals, and enhances the sustainability credentials and appeal of Fagri Digital's platform. |
| **Proven Technology & Security** | EVM is a time-tested platform with robust infrastructure, providing inherent security and resistance to tampering. | Ensures high reliability and trust for critical carbon data, provides resilience against manipulation, and is crucial for regulatory compliance and overall market integrity. |
| **Flexibility & Customization** | Provides an adaptable and customizable environment for building decentralized applications (dApps) and smart contracts. | Allows Fagri Digital to tailor solutions to specific market needs, adapt to evolving regulations, and support diverse carbon credit types and methodologies. |

## V. Fagri Digital's Vision: Democratizing the Global CO2 Market

Fagri Digital's vision extends beyond simply providing a technological solution; it aims to fundamentally reshape the global CO2 market by making it more equitable, transparent, and accessible to all participants.

### A. Strategic Rollout: From Italy to the World

Fagri Digital's phased rollout strategy commences with a concentrated effort in Italy, leveraging the country's uniquely progressive regulatory environment. Italy has taken a leading stance in providing explicit legal definitions for Distributed Ledger Technologies and Smart Contracts through Law no. 12/2019 32, offering a solid legal foundation and significantly reducing regulatory uncertainty for Fagri Digital's operations. Furthermore, the Italian Ministry of Economic Development (Mimit) has actively explored the application of blockchain for traceability, including its direct applicability to environmental sustainability, as detailed in the "Made in Italy" document.35 This demonstrates a clear governmental understanding and interest in the very technological approach Fagri Digital champions.

This initial focus on Italy is not merely a geographical choice; it is a strategic move to leverage a pioneering regulatory framework that de-risks initial deployment and provides a strong precedent for subsequent European and global expansion. The Italian legal landscape, with its explicit recognition of DLT and smart contracts, offers a unique advantage by providing legal certainty where it might otherwise be ambiguous in other jurisdictions. This allows Fagri Digital to build and refine its platform within a supportive environment. The country's active transposition of major EU climate reporting directives, such as the CSRD (Legislative Decree 125/2024) and the expanded ETS (Legislative Decree 147/2024) 14, creates a clear and immediate market need for Fagri Digital's DLT-based reporting and traceability solutions. Italy can therefore serve as a vital testbed for DLT in environmental compliance, offering valuable lessons and a proven model for other nations as Fagri Digital expands.

Following its establishment and proven success in Italy, Fagri Digital plans to expand its operations across Europe. This expansion will capitalize on the robust and increasingly stringent EU climate policies, including the "Fit for 55" package, the EU ETS, and the CSRD, all of which demand enhanced transparency and data integrity in carbon accounting.8 The European Commission's active promotion of blockchain for climate action and the European Blockchain Sandbox initiative further validate this strategic direction, as they highlight the EU's commitment to leveraging DLT for environmental compliance.22 Fagri Digital's G8Chain, with its interoperable EVM-based solution, is well-suited to integrate with diverse European regulatory frameworks and market infrastructures.

Ultimately, Fagri Digital's ambition is to establish a unique global standard for CO2 management. The selection of G8Chain, an EVM-compatible blockchain technology, is a deliberate choice to support this global vision. The vast and active global developer community associated with EVM provides a critical mass of talent and innovation, facilitating the development of a universally adaptable and scalable platform.53 This approach leverages powerful network effects, increasing the likelihood of widespread adoption and positioning Fagri Digital's solution as a de facto standard for transparent and accessible carbon markets worldwide.

### B. Democratizing Carbon Markets for All Actors

A fundamental aspect of Fagri Digital's vision is the democratization of the global CO2 market. Currently, participation in carbon markets, particularly for SMEs and individual investors, is often hindered by complexity, high transaction costs, and a lack of accessible tools.47 Fagri Digital aims to dismantle these barriers, fostering an inclusive ecosystem where all stakeholders can actively participate and contribute to climate action.

The platform will achieve this democratization through several key mechanisms:

* **Simplified Access and User-Friendly Tools:** By leveraging G8Chain, Fagri Digital can streamline complex carbon accounting and trading processes, making them more intuitive and accessible for a broader range of users. This includes developing user interfaces and tools that abstract away the technical complexities of blockchain, allowing SMEs and individual investors to engage without requiring specialized knowledge. The implementation of a **digital fingerprint** protects all stakeholders and users against fraud and scams, ensuring transparency while safeguarding privacy and data. Furthermore, the **3FA (Three-Factor Authentication)** system provides robust account security, ensuring that only the devices the user connects to their account can access it, meaning even if a hacker obtains an email and password, they will still be unable to gain entry. This is particularly crucial given the increasing global incidents of hacks and stolen credentials sold on the dark web.
* **Reduced Transaction Costs:** G8Chain's exceptionally low transaction cost of **0.003%** is a game-changer for market accessibility. This cost-effectiveness is crucial for enabling smaller players to participate economically in carbon markets, where high overheads can otherwise be prohibitive. This provides complete financial planning security for all users.
* **Enhanced Transparency and Trust:** The inherent transparency and immutability of G8Chain ensure that all carbon credit transactions and emissions data are verifiable and trustworthy.16 This directly addresses the current market's issues of double counting, greenwashing, and data integrity, which disproportionately affect smaller participants who lack the resources for extensive due diligence.38 By providing a reliable "Ground Truth" 35, Fagri Digital builds confidence across the market, encouraging wider participation.
* **Democratization of Data and Information:** The Mimit document highlights how blockchain can democratize the supply chain by placing all participants at the same level and fostering a true ecosystem.35 This principle extends to carbon markets, where Fagri Digital's platform can provide all authorized participants with shared, real-time access to verified emissions data and carbon credit information. This open access to reliable data empowers SMEs and individual investors to make informed decisions, understand the true impact of their investments, and hold larger entities accountable.
* **Tokenization of Carbon Credits:** By representing carbon credits as programmable digital assets on G8Chain, Fagri Digital can enable automated transactions for issuing, trading, and retiring credits.39 This tokenization can increase liquidity and create new avenues for investment, potentially allowing for fractional ownership of carbon credits, which would significantly lower the entry barrier for small investors.
* **Horizontal Governance and Incentivized Participation:** G8Chain's federated node structure, with 51 single organizations from all sectors controlling individual nodes after passing KYC, fosters a truly horizontal, fair, and transparent approach. This is a novel model where small social projects share control and responsibility with large organizations, companies, and governments. The DPoS consensus algorithm further incentivizes participation by allowing researchers and operators to generate income and cover R&D costs through their involvement in the network's turnover and liquidity. This structure ensures full compliance with regulatory requirements like MiCA for audit and accountability, providing a robust and trustworthy environment for all stakeholders.

By fostering an inclusive and transparent carbon market, Fagri Digital aims to unlock the full potential of collective action against climate change. Empowering SMEs and individual investors to participate meaningfully will not only accelerate global decarbonization efforts but also ensure that the benefits of the transition to a low-carbon economy are more broadly distributed.

#### Referenzen

1. The United Nations Framework Convention on Climate Change, the Kyoto Protocol, and the Paris Agreement: A Summary | Congress.gov, Zugriff am Juli 23, 2025, <https://www.congress.gov/crs-product/R46204>
2. History of the Convention - UNFCCC, Zugriff am Juli 23, 2025, <https://unfccc.int/process/the-convention/history-of-the-convention>
3. Paris Agreement - Wikipedia, Zugriff am Juli 23, 2025, <https://en.wikipedia.org/wiki/Paris_Agreement>
4. International Agreements on Climate Change - Iberdrola, Zugriff am Juli 23, 2025, <https://www.iberdrola.com/sustainability/international-agreements-on-climate-change>
5. What is double counting in carbon offsetting? And why is it important?, Zugriff am Juli 23, 2025, <https://lune.co/blog/what-is-double-counting-in-carbon-offsetting-and-why-is-it-important>
6. The tiny Pacific nation of Vanuatu turns to the world court as climate disasters mount, Zugriff am Juli 23, 2025, <https://apnews.com/article/vanuatu-climate-change-international-court-justice-c34f9a25866159102503ac14ee4ea197>
7. Global climate action is at stake in the UN top court's biggest ever decision, Zugriff am Juli 23, 2025, <https://apnews.com/article/un-court-opinion-climate-change-1ac84a94a5aaffd63518ef1da3502a9e>
8. Fit for 55 Package - ICE, Zugriff am Juli 23, 2025, <https://www.ice.com/energy/environmental/fitfor55>
9. The European Climate Package: Is the EU's 'Fit for 55' in line with being fit for 1.5?, Zugriff am Juli 23, 2025, <https://gceurope.org/the-european-climate-package-is-the-eus-fit-for-55-in-line-with-being-fit-for-1-5/>
10. European Union Emissions Trading System - Wikipedia, Zugriff am Juli 23, 2025, <https://en.wikipedia.org/wiki/European_Union_Emissions_Trading_System>
11. EU Carbon Permits - Price - Chart - Historical Data - News - Trading Economics, Zugriff am Juli 23, 2025, <https://tradingeconomics.com/commodity/carbon>
12. How Does Emissions Trading Work? | Definition of (EU) ETS - Next Kraftwerke, Zugriff am Juli 23, 2025, <https://www.next-kraftwerke.com/knowledge/emissions-trading-scheme-ets>
13. Monitoring, reporting and verification - European Commission - EU Climate Action, Zugriff am Juli 23, 2025, <https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification_en>
14. ETS and ETS2 in Italy: The New European Emission Market in Light of EU Directives 958/2023 and 959/2023 | Rödl & Partner, Zugriff am Juli 23, 2025, <https://www.roedl.com/insights/italien/ets-ets2-italy-new-european-emission-market-light-eu-directives-958-959-2023>
15. Carbon Border Adjustment Mechanism - Taxation and Customs Union, Zugriff am Juli 23, 2025, <https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en>
16. EU Green-Lights Blockchain for CSRD | Quality Digest, Zugriff am Juli 23, 2025, <https://www.qualitydigest.com/inside/risk-management-article/eu-green-lights-blockchain-csrd-121624.html>
17. Carbon reporting legislation: an overview - Normative.io, Zugriff am Juli 23, 2025, <https://normative.io/insight/carbon-reporting-legislation/>
18. How To Comply With EU's CSRD Carbon Accounting Rules - Oliver Wyman, Zugriff am Juli 23, 2025, <https://www.oliverwyman.com/our-expertise/insights/2023/aug/carbon-accounting-europe.html>
19. Environmental, Social & Governance Laws and Regulations Report 2025 Italy - ICLG.com, Zugriff am Juli 23, 2025, <https://iclg.com/practice-areas/environmental-social-and-governance-law/italy>
20. Il nuovo decreto legislativo sulla rendicontazione di sostenibilità - SRB Lab, Zugriff am Juli 23, 2025, <https://srblab.unibocconi.it/news-eventi/il-nuovo-decreto-legislativo-sulla-rendicontazione-di-sostenibilita>
21. Bilancio di Sostenibilità: cos'è, obblighi e normativa - Infominds, Zugriff am Juli 23, 2025, <https://infominds.eu/bilancio-di-sostenibilita-obblighi-normativa-guida/>
22. Blockchain for climate action - Shaping Europe's digital future - European Union, Zugriff am Juli 23, 2025, <https://digital-strategy.ec.europa.eu/en/policies/blockchain-climate-action>
23. Blockchain per l'azione per il clima | Plasmare il futuro digitale dell'Europa, Zugriff am Juli 23, 2025, <https://digital-strategy.ec.europa.eu/it/policies/blockchain-climate-action>
24. Climate Action and Sustainability - Blockchain for Europe, Zugriff am Juli 23, 2025, <https://www.blockchain4europe.eu/wp-content/uploads/2024/08/An-Overview-of-Blockchain-for-Climate-Action-and-Sustainability-BC4EU-IOTA-April-2023.pdf>
25. Blockchain-Driven Carbon Accountability in Supply Chains - MDPI, Zugriff am Juli 23, 2025, <https://www.mdpi.com/2071-1050/16/24/10872>
26. European blockchain sandbox - European Commission, Zugriff am Juli 23, 2025, <https://blockchain-observatory.ec.europa.eu/european-blockchain-sandbox_en>
27. Connected: 1st Cohort Best Practices Report - June 2024 - Bird & Bird, Zugriff am Juli 23, 2025, <https://www.twobirds.com/en/insights/2024/global/connected---june-2024>
28. European Blockchain Sandbox Best Practices Report | Shaping ..., Zugriff am Juli 23, 2025, <https://digital-strategy.ec.europa.eu/en/library/european-blockchain-sandbox-best-practices-report>
29. European Blockchain Sandbox Best practices report (2023) 1st Cohort, Part A, Zugriff am Juli 23, 2025, <https://ec.europa.eu/digital-building-blocks/sites/download/attachments/634979024/European%20Blockchain%20Sandbox%20-%20Best%20practices%20report%20-%20Part%20A%20-%20dec.%202023.pdf?version=2&modificationDate=1707389806964&api=v2>
30. European blockchain sandbox - Best practices report. 2nd cohort ..., Zugriff am Juli 23, 2025, <https://euagenda.eu/publications/european-blockchain-sandbox-best-practices-report-2nd-cohort>
31. European Blockchain Sandbox - Second cohort best practices report - Zprávy Kurzy.cz, Zugriff am Juli 23, 2025, <https://zpravy.kurzy.cz/809806-european-blockchain-sandbox-second-cohort-best-practices-report/>
32. Italian law defines blockchain and smart contracts – Technethics, Zugriff am Juli 23, 2025, <https://www.technethics.com/italian-law-defines-blockchain-and-smart-contracts/>
33. Smart contracts e blockchain: la legge 11 Febbraio 2019, n. 12 - Diritto dei Media, Zugriff am Juli 23, 2025, <https://fulviosarzana.nova100.ilsole24ore.com/2019/02/13/smart-contracts-e-blockchain-la-legge-11-febbraio-2019-n-12/>
34. SMART CONTRACT E TECNOLOGIE BASATE SU REGISTRI DISTRIBUITI – PRIME NOTE, Zugriff am Juli 23, 2025, <https://www.notartel.it/notartel/pdf-studi/SMART-CONTRACTS-1-2019-DI.pdf>
35. DOCUMENTO DI SINTESI LA BLOCKCHAIN PER LA ... - Mimit, Zugriff am Juli 23, 2025, <https://www.mimit.gov.it/images/stories/documenti/IBM-MISE-2019-BC.pdf>
36. Novità per la Rendicontazione di Sostenibilità in Italia - Uniaudit, Zugriff am Juli 23, 2025, <https://www.uniaudit.it/novita-per-la-rendicontazione-di-sostenibilita-in-italia/>
37. Prima emissione in Italia di un digital bond su blockchain, Zugriff am Juli 23, 2025, <https://www.bancaditalia.it/media/notizia/prima-emissione-in-italia-di-un-digital-bond-su-blockchain/>
38. Double counting | ClimatePartner, Zugriff am Juli 23, 2025, <https://www.climatepartner.com/en/knowledge/glossary/double-counting>
39. How Technologies Solve Double-Counting Problems in Carbon Markets: Key Takeaways from COP29 Azerbaijan panel, Zugriff am Juli 23, 2025, <https://www.carbonmark.com/post/how-technologies-solve-double-counting-problems-in-carbon-markets-key-takeaways-from-cop29-azerbaij>
40. 5 greenwashing trends to avoid in company carbon offsetting, Zugriff am Juli 23, 2025, <https://lune.co/blog/5-greenwashing-trends-to-avoid-in-company-carbon-offsetting>
41. 10 Companies Called Out For Greenwashing - Earth.Org, Zugriff am Juli 23, 2025, <https://earth.org/greenwashing-companies-corporations/>
42. Greenwashing – the deceptive tactics behind environmental claims | United Nations, Zugriff am Juli 23, 2025, <https://www.un.org/en/climatechange/science/climate-issues/greenwashing>
43. dynamiccarboncredits.com, Zugriff am Juli 23, 2025, <https://dynamiccarboncredits.com/carbon-credit-greenwashing-the-hidden-threat-to-net-zero-goals-and-how-to-avoid-it/#:~:text=The%20consequences%20of%20greenwashing%20extend,could%20make%20a%20real%20difference.>
44. How Does Data Integrity Affect Outcomes? → Question - Climate → Sustainability Directory, Zugriff am Juli 23, 2025, <https://climate.sustainability-directory.com/question/how-does-data-integrity-affect-outcomes/>
45. Why Is Data Integrity Important for Sustainability Reporting? → Question, Zugriff am Juli 23, 2025, <https://climate.sustainability-directory.com/question/why-is-data-integrity-important-for-sustainability-reporting/>
46. Unlocking Transparency in Carbon Markets, Zugriff am Juli 23, 2025, <https://www.numberanalytics.com/blog/ultimate-guide-transparency-carbon-markets>
47. Navigating the Voluntary Carbon Market's Issues and Opportunities, Zugriff am Juli 23, 2025, <https://www.senken.io/blog/voluntary-carbon-market-issues-and-opportunities>
48. Transparency in the carbon market & how software can help - Thallo, Zugriff am Juli 23, 2025, <https://www.thallo.io/transparency-in-the-carbon-market-how-software-can-help/>
49. Data Privacy in Carbon Credit Trading: Challenges, Risks, and Regulatory Frameworks, Zugriff am Juli 23, 2025, <https://secureprivacy.ai/blog/carbon-credit-trading-data-privacy>
50. (PDF) A European Emissions Trading System Powered by Distributed Ledger Technology: An Evaluation Framework - ResearchGate, Zugriff am Juli 23, 2025, <https://www.researchgate.net/publication/349364274_A_European_Emissions_Trading_System_Powered_by_Distributed_Ledger_Technology_An_Evaluation_Framework>
51. A Blockchain Enabled Framework for Notarizing ... - POLITesi, Zugriff am Juli 23, 2025, <https://www.politesi.polimi.it/retrieve/537b1f1d-b009-4a7f-a5ab-0be7ea5a01bf/2024_04_Hadi_Thesis.pdf>
52. Distributed ledger technology, carbon accounting, and emissions trading; - Federal Reserve Bank of Chicago, Zugriff am Juli 23, 2025, <https://www.chicagofed.org/-/media/publications/chicago-fed-letter/2022/cfl474-pdf.pdf?sc_lang=en>
53. What Are EVM-Compatible Blockchains? Benefits and Examples, Zugriff am Juli 23, 2025, <https://blog.sei.io/what-are-evm-compatible-blockchains-benefits-and-examples/>
54. EVM Compatible Blockchains - Benefits and Use Cases | Shardeum, Zugriff am Juli 23, 2025, <https://shardeum.org/blog/what-are-evm-compatible-blockchains/>
55. Ethereum has 4.9x more developers than any other blockchain (2023 data). Base's 2024 growth will amplify Ethereum's developer dominance even further. Ethereum is the Internet of Blockchains. : r/ethtrader - Reddit, Zugriff am Juli 23, 2025, <https://www.reddit.com/r/ethtrader/comments/1hbkk3t/ethereum_has_49x_more_developers_than_any_other/>
56. Analysing Developer Trends Across the Crypto Ecosystem - CoinShares Research Blog, Zugriff am Juli 23, 2025, <https://blog.coinshares.com/analysing-developer-trends-across-the-crypto-ecosystem-67f470d77b17>
57. What Are EVM-Compatible Blockchains?, Zugriff am Juli 23, 2025, <https://www.gocrypto.com/blog/what-are-evm-compatible-blockchains>
58. How Does EVM Compatibility Enhance Blockchain Usability? - - Venue Cincinnati, Zugriff am Juli 23, 2025, <https://venuecincinnati.com/how-does-evm-compatibility-enhance-blockchain-usability/>