MacroCosmos Creations

Blockchain-Enabled Carbon Management Platform for a Sustainable Future

White Paper

August 2023

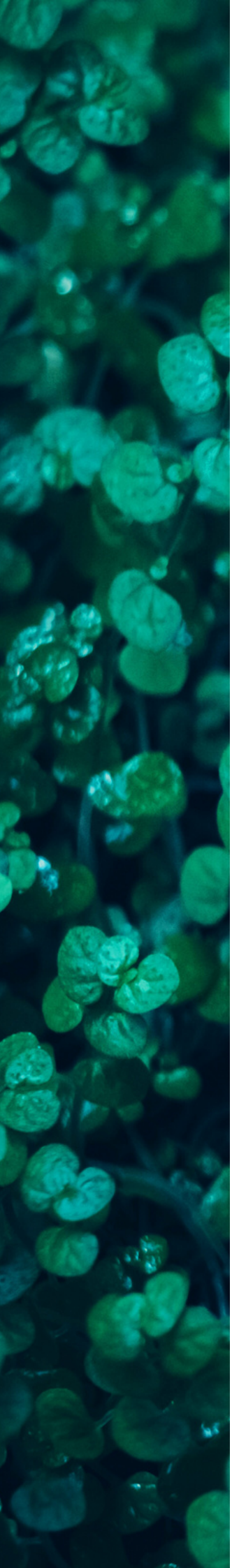


Table of contents

Executive summary

MacroCosmos Creations Private Limited (MCC) is a global startup, committed to addressing climate change and promoting environmental sustainability. MCC's overall vision is to assist in achieving net-zero goals aligned with IPCC targets, enhance food security for a population of 10 billion by 2050 and provide access to high-quality food and improve health & wellness.

MCC's core mission is to advance the global journey towards net-zero emissions by pioneering a comprehensive, transparent, and efficient carbon management platform. Our commitment is to establish trust and accountability throughout the process. Our objective encompasses facilitating carbon offset projects, minimizing carbon footprints, and enabling participation in carbon credit and token trading. Through the integration of blockchain technology and tokenization, we provide a holistic solution for effective carbon management.

MCC’s platform stands out as a unique and innovative solution in the carbon management domain. It combines blockchain technology with Digital monitoring, Reporting, and Verification (D-MRV) functionalities, ensuring the accurate and reliable generation of carbon credits.

MCC's platform introduces the MacroCosmos Carbon Token (MCT) as the foundation for carbon credit trading, carbon footprint offsetting, investments in sustainable carbon credit projects, and retiring carbon credits. This blockchain-based tokenization system enhances transparency, efficiency, and traceability in the carbon management landscape.

By leveraging blockchain technology, MCC’s platform aims to reduce costs and improve accessibility for individuals and companies seeking to offset their carbon footprint. Additionally, this platform helps real-time monitoring and promotes sustainable practices, which facilitate greenhouse gas emissions reduction and contribute to the global fight against climate change.

The integration of blockchain technology in MCC's platform enhances reliability, security, and trustworthiness in the carbon market. This favorable market environment incentivizes greater participation, resulting in reduced carbon emissions and increased investment in sustainable projects.

In summary, MCC's platform offers an innovative solution for carbon management, driving positive change towards a greener future. Through seamless integration of blockchain technology and tokenization, we aim to make a significant impact on the environment, promote sustainability, and create a better world for future generations.

Background

Climate change is recognized as one of the most pressing issues of our time, with far-reaching impacts on the environment, economies, and societies worldwide. The United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992, marked the first international agreement dedicated to addressing this global challenge. The UNFCCC established a framework for international cooperation to stabilize greenhouse gas (GHG) concentrations in the atmosphere and prevent dangerous human-induced interference with the climate system.

As the years went by, scientific research and global awareness about climate change continued to increase. In 1997, the international community took a significant step forward with the adoption of the Kyoto Protocol. This protocol, under the UNFCCC, aimed to legally bind developed countries to reduce their greenhouse gas emissions. It set specific emission reduction targets for these countries during the commitment period from 2008 to 2012.

The Kyoto Protocol introduced innovative mechanisms such as emissions trading and the Clean Development Mechanism (CDM) to facilitate emissions reductions and promote sustainable development. It was a significant milestone in the international efforts to combat climate change, showcasing the world's commitment to addressing the problem collectively. However, it became evident that a more comprehensive and inclusive agreement was needed to effectively address climate change on a global scale. Years of negotiations and consultations led to the historic Paris Agreement in 2015. This agreement built upon the foundations of the UNFCCC and sought to strengthen the global response to climate change.

Under the Paris Agreement, countries pledged to limit global warming to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the temperature increase to 1.5 degrees Celsius. Each country voluntarily submitted their own nationally determined contributions (NDCs), outlining their emission reduction targets and actions.

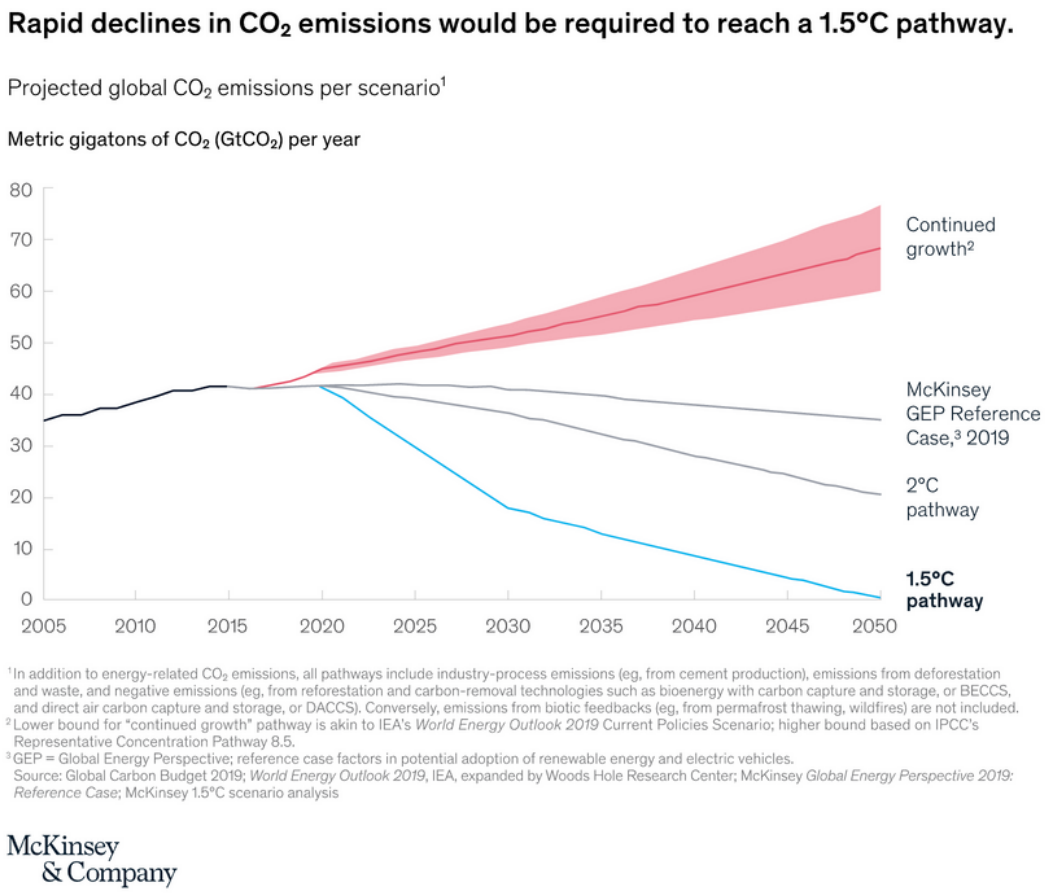


Figure: The graph indicating rapid declines in CO_2 emissions required for the 1.5°C pathway (source: McKinsey & Company)

The Paris Agreement emphasized the importance of transparency, accountability, and regular reporting to track progress towards the set goals. It also recognized the need for financial and technological support to assist developing countries in their climate change mitigation and adaptation efforts. Building upon the global commitment and the advancements in technology, innovative solutions emerged to facilitate effective carbon management.

Carbon Management

Carbon management is an organized approach that enables organizations to strategically reduce CO_2 emissions, gain strategic advantages, and promote sustainability. By implementing carbon management practices, organizations can monitor, measure, and offset their carbon emissions. This involves improving energy efficiency, transitioning to low-carbon energy sources, and implementing carbon offsetting initiatives. Carbon management plays a crucial role in the global fight against climate change, helping organizations align their efforts with emission reduction goals and reduce reliance on fossil fuels.

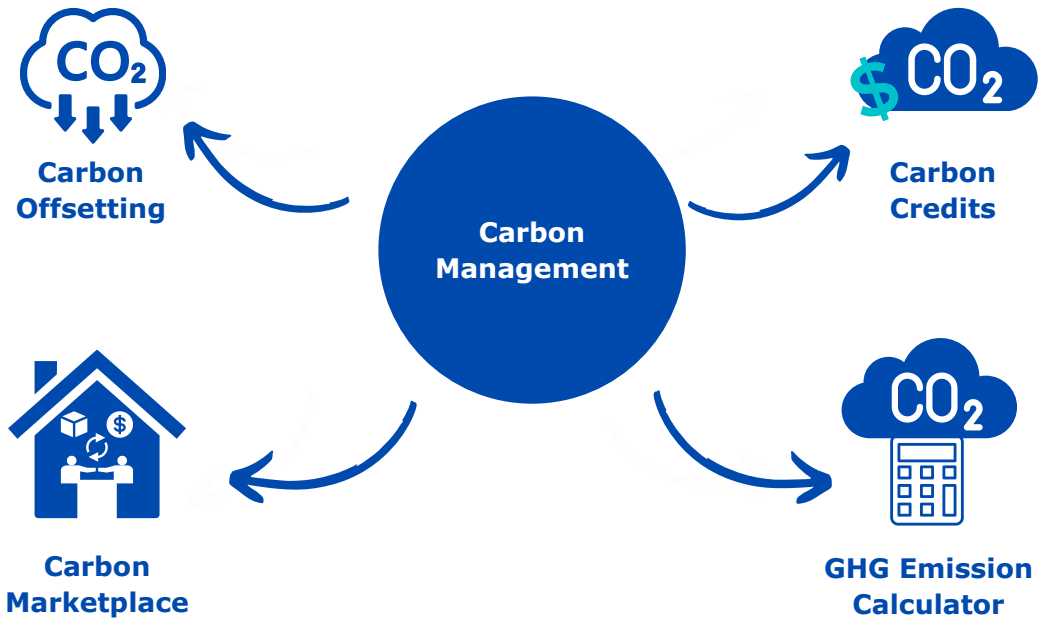


Figure: Unlocking the Potential of Carbon Management: A comprehensive approach to Carbon Offsetting, Carbon Credits, Carbon Trading, and Emission Calculations

Problem Statement

The current carbon management systems face a number of challenges, including a lack of standardization, verification difficulties, double counting, inefficient carbon trading, limited transparency, and liquidity issues. These obstacles hinder the effectiveness of the carbon market and undermine efforts to achieve significant reductions in GHG emissions.

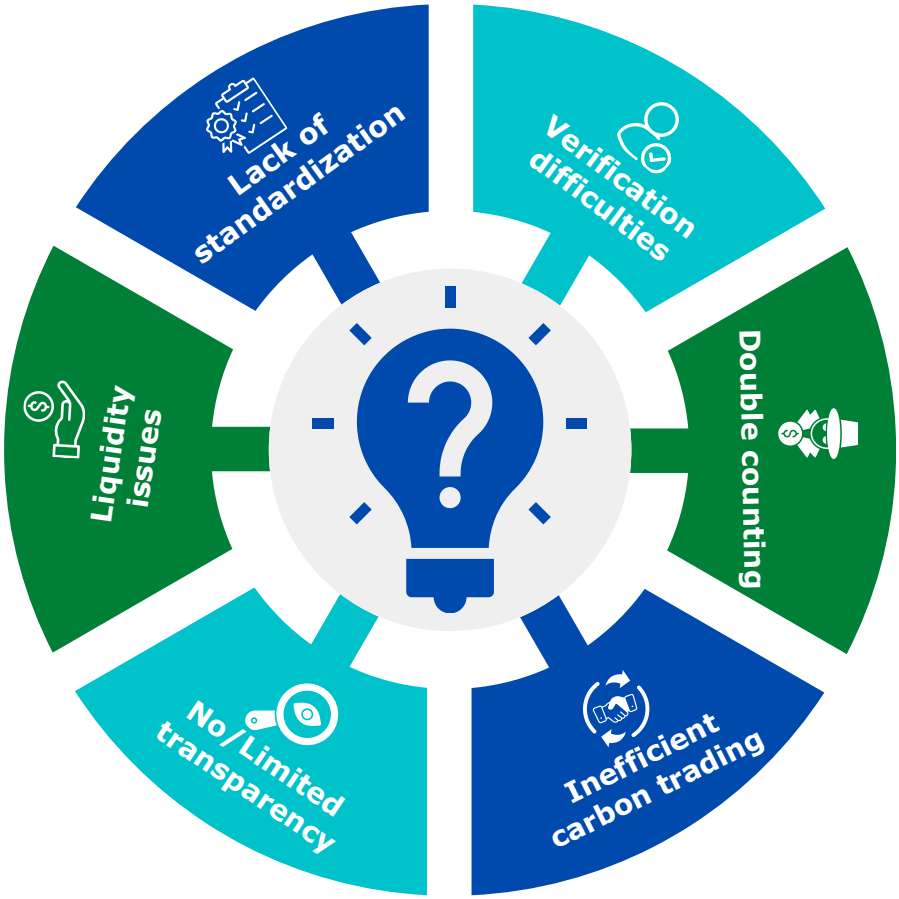


Figure: Depicts Problem Statement

Objectives

Our white paper introduces an innovative solution for carbon management through tokenization and blockchain technology.

- To Develop an Efficient and Transparent Blockchain-Powered Carbon Management Platform.
- To Empower Carbon Management with Digital Monitoring, Reporting, and Verification (D-MRV).
- To Establish a Reliable Carbon Credit Tracking System with MacroCosmos Carbon Token (MCT).
- To Entice Investors with MCT's value proposition such as Financial Returns and Climate Change Impact.

Figure: Depicts Objectives of Carbon Management

By achieving these objectives, we aim to revolutionize the carbon offset market.

Introducing Our Blockchain-Powered Carbon Management Platform

A blockchain-powered carbon management platform represents a breakthrough solution in addressing the urgent need for effective carbon management. At the forefront of innovation, our blockchain-powered carbon management platform offers a groundbreaking solution to the pressing challenge of effective carbon management. By harnessing the power of blockchain technology, our platform streamlines carbon offset project investments, ensures transparent tracking of carbon credits, and facilitates efficient trading.

Emphasizing transparency, trust, and accountability, this cutting-edge approach transforms the carbon credit market, empowering stakeholders to make impactful decisions in the fight against climate change. Investors are presented with a unique opportunity to contribute towards sustainability while potentially reaping financial returns.

With our tailored blockchain-powered carbon management platform, we pave the way toward a more sustainable and responsible future, aligning financial incentives with environmental impact. Together, we revolutionize carbon management and chart a path to a greener tomorrow for our future generations!

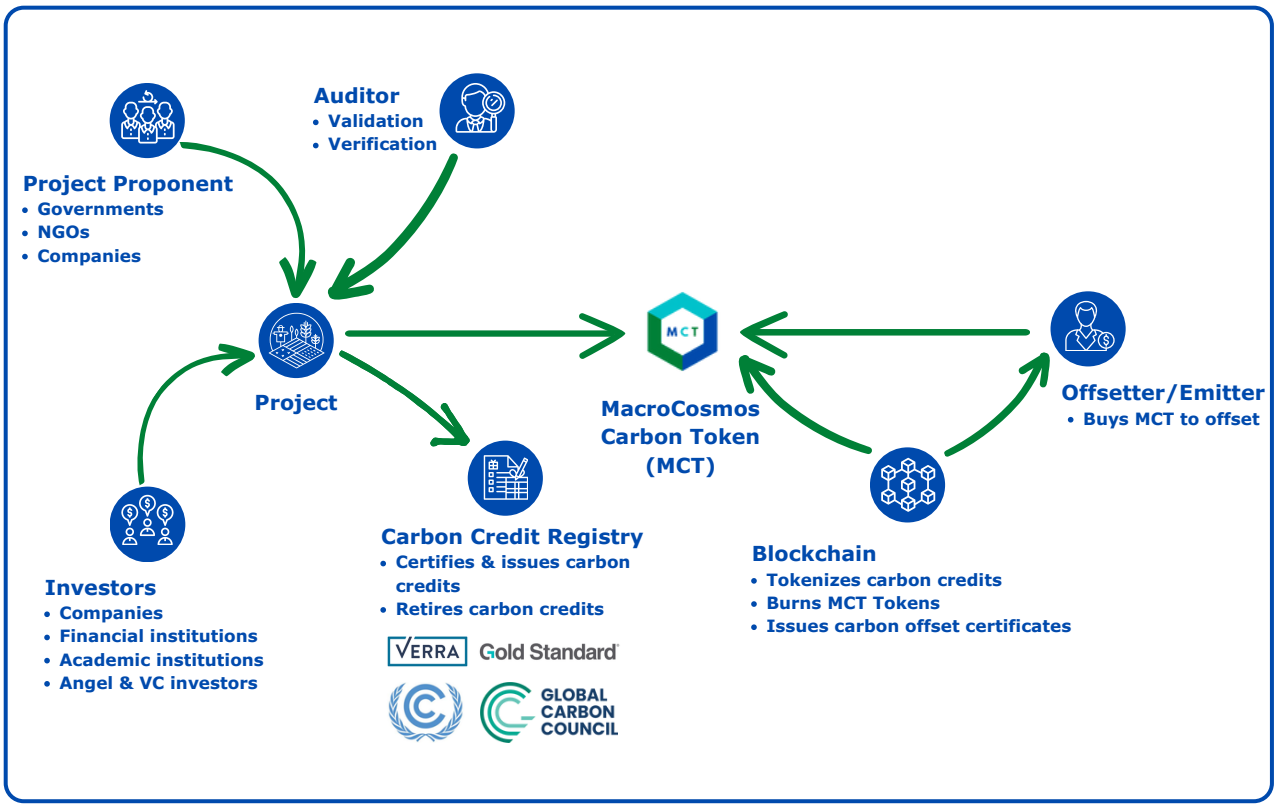


Figure: A Blockchain-Powered Carbon Credit Ecosystem

Empowering Carbon Management with DMRV

D-MRV represents a comprehensive framework in carbon management, harnessing digital technologies to streamline processes. By leveraging sensor technology (such as IOT and Satellite), data analytics, and machine learning, D-MRV enhances efficiency, accuracy and transparency.

At MCC, we take D-MRV to the next level by integrating blockchain technology, creating a secure and transparent platform for carbon accounting, including emissions, reductions, and removals data. This tamper-proof storage ensures the integrity of emissions and mitigations data.

With blockchain-based D-MRV, carbon credit creation, and trading become seamless, boosting investor confidence in carbon offset projects. The result is a cutting-edge MCC platform, offering security, transparency, efficiency, and accountability, that propels us towards our net-zero goal.

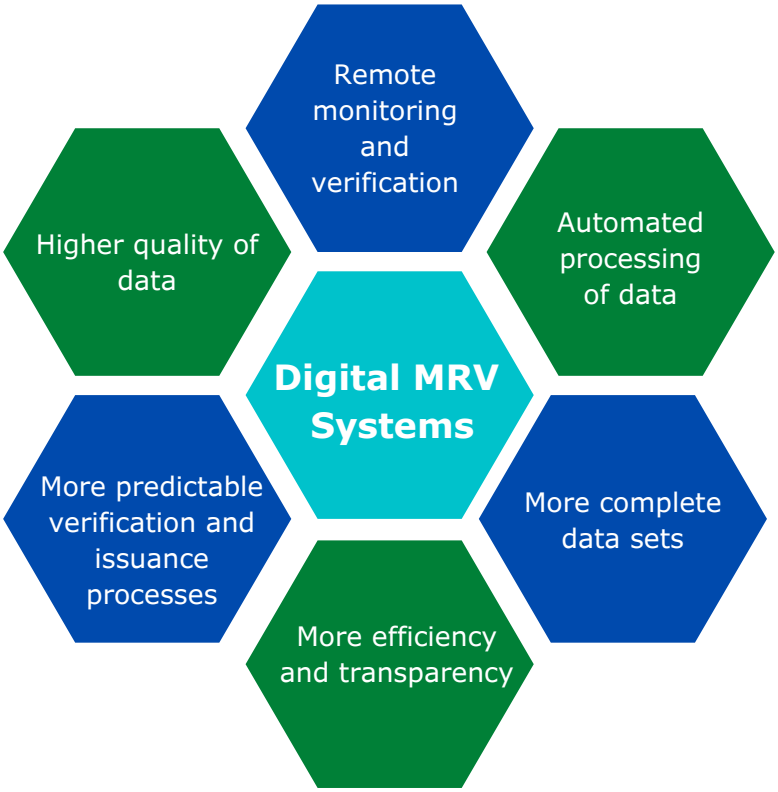


Figure: Digital MRV Systems

Transforming Carbon Management with Tokenization

Tokenization, a revolutionary concept in blockchain technology, has the power to transform carbon management. It offers a digital and decentralized way to represent and transfer ownership of assets, making tangible or intangible assets easily accessible, tradable, and divisible.

In the context of carbon management, tokenization opens new avenues by digitizing carbon credits, enabling seamless trading, and fostering efficiency in the carbon market. This groundbreaking approach holds the potential to revolutionize how we address climate change, paving the way for a more sustainable and transparent future.

At MCC, we utilize the MCT as the foundation of our platform. MCT, built on the Ethereum blockchain, ensures high security, transparency, and efficiency. Using MCT, buyers can easily track and facilitate carbon credit trading, eliminating the risk of double counting or fraud while ensuring a seamless process for trading and retiring carbon credits.

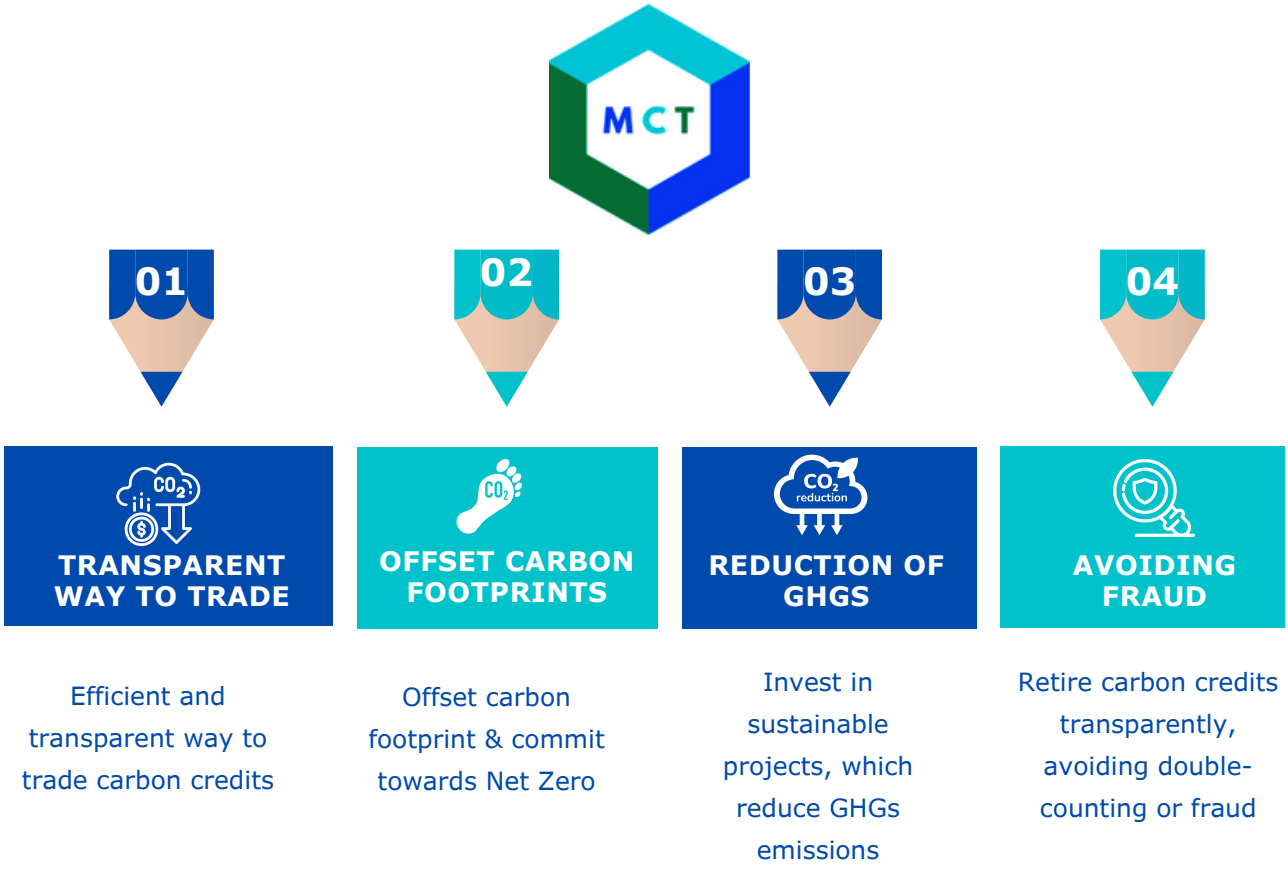


Figure: Paving the Path to a Greener Future with MCT

MCT's Value Proposition

Investing in Sustainability with MCT Token Sale

MCT Token Sale welcomes individuals, corporates, and socially responsible brands to actively contribute to sustainability. By investing in MCT, you support our technology-driven carbon offset management platform while endorsing carbon farming, emission reduction, avoidance, and removal projects.

Maximizing Impact through Token Sale Proceeds

MCT Sale proceeds will amplify our platform's reach and fund sustainable initiatives focused on greenhouse gas emission reduction, avoidance and removals. Your investment through MCT drives tangible change, creating a more sustainable world for future generations.

Diversified Portfolio of Climate Solutions

MCT offers a diversified portfolio of carbon offsetting projects focused on nature-based solutions and other climate solutions like renewable energy. Carbon credits from these projects can be tokenized to provide greater liquidity and accessibility to carbon credit markets. By investing in MCT, you can participate in projects that address climate change and promote sustainability.

Profit with Purpose

With MCT, you don't have to choose between profit and purpose – you can achieve both. You can earn competitive financial returns while making a meaningful impact on climate change. MCT distribution prioritizes long-term company success and equitable token allocation, reinforcing sustainability principles.

Exclusive Benefits for MCT Token Holders

MCT holders will enjoy exclusive benefits such as early access to carbon offset projects, discounts on carbon offset purchases, and the ability to retire carbon credits on our platform. We prioritize our token holders and strive to provide them with unique rewards for their investment.

Real-time Trade, Transparency, and Low Transaction Costs

MCT enables real-time trade, transparency, and cost-efficiency, delivering a user-friendly experience. Our platform strives to make climate solution investments accessible, efficient, and accountable.

Invest in MCT and join us in driving the transition to a cleaner and more sustainable future, while also generating strong returns for your portfolio and making a positive impact on climate change!

Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The 17 SDGs are integrated. They recognize that action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability.

We, at MCC, aim to achieve SDGs - 1 to 13, and 15 to 17.

Figure: Sustainable Development Goal (Source: United Nations)

MCT Tokenomics

Public Participation & Strategic Investors (Presale Rounds): These rounds are allocated for public participation and strategic investors to support early adoption and secure partnerships, enabling them to become early supporters of MCT and benefit from potential future value appreciation.

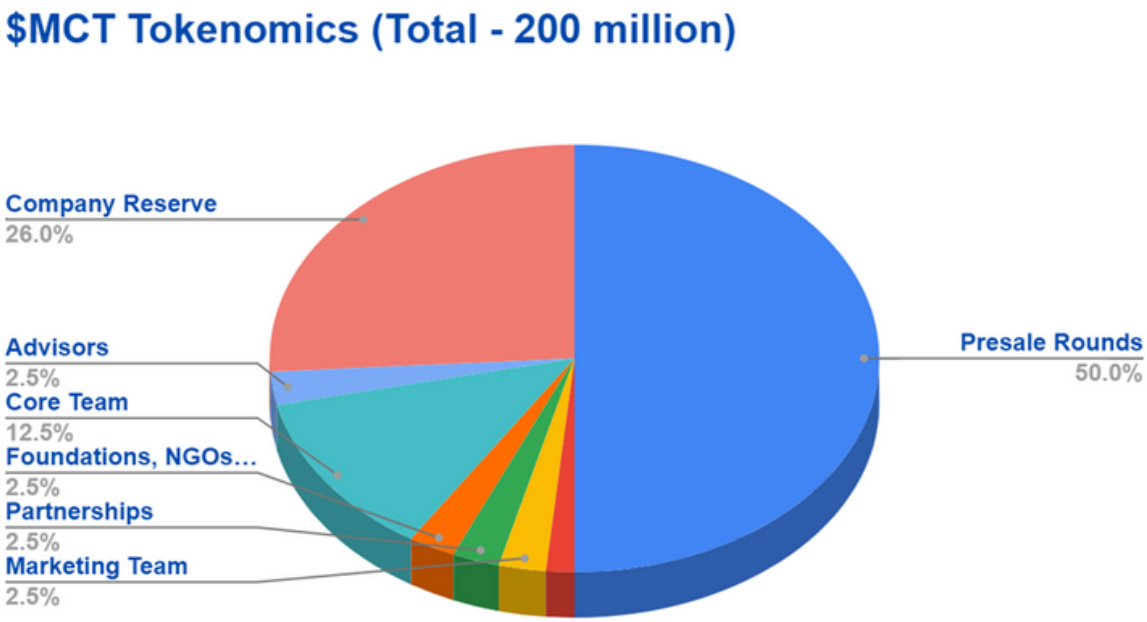
Community Building & Marketing Initiatives: Tokens will be allocated for community building and influencer marketing initiatives, aimed at raising awareness and driving adoption of MCT among a wider audience, increasing the visibility and demand for MCT.

Empowering Key Partnerships (Partners): Tokens will be allocated to key partners to establish mutually beneficial relationships, fostering collaborations and synergies that can drive the growth and adoption of MCT.

Driving Philanthropy & Social Impact (Foundation, NGOs, Charity): Tokens will be allocated for philanthropic initiatives that promote sustainability and social impact, reflecting MCC's commitment to making a positive contribution to the environment and society.

Recognizing Core Team & Advisors: A portion of tokens will be allocated to the core team and advisors as an incentive and reward for their contribution to the project, aligning their interests with the long-term success of MCC.

Fueling Future Development (Company Reserve): Tokens will be allocated for future business development and strategic investments, providing flexibility for MCC to pursue growth opportunities, expand its platform, and drive innovation in the field of carbon offsetting and climate solutions.



Please note that tokenomics details may be subject to updates, and specific token distribution percentages and/or numbers should be verified through the latest information available in MCC's official documentation.

Technology

Our carbon-based blockchain platform leverages the Ethereum blockchain *(https://ethereum.org/en/what-is-ethereum/)*, integrating ERC20 and ERC1155 standards. This creates a secure, scalable solution for tokenizing, trading, verifying carbon credits and issuing the carbon offsetting certificates. The cutting-edge technology establishes a transparent marketplace, making a significant impact on global climate change and sustainability efforts.

We prioritize safeguarding proprietary information while showcasing the transformative potential of our platform. With transparency, efficiency, and robustness, we contribute towards a greener future, positively impacting our planet's environmental sustainability.

MCT Smart Contract Audit

The MCT smart contract audit was conducted by Scrutify between April 1, 2023, and June 26, 2023**.** The comprehensive audit report summarizes the findings of the smart contract audit in a detailed manner.

Roadmap

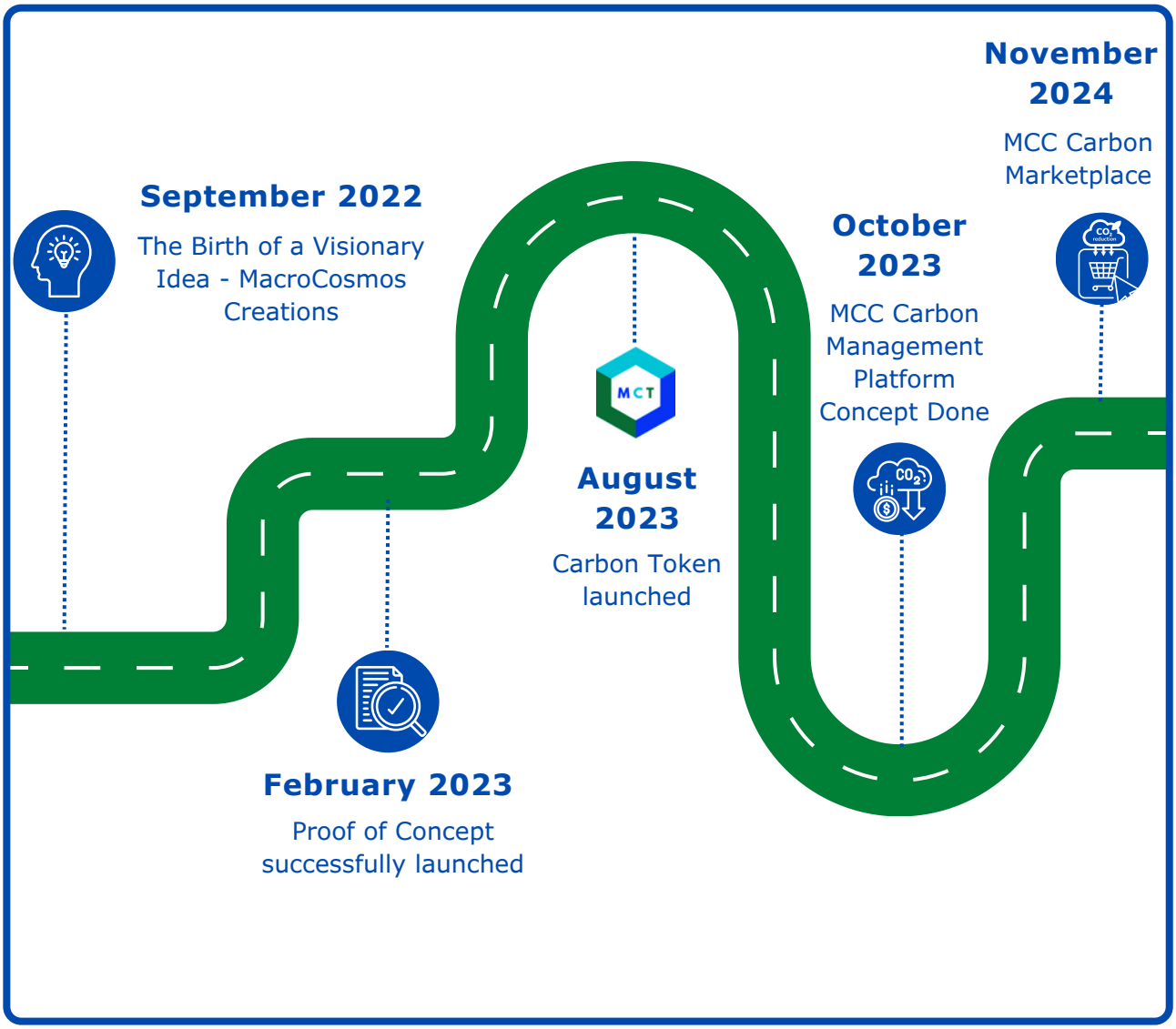


Figure: Roadmap

Legal and Compliance

A. Legal Framework

As a carbon credits trading platform, MCC is committed to adhering to the highest legal and ethical standards in all its operations. The legal framework for our platform is based on the principles of the United Nations Framework Convention on Climate Change (UNFCCC), the Clean Development Mechanism (CDM) and the Verified Carbon Standard (VCS).

B. Compliance with Regulations

We are fully committed to complying with all relevant regulations and laws, including those related to anti-money laundering, anti-bribery and anti-corruption, as well as data privacy and security. Our platform undergoes regular compliance assessments and audits to ensure that it meets the highest standards of integrity and transparency.

C. KYC Procedures

To ensure the security and integrity of our platform, we will implement Know Your Customer (KYC) procedures to verify the identities of all our users. This includes collecting and verifying information such as name, address, and other relevant details to confirm the identity of our users and prevent fraud and money laundering. Our KYC procedures are designed to balance the need for security with the need for privacy and user convenience.

We take the responsibility of complying with legal and regulatory requirements seriously and are committed to providing a safe and secure platform for our users to trade carbon credits.

Note: During MCT claiming procedure, KYC is mandatory. All the regulatory policy will be applied, if any. For more details, it is advisable to read the MCT token holder agreement and our terms and conditions by visiting our website - www.macrocosmoscreations.com before buying MCT token.

DID YOU KNOW?

Pre-industrial CO2 levels were around 280 parts per million (ppm). Today, we stand close to 420 ppm.

- Source:NASA

Conclusion

The MacroCosmos Carbon Management Platform is a secure and blockchain-integrated solution for carbon management and tokenization. The platform aims to help organizations effectively track and reduce their carbon footprint, making a lasting impact in the fight against climate change. Our roadmap outlines our plans for growth and innovation, including expansion into new global markets, integration with sustainability data sources, advancement of analytics and AI tools, and implementation of innovative carbon reduction strategies and technologies.

Future Outlook: The future of carbon management and mitigation is crucial in the fight against climate change. The MCC Carbon Management Platform represents a promising solution for organizations looking to effectively manage their carbon footprint and make a positive impact on the environment. With a focus on innovation, growth, and sustainability, we believe the MCC platform has the potential to drive real change in the fight against climate change.

Disclaimer

The information contained in this white paper is for informational purposes only and is not intended to be a prospectus, offering document, or investment advice. The MCC platform and its associated token offerings are subject to a number of risks and uncertainties, and the actual results of the MCC platform and its associated token offerings may differ materially from those discussed in this white paper. This white paper does not constitute a recommendation or endorsement of any investment in the MCC platform or its associated token offerings. Readers should carefully consider the risks and uncertainties associated with the MCC platform and its associated token offerings before making any investment decisions.

Team

1. Abhishek Mani Tripathi, PhD
2. Ketaki Vasant Phadke, PhD
3. Sharvari Patil
4. Ayush Ranjan
5. Ayush Porwal
6. Nikhil Masigari
7. Ashish Sharma
8. Sushil Singh
9. Jayeeta Chakroborty
10. Mubarak Oladele Muhammed
11. Vivek Kharwar
12. Aarav Srivastava
13. Nistha Tripathi
14. Amey Padma
15. Priyanka Pandey

Advisors

1. Mohammad Kamran, PhD
2. Dr. Srikanta K Panigrahi
3. Daher Bassel, PhD
4. Ashutosh Tiwari
5. Laxman Singh

References

- Empirical Analysis. In Electronic Governance with Emerging Technologies: First International Conference, EGETC 2022, Tampico, Mexico, September 12–14, 2022, Revised Selected Papers (pp. 227-237). Cham: Springer Nature Switzerland.
- He, Z., & Turner, P. (2022). Blockchain applications in forestry: A systematic literature review. Applied Sciences, 12(8), 3723.
- Leigh Matthews (2022) How Blockchain is Revolutionizing the Carbon Credit Space
- Marketplace (2022): How Blockchain Technology is Revolutionizing Carbon Credit Trading.
- Richardson, A., & Xu, J. (2020). Carbon Trading with Blockchain. In P. Pardalos, I. Kotsireas, Y. Guo, & W. Knottenbelt (Eds.), Mathematical Research for Blockchain Economy (pp. 105–124).
- Saraji, S., & Borowczak, M. (2021). A blockchain-based carbon credit ecosystem. arXiv preprint arXiv:2107.00185.
- Sicilia, M. A., García-Barriocanal, E., Sánchez-Alonso, S., Mora-Cantallops, M., & de Lucio, J. J. (2023, January). Understanding KlimaDAO Use and Value: Insights from an
- Sipthorpe, A., Brink, S., Van Leeuwen, T., & Staffell, I. (2022). Blockchain solutions for carbon markets are nearing maturity. One Earth, 5(7), 779-791.
- The Future of Carbon Trading with Blockchain Technology - CoinCentral.

- United Nations (2015). Sustainable Development Goals, https://www.un.org/sustainabledevelopment/news/communications-material/.
- van Wassenaer, L., van Hilten, M., van Asseldonk, M., & van Ingen, E. (2021). Applying blockchain to climate action in agriculture: State of play and outlook: Background paper. Food and Agriculture Organization of the United Nations.
- World Bank Group. (2018). Blockchain and emerging digital technologies for enhancing post-2020 climate markets.
- World Bank (2021)The Potential for Blockchain in Carbon Markets.
- World Bank. (2022). Digital Monitoring, Reporting, and Verification Systems and Their Application in Future Carbon Markets.
- World Economic Forum (2022). How can blockchain open access to carbon markets?
- World Economic Forum (2023). Recommendations for the Digital Voluntary and Regulated Carbon Markets.
- Woo, J., Fatima, R., Kibert, C. J., Newman, R. E., Tian, Y., & Srinivasan, R. S. (2021). Applying blockchain technology for building energy performance measurement, reporting, and verification (MRV) and the carbon credit market: A review of the literature. Building and Environment, 205, 108199.

Appendix

Blockchain: A decentralized, digital ledger that records transactions across a network of computers.

Carbon Credit: A tradable certificate representing a reduction of one metric ton of carbon dioxide or its equivalent in other greenhouse gases.

Carbon Market: A market where buyers and sellers trade carbon credits to meet emissions reduction goals.

Clean Development Mechanism (CDM): A carbon credit program established by the United Nations Framework Convention on Climate Change (UNFCCC) to promote sustainable development in developing countries.

Gold Standard (GS): A certification program that verifies the environmental and social benefits of carbon credits, renewable energy, and energy efficiency projects.

Tokenization: The process of converting an asset, such as a carbon credit, into a digital token that can be traded on a blockchain.

United Nations Framework Convention on Climate Change (UNFCCC): An international treaty signed in 1992 to stabilize greenhouse gas concentrations in the atmosphere and mitigate the impacts of climate change.

Verified Carbon Standard (VCS): A globally recognized program for the verification and issuance of carbon credits**.**

Verra: A non-profit organization that develops and manages standards for carbon credits, including the Verified Carbon Standard (VCS) and the Climate, Community and Biodiversity Standards (CCBS).

Voluntary Carbon Markets (VCM): Markets that allow carbon emitters to offset their emissions by purchasing carbon credits generated by projects targeted at removing or reducing greenhouse gas from the atmosphere.

Get in touch

We welcome questions and comments regarding our blockchain-enabled carbon management platform. Please get in touch with us at ***contact@macrocosmoscreations.com.***

www.macrocosmoscreations.com

MacroCosmos Creations

@MacroCosmosCPVT

MacroCosmos Creations

MacroCosmos Creations

MacroCosmos Creations