



ESGpedia: A Case Study

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EXECUTIVE SUMMARY

Singapore's fintech industry is a global leader in digital transformation, supported by advanced infrastructure and a robust regulatory framework. This study focuses on ESGpedia, a Singapore-based small and medium-sized enterprise (SME) operating at the intersection of fintech, blockchain, and Environmental, Social, and Governance (ESG) data management. ESGpedia leverages blockchain technology to address fragmented data, greenwashing, and compliance challenges, providing transparent and reliable ESG solutions for businesses, regulators, and financial institutions.

As an SME, ESGpedia has secured critical partnerships, enhancing its credibility and regional influence. Despite these strengths, the company faces challenges typical of SMEs, including funding constraints, evolving regulatory requirements, and the complexity of blockchain adoption for cost-sensitive clients. Additionally, ESGpedia operates in a competitive landscape, with competitors employing similar technologies and expanding their global reach.

ESGpedia employs three core strategies to address these challenges: (1) strategic partnerships, (2) technology-driven solutions, and (3) ecosystem-centric knowledge sharing. To enhance its position, ESGpedia could expand its blockchain capabilities, including tokenization of carbon credits and real-time ESG monitoring, aligning with global standards such as the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB), and tailor its solutions to underserved markets. Furthermore, adopting scalable pricing models and leveraging AI-driven predictive analytics could enhance the platform's usability and appeal, particularly for SMEs.

By addressing its challenges and leveraging its innovative strategies, ESGpedia is well-positioned to strengthen its role in the growing blockchain ESG market, which is projected to reach \$5.4 billion by 2030. As a Singapore-based SME, ESGpedia's adaptability, focus on regional partnerships, and commitment to scalable innovation are critical in an evolving industry.

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Introduction

The fintech industry in Singapore has emerged as a global leader in digital transformation, driven by its advanced digital infrastructure and supportive regulatory environment. Ranked first in the Asian Digital Transformation Index (Economist Intelligence Unit, 2023), Singapore is a pivotal hub for innovation, particularly in adopting innovative technologies like blockchain. This case study focuses on Hashstacs Pte Ltd, now rebranded as ESGpedia, a Singapore-based SME founded in 2018 that operates at the intersection of fintech, blockchain, and Environmental, Social, and Governance (ESG) data management.

ESGpedia provides a centralized platform for aggregating and validating ESG data, enabling businesses, financial institutions, and regulatory bodies to enhance transparency, improve compliance, and combat greenwashing. By leveraging Blockchain technology, ESGpedia addresses challenges such as fragmented ESG data, lack of standardization, and risks of data tampering. Unlike competitors, ESGpedia differentiates itself by offering an integrated ecosystem of ESG solutions using blockchain technology tailored to support compliance while enabling decision-makers to trust the data they rely on. However, the company faces fierce competition in the fintech ecosystem with low barriers to entry, alternative platforms, and technologies, and it must navigate evolving ESG reporting standards.

ESGpedia's strategic partnerships play a vital role in addressing these challenges. Collaborations with financial entities like OCBC Bank and Bamboo Capital Group provide access to expertise and networks that amplify its regional presence. Moreover, partnerships with regulators such as the Monetary Authority of Singapore (MAS) through initiatives like Project Greenprint enable ESGpedia to shape and align with emerging ESG standards. These collaborations allow ESGpedia to bolster its credibility, combat greenwashing, and expand its influence across the ASEAN region.

This case study explores ESGpedia's operational timeline, innovative solutions, and strategic partnerships. The study highlights ESGpedia's role in advancing Singapore's leadership in fintech and sustainable finance by analyzing its responses to challenges and its differentiation in the fintech space.

Industry Context

The blockchain-based ESG reporting industry is growing rapidly, fueled by increasing demands for transparency, accountability, and compliance in sustainability practices. Blockchain technology's unique attributes—immutability, traceability, and enhanced data security—address critical challenges in traditional ESG reporting systems. Global ESG frameworks such as the Global Reporting Initiative (GRI), Task Force on Climate-Related Financial Disclosures (TCFD), and Carbon Disclosure Project (CDP) further accelerate adoption. The global blockchain ESG market is projected to grow at a compound annual growth rate (CAGR) of 15.6% from 2023 to 2030, reaching a market value of \$5.4 billion by 2030 (Grand View Research, 2023).

The industry faces intense competition, with key players competing in a fragmented market. While fragmentation drives innovation, it challenges new entrants, particularly in gaining credibility and acquiring clients. ESGpedia distinguishes itself through strong partnerships with regulators such as the Monetary Authority of Singapore (MAS) and initiatives like Project Greenprint. These collaborations position ESGpedia as a credible player in the Asia-Pacific market.

Adoption challenges remain, particularly among SMEs. Blockchain solutions are often perceived as costly and complex compared to substitutes like ERP systems or manual tools. Substitutes address basic ESG reporting needs but lack blockchain's scalability and transparency. SMEs' sensitivity to cost is a significant barrier, as 65% of small businesses prioritize affordability when adopting new technologies (OECD, 2022).



Regulatory trends drive demand, with ESG compliance becoming mandatory in several regions, including Europe and Asia. Emerging technologies such as artificial intelligence (AI) and the Internet of Things (IoT) enhance blockchain's value proposition by enabling real-time monitoring and predictive analytics. Integration with these technologies creates opportunities for advanced ESG solutions, aligning with evolving market needs.

The blockchain ESG market holds immense potential but demands strategic innovation and collaboration. Firms like ESGpedia must address price sensitivity and tailor solutions to regional needs while leveraging advanced technologies. With its strong partnerships and focus on scalability, ESGpedia is well-positioned, but continuous adaptation will be essential to thrive in this dynamic and competitive market.

Challenges and Solutions

While ESGpedia is positioning itself in the ESG reporting industry, it faces several critical challenges requiring solutions.

One of the primary challenges is data fragmentation and standardization. ESG data often varies significantly across regions and industries, making it difficult to ensure comparability and reliability (Forbes, 2022). This lack of standardization creates barriers for businesses to meet regulatory requirements or achieve sustainability targets effectively. Additionally, regulatory compliance is an ongoing concern. With evolving frameworks such as Europe's Corporate Sustainability Reporting Directive (CSRD) and diverse regulatory requirements across the Asia-Pacific region, ESGpedia must continuously adapt to ensure alignment with these standards (Lisam, 2023).

Another critical issue for ESGpedia is funding constraints. A cautious investment environment and a decline in venture capital activity have made it challenging to secure consistent financial resources, limiting opportunities for rapid expansion (KPMG, 2023). Compounding this is the challenge of converting funding into sustainable and predictable revenue streams necessary for long-term financial stability in a competitive and rapidly evolving market. These financial pressures likely influenced the strategic rebranding of Hashstacs Pte Ltd to ESGpedia in September 2024, signaling a shift in focus from a pure play in fintech and blockchain to ESG solutions.

This pivot occurred despite the company raising over USD 6 million in funding, including USD 3.6 million in a pre-Series A round led by Wavemaker Partners in 2021. However, ESGpedia's experience reflects broader challenges in the Fintech space for SMEs, such as market saturation, scalability issues, and regulatory uncertainties, which can constrain growth. By pivoting to ESG solutions, the company aimed to overcome these limitations by aligning with the rising demand for compliance-driven ESG data and technology. This shift is particularly strategic in the Asia-Pacific region, where regulatory initiatives like those in Singapore create significant growth opportunities in the ESG sector.

Technological integration also poses a significant hurdle, particularly for SMEs. Many lack the technical expertise or resources to adopt blockchain-based ESG solutions, which hampers ESGpedia's ability to scale its services to a broader market (Fintech News, 2024). Meanwhile, market competition remains intense, with platforms like Diginex and Kaleido offering similar services. This competitive environment pressures ESGpedia to differentiate itself while maintaining cost-effectiveness and value for its users.

To address these challenges, ESGpedia can take a multi-pronged approach. As evidenced by its partnership with the Monetary Authority of Singapore (MAS), strengthening collaborations with regulators can enhance data aggregation and standardization, bolstering credibility and compliance alignment. Localized solutions tailored to specific regulatory frameworks in underserved markets such as Vietnam and Indonesia can help ESGpedia expand its market presence and become a trusted partner in these regions.



To tackle funding constraints, ESGpedia can diversify its revenue streams by forming strategic partnerships with sustainability-focused organizations and leveraging corporate social responsibility (CSR) programs. Additionally, introducing a tokenized funding mechanism could attract impact-focused investors interested in supporting blockchain-based ESG innovations. These steps will ensure access to sustainable capital and support long-term growth.

Implementing value-based pricing models, such as subscription tiers, could also make ESG solutions more accessible to cost-sensitive SMEs while safeguarding revenue potential. Leveraging technological innovations, such as AI and IoT, for real-time environmental monitoring and automated data processing can further lower adoption barriers for SMEs, enhancing the platform's usability and appeal. ESGpedia can also focus on market differentiation by offering user-friendly interfaces, seamless integration with enterprise systems, and targeted solutions for niche industries.

By addressing its challenges with strategic funding solutions, enhanced regulatory adaptability, scalable pricing models, and technological innovation, ESGpedia can strengthen its position in the blockchain-based ESG reporting industry. These efforts will enable the platform to expand its market presence, build user trust, and contribute meaningfully to global sustainability goals.

ESGpedia Strategic Roadmap

Considering the current business landscape, ESGpedia recognizes three key strategies as part of its roadmap: (1) Strategic Partnerships, (2) Technology Driven Solutions and (3) Knowledge Sharing.

Strategy 1: Strategic Partnerships

ESGpedia has established strategic partnerships with regulatory bodies and financial institutions in its efforts to align with regulatory requirements and meet growing demands in the fintech.

The collaboration with the Monetary Authority of Singapore (MAS) under Project Greenprint is a significant aspect of ESGpedia's strategy. By powering the ESG Registry, ESGpedia provides a centralized platform for verified ESG data, improving transparency and enabling financial institutions to mobilize capital toward sustainable projects. This partnership aligns with MAS's regulatory initiatives to integrate sustainability into financial systems (Monetary Authority of Singapore, 2023). However, the platform's scalability across regions with varying regulatory frameworks poses challenges. To address this, ESGpedia could further align with global reporting standards such as the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB), enhancing its adaptability. ESGpedia's partnership with OCBC Bank demonstrates its practical application in sustainable finance. By supporting OCBC in extending sustainability-linked loans (SLLs) to Ghim Li, ESGpedia facilitates emissions tracking and ensures compliance with sustainability benchmarks. This partnership highlights the platform's ability to integrate technological solutions into financial mechanisms (OCBC, 2023). However, its focus on specific industries, such as textiles, limits its broader applicability. Expanding its reach to other sectors, including renewable energy and agriculture, could enhance ESGpedia's impact across diverse industries.

ESGpedia's role as the official ESG platform for the Sustainable Finance Institute Asia (SFIA) Single AccessPoint for ESG Data (SAFE) initiative strengthens its presence in the ASEAN region. This partnership addresses challenges related to ESG data standardization and accessibility, particularly for SMEs, and promotes regional alignment in sustainability practices (Sustainable Finance Institute Asia, 2023). However, the variability of ESG regulatory maturity across ASEAN countries impedes uniform implementation. Offering



region-specific ESG solutions and leveraging data to establish benchmarks could further enhance ESGpedia's value proposition.

Strategy 2: Technology-Driven Solutions

ESGpedia employs a technology-driven strategy to address the fragmented nature of Environmental, Social, and Governance (ESG) data frameworks, utilizing advanced technologies like artificial intelligence (AI) and blockchain to enhance data accessibility, transparency, and trust. By consolidating extensive ESG data points and certifications into a unified platform, ESGpedia resolves data fragmentation and provides stakeholders with streamlined access to verified information. Through AI, ESG data from diverse sources is harmonized into consistent and comparable profiles, facilitating evaluation and compliance. This approach is exemplified in its collaboration with OCBC Bank, enabling emissions tracking for sustainability-linked loans. ESGpedia's blockchain technology, developed by STACS, ensures the immutability and transparency of ESG data by underpinning the ESG Registry with verifiable records and enabling secure data sharing among stakeholders. Its partnership with Razer Inc. further highlights its innovative applications, with the development of Restorify, a carbon credits digital management platform ensuring transaction transparency and accountability.

In addition to its technological advancements, ESGpedia offers industry-specific tools that address challenges in sectors like hospitality and textiles, helping stakeholders implement emissions reduction strategies and achieve sustainability certifications. Its collaboration with IAF CertSearch has expanded its services by enabling suppliers to validate ISO certifications, enhancing supply chain transparency and supporting sustainable operations.

While ESGpedia's strategy is robust, it could be further strengthened by expanding its blockchain capabilities to include tokenizing carbon credits, which would streamline trading and tracking in sustainability markets. Leveraging AI for predictive and prescriptive analytics could also help organizations anticipate ESG risks and opportunities, enabling proactive decision-making. Aligning its reporting with global standards such as the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) would improve scalability and relevance across diverse regulatory environments. Additionally, introducing real-time ESG performance dashboards with blockchain verification could provide businesses with transparent, user-friendly tools to monitor compliance and address issues effectively.

Competitors like EY's OpsChain ESG, Deloitte, and Microsoft illustrate the importance of adopting cutting edge technologies and aligning with international standards. EY leverages blockchain for carbon credit tokenization and traceability, Deloitte employs AI-driven predictive analytics for ESG risk management, and Microsoft's Cloud for Sustainability provides standardized ESG data capabilities aligned with global frameworks. By incorporating similar enhancements, ESGpedia could solidify its position as a leading ESG platform, driving greater global impact and adoption.

Strategy 3: Knowledge Sharing

ESGpedia's ecosystem-centric strategy, emphasizing knowledge-sharing initiatives, effectively addresses the fragmented nature of ESG frameworks. By fostering collaboration among businesses, regulators, and technology providers, ESGpedia disseminates actionable insights that empower stakeholders to adopt and enhance ESG practices.

For instance, ESGpedia co-authored a case study with Citadines Berawa Beach Bali, financed by PT Bank HSBC Indonesia, highlighting how decarbonization tools and green certification processes led to measurable sustainability improvements. This collaboration showcased actionable strategies for achieving operational efficiency while reducing carbon



footprints, serving as a replicable model across the industry (ESGpedia, 2023d).

Further demonstrating its commitment to knowledge dissemination, ESGpedia's Founder and Managing Director, Benjamin Soh, has actively participated in global conferences and industry talks. Notably, he spoke at the ReThink HK conference, where he shared expertise on sustainable supply chains (ReThink HK, 2023). Additionally, ESGpedia co-hosted "Green Logistics: Accelerating the Sustainability Transition with ESG Solutions workshop, bringing together leaders in logistics and sustainability to discuss ESG integration within the industry (ESGpedia, 2023e).

While ESGpedia's knowledge-sharing strategy is impactful, incorporating measurable outcomes would further enhance its credibility. Metrics such as the number of businesses adopting ESG practices, carbon emissions reductions, or compliance rate improvements would provide concrete evidence of its ecosystem-building success. Moreover, demonstrating how co-authored research influences policy decisions or drives business innovation would underscore the practical significance of ESGpedia's contributions, reinforcing its role as a leader in ESG integration and transformation.

Conclusion

ESGpedia illustrates the agility of well-positioned SMEs to adapt and pivot into new and emerging industries, provided they possess sufficient strategic vision and resources to seize opportunities effectively. In underdeveloped ecosystems lacking a robust network, forming strategic partnerships becomes an essential strategy. Collaborations with government agencies, industry leaders, technology providers, or even academic institutions can help SMEs overcome resource constraints, build credibility, and generate market awareness. Such partnerships are particularly vital for educating potential customers and stakeholders to create demand in industries where it might not naturally exist.

The evolving regulatory landscape, while offering significant opportunities, also poses challenges that only adaptable and well-prepared SMEs can fully leverage. Frameworks like Europe's Corporate Sustainability Reporting Directive (CSRD) and Asia's regional ESG mandates present growth potential for SMEs capable of developing scalable, compliance-driven solutions. However, these regulations often demand significant investments in infrastructure, training, and compliance mechanisms, which may strain SMEs with limited resources. To navigate this dual-edged environment, SMEs must focus on early engagement with regulators, leveraging partnerships to share the cost of compliance, and staying ahead of policy trends to anticipate changes.

Simultaneously, advancements in technology, such as blockchain-enabled carbon credit systems and AI-driven predictive analytics, provide tools that can help SMEs maintain competitiveness in fast-evolving sectors. By investing in innovative, affordable, and adaptable solutions, SMEs can align themselves with global and regional ESG priorities while meeting the increasing demand for transparency and accountability.

Ultimately, ESGpedia's success underscores the importance of an integrated approach for SMEs in emerging markets. Strategic partnerships provide the foundation for market access and credibility; regulatory foresight and preparedness unlock growth opportunities; and technological innovation ensures relevance in a rapidly changing environment. SMEs that proactively combine these elements can overcome barriers and position themselves as competitive players in dynamic, high-growth industries.



Appendix

Company Name	ESGpedia
Industry	ESG Data and Technology
Products & Services	ESG data and compliance platform and integrated solutions
Founding Year	2018
No of Founders	1
Headquarters	Singapore
Market Presence	Asia- Pacific Region
Annual Revenue	Not publicly disclosed

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