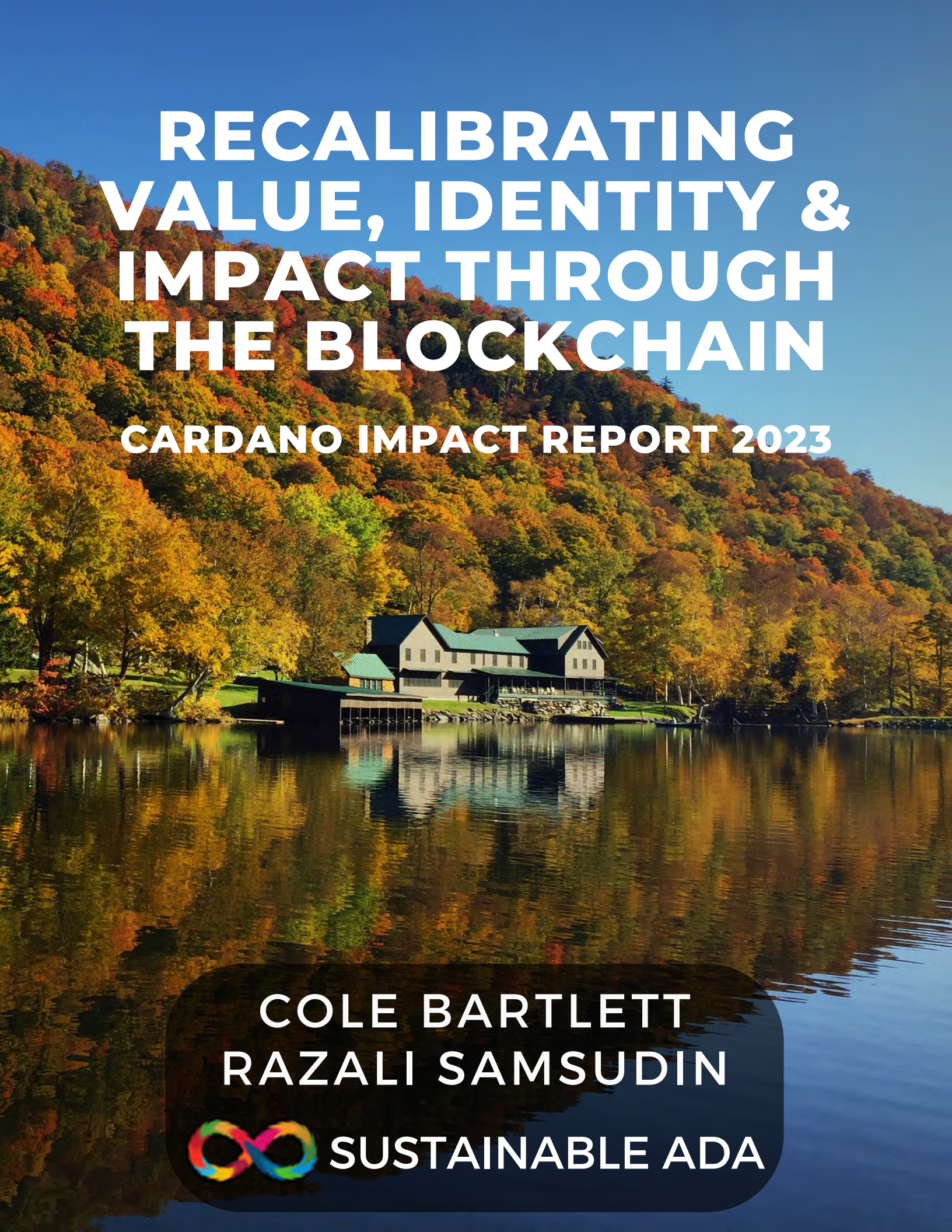


RECALIBRATING VALUE, IDENTITY & IMPACT THROUGH THE BLOCKCHAIN

CARDANO IMPACT REPORT 2023

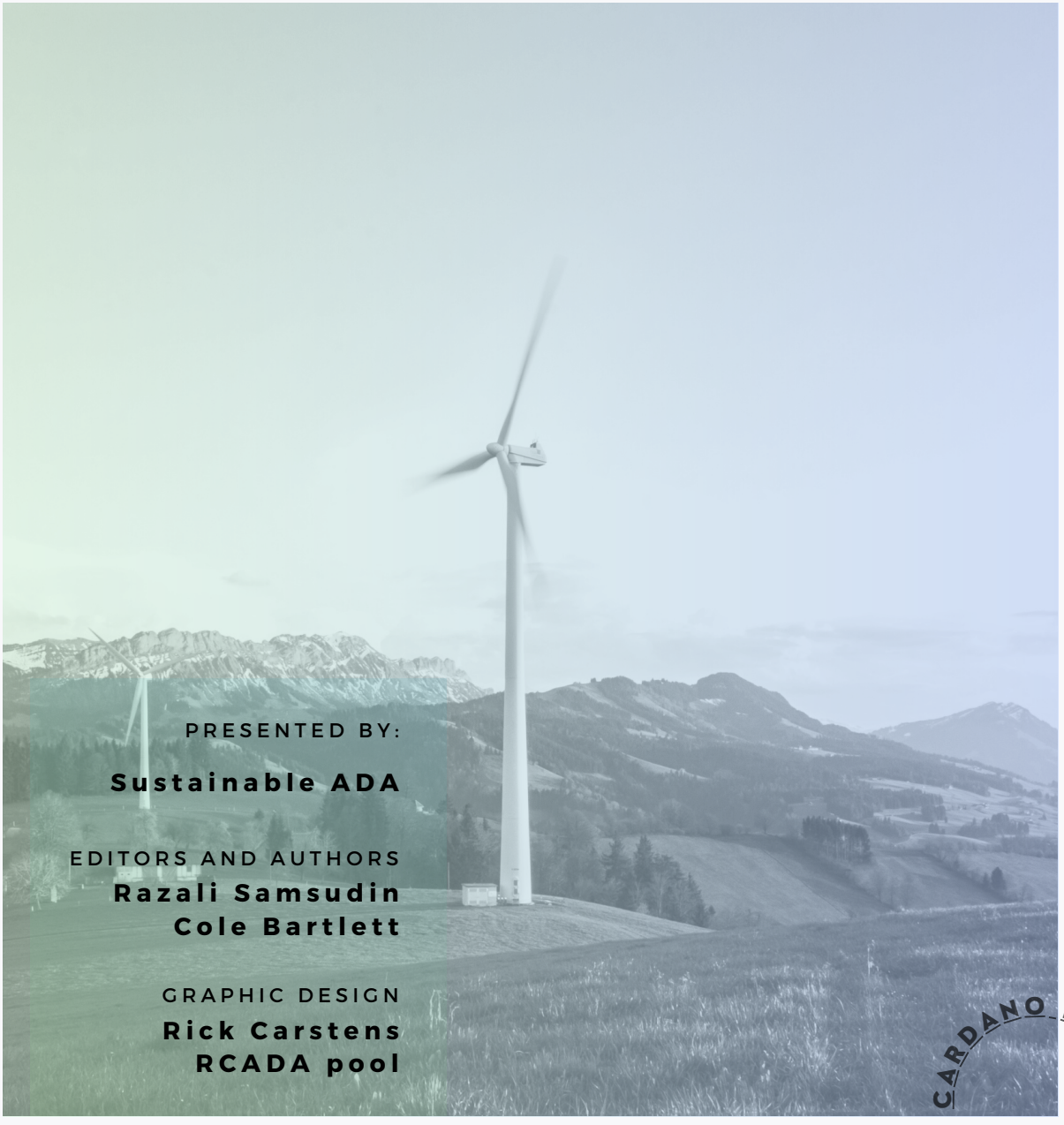
COLE BARTLETT
RAZALI SAMSUDIN

SUSTAINABLE ADA

2023

Recalibrating Value, Identity & Impact through the Blockchain

Cardano Impact Report 2023



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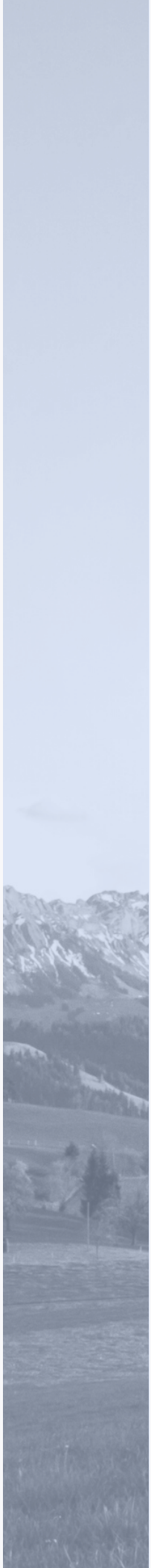
CARDANO IMPACT REPORT 2023



"We believe that Cardano is making a step towards a world where new mechanisms of decentralized cooperation and consensus can start to replace the cheap-at-all-costs and business-as-usual structures that are degrading the world we live in"

RAZALI SAMSUDIN, SUSTAINABLE ADA

"The first thing we have to solve is this: You bring more than you take."

CHARLES HOSKINSON, CEO OF IOHK AND FOUNDER OF CARDANO

"Governments, constitutions, colonizers, civil wars, and political movements may come and go. Borders shift, countries are wiped off the map one generation, restored the next, and then altered some more. But values remain, the irreducible core of national culture and identity."

DR MANDEEP RAI, AUTHOR OF THE VALUES COMPASS

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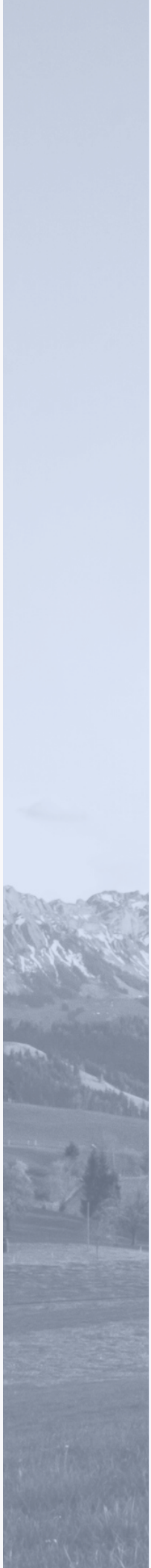
We by no means claim to have carried out an exhaustive coverage and deep dive of the entire Cardano ecosystem and its actors, and so there may be those who find that they should be included in this report.

With every dynamic and fast evolving community and ecosystem, there will be developments and projects that we may have missed, and so we apologize in advance if this is the case.

We welcome any reader to get in touch with us if they feel that their project would be relevant for inclusion in the Cardano Impact Report, as we see this document as being one that will evolve over time.



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Sustainable ADA gratefully acknowledges the time and effort spent by those involved in the production of this publication.

Recalibrating Value, Identity, and Impact through the Blockchain Cardano Impact Report 2022/2023 was crafted under the overall guidance of Dr Mihaela Ulieru, President of IMPACT Institute for the Digital Economy - Technology Alchemist Innovating at the nexus AI/IoT/Blockchain, Chief AI Alchemist - SingularityNET.

The publication would not have been possible without those who undertook the research activities and contributed to its drafting and finalization. Gratitude goes to lead author Cole Bartlett, Founder of Sustainable ADA.

Supervision and editing was carried out by co-author and knowledge expert Razali Samsudin, Researcher, Educator and Teacher of Sustainability, Humanities and Blockchain4Good, Founder of Sustainable ADA, and Co-Founder of Streets of ADA.

Razali Samsudin and Cole Bartlett led and carried out research, document analysis, interviews, survey analysis, figure creation, and reference collation.

We are also grateful for the time and expertise made available by Green Crypto Research, and Isabel Gerer, who generously shared their research and world first ESG rating of cryptocurrencies.

We would also like to thank the projects and teams who provided some contributions and supporting answers on the projects. Streets of ADA, Profila, Gokey, Sound Rig, Color The Blockchain, Earth Natives, Veritree, SCAT DAO, ImpactScope, Empowa, ADA Solar, Open Litter Map, Loxe Inc., Gimbalabs, littlefish, Wada, DirectEd, Blockchain Learning Center, Royal Dreads.

We want to recognize the support from Emurgo's Cardano Spot. Miguel A. and Anuj Chaudhary were very supportive during the process through many marketing and promotion efforts and contributed a piece on the impact of Cardano Spot.

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Thank you to Rick Carstens, RCADA Stakepool operator, and management team lead of the Climate Neutral Cardano Alliance of mission driven stakepools. Your help with the graphic design of the freely downloadable version of the Cardano Impact Report is greatly appreciated.

Razali Samsudin

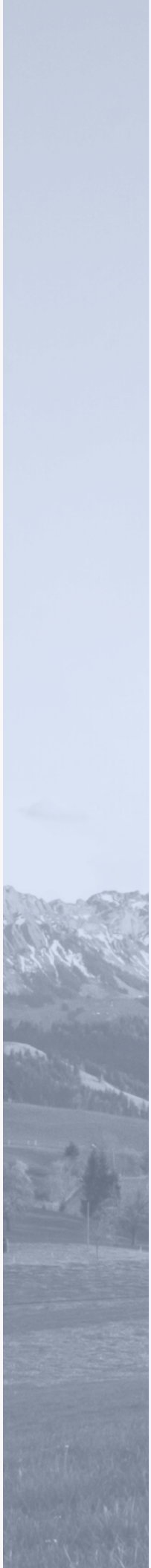
I would like to give thanks to my friend and fellow co-founder Cole, without which this report wouldn't have been published. His drive and dedication, creativity, and seemingly boundless energy, topped with his positivity and calm aura have been an immense help and source of inspiration on this winding, and at times bumpy journey.

All my love and thanks go to all my family, my wife Sarah Margono Samsudin, and our son Zachary Indra Samsudin. Sarah, my co-pilot, pillar, and coach, thank you for always believing in me and pushing me to give the best that I can give. Our son Zachary, our bottomless source of joy, and a daily reminder that there's nothing your smile, laughter and nose-to-nose kisses can't fix!

Deepest gratitude and love for my Mum, Rosie Samsudin, and brother, Kuya Affendi Samsudin, and Dad, Mohamed Samsudin. Without you all, your patience, encouragement and love, I wouldn't be here, nor the man I am today. Thank you Azie Samsudin, Mya Samsudin, and Rayan Samsudin for making me laugh, and asking the best questions, and bringing me food and cups of tea on all those long days and nights! Enzo Margono, Papa, Indra Margono, Almira Margono and Grand-mère, and Maman, Elsa Hasan and Marc Deroo, thank you for all your patience, advice, and care.

To the Cardano and wider impact community, who have shared their light with me, Dr Radika Kumar, James Dunseith, Mercy and Josh Fielding of wada, Joshua Akpan of Proof of Africa Stakepool, Sosha, Felix, Cardano AIM - Phil, Lucio, Victor, the C4C crew, Petr of adafilms, Lucas Zaeringher and the Positiveblockchain and Blockchain for Good crews, Trish and Vincent and the erable team, Alfred of Hotel Cardano, and Fabrizio Shao.

Thank you Charles Hoskinson, for choosing not to take the easy road. For being a visionary leader that has striven to build tools, educate and inspire a global movement of changemakers. You have inspired me, and my life has been all the better for it. I hope this book is helpful to others on their journey and sparks a light that may inspire them too.



Cole Bartlett

I would like to give thanks to my friend and fellow co-founder Razali Samsudin. He has helped guide and teach me many different skills during our journey of building Sustainable ADA together.

My love and thanks goes to my family and close friends who have helped me on my life long journey and have all been a part of helping shape me into the person I am today. I want to especially give a shout out to my Mom Kerrie Bartlett, and Dad William Bartlett for raising me and all the guidance/support over the years, and for helping give me so much drive for what I do today.

I want to thank from the bottom of my heart my grandparents Kevin and Kathey Priest. They have been such a big support for me over the years and have made life great, I wouldn't be where I am today if it wasn't for them. I also want to thank my Grandpa Steve Bartlett for all the great times over the years!

Throughout life, I have met some really amazing people who I have enjoyed so many great times with and I am so thankful for all their support and how much value they have added to my life. I want to give a big shout-out to Brayden Bartlett, Ava Bartlett, Max Akey, Zach Akey, Hannah Phillips, George Davis, Charlie Bernicke, David Johnson, Eli Racusin, Jack Heaps, Bryce Libby, Freddy Schaake, Michael Fiacco, Brigham & Parker Francis, Guinevere (Kam) Geibardo, Connor and Liam Conkling, Casey Star, Kyler Whitehanson, David Huber, Liam Strobek, Ben Moy, and many more!

Through my Cardano community experiences, I would like to thank Charles Hoskinson for the inspiration that pushed me to dive into the Cardano ecosystem. I would like to thank James Dunseith from Gimbalabs. If it wasn't for James pushing me to start Sustainable ADA along with the introduction to Project Catalyst I don't know if I would be here today. I would also like to thank members of the Cardano4Climate community. I also would like to shout out Daniel Sampson, Steve Lockheart, Ryan Stacey, Fabrizio Shao, Alex Pogos, Jack Kochen, Alfred!

Thank you!

Foreword by Dr. Mihaela Ulieru

Empowering Change

The Cardano Impact Report: Unleashing the Potential of Blockchain Technology for a Sustainable Future

> In an era where our world faces pressing challenges ranging from environmental degradation to social inequality, the search for innovative solutions has become more critical than ever.

It is within this context that the intersection of values, blockchain technology, and positive impact emerges as a promising avenue for change.

The Cardano Impact Report stands as a living testimony for hope in a better world through the power of decentralized communities dedicated to creating a sustainable life on our blue dot.

I feel both blessed and humbled by the opportunity that Charles Hoskinson gave me to be a part of these efforts and witness the enormous commitment of a community of impact champions that, on the ground of solid principles are unleashing their creative energies in innovative projects improving lives and the environment around the world.

From stake pool operators and developers to social entrepreneurs and impact-driven investors, this report showcases the collective spirit of the Cardano community as they strive for a more sustainable and equitable future.

As you will no doubt agree while reading this report, the outcome of all these efforts feels already overwhelming – and here I take the opportunity to extend my deepest gratitude to the authors of the report for their tireless efforts in bringing these stories to light and for amplifying the voices of those driving impact within the Cardano ecosystem. This report serves as a comprehensive documentation of the transformative projects, partnerships, and initiatives that have emerged from the Cardano community's collective efforts.

Within the pages of this report, you will embark on a journey that showcases the values-driven approach of Cardano and its commitment to sustainability, social impact, governance, and innovation. The report presents a diverse range of projects that are positively impacting various sectors, including sustainable agriculture, access to healthcare, renewable energy, responsible consumption, environmental conservation, and social empowerment. These projects exemplify the potential of blockchain technology and its ability to foster transparency, traceability, and trust, ultimately leading to meaningful change.

The report also sheds light on the unique governance model of Cardano, which empowers individuals to actively participate in decision-making and contribute to the ecosystem's development. Through initiatives such as Project Catalyst, the Cardano community has harnessed the power of collective intelligence and collaboration, driving the evolution of the blockchain towards greater sustainability and positive social outcomes.

Chapter 1 sets the stage by delving into the fundamental concepts of impact and values. It underscores the importance of understanding the stakes involved and introduces Cardano, a values-based community that embodies the principles of transparency, traceability, and trust through blockchain technology. The chapter then goes on to explore the potential of blockchain in fostering sustainability and positive impact, elucidating its different systems and the value it brings to the Sustainable Development Goals (SDGs).

Chapter 2 shines a spotlight on Cardano's role as a sustainable blockchain and examines the sustainable development use cases enabled by this leading blockchain platform. From track and trace projects in sustainable agriculture and access to health, to renewable energy and responsible consumption, Cardano has become a catalyst for transformative solutions. The chapter also explores impact investing, measurement, and environmental, social, and governance (ESG) considerations, showcasing the power of sustainable ADA and the Impact of Web 3.

Chapter 3 delves into the critical topic of environmental impact. It compares Cardano with other blockchains, revealing its environmentally friendly attributes. The chapter highlights projects such as Veritree and Open Litter Map, which leverage blockchain technology to address environmental challenges.

Similarly, **Chapter 4** uncovers the potential for social impact through blockchain, shedding light on projects like Profila and Gimbalabs that strive to empower communities, foster inclusivity and preserve our human rights.

One of the defining features of Cardano is its unique governance model, which takes center stage in **Chapter 5.** The exploration of Project Catalyst, a groundbreaking initiative fostering community-driven decision-making, offers valuable insights into how governance on Cardano can drive positive change. Additionally, the chapter examines the role of decentralized autonomous organizations (DAOs) and the pioneering role of the Cardano Improvement Proposals (CIPs) in shaping the future of blockchain governance.

Chapter 6 highlights the vital role of impactful stake pools and alliances in driving positive change. It showcases the Climate Neutral Cardano initiative and environmentally friendly stake pools like CNC Pools, which contribute to reducing the carbon footprint of blockchain technology. The chapter also spotlights the Goma Stake Pool in Africa, exemplifying how blockchain can empower local communities and bridge the digital divide.

The report then turns its focus to the burgeoning field of Non-Fungible Tokens (NFTs) in **Chapter 7**, exploring the potential of NFTs for good. It showcases the NFT4Good ecosystem and its various components, including NFT tooling, verified NFTs, and NFT marketplaces. The chapter provides project highlights from Earth Natives to Empowa NFT, demonstrating the creative potential of NFTs in driving positive impact across diverse domains.

Finally, **Chapter 8** draws the threads together, weaving a narrative that celebrates the transformative power of blockchain technology and its potential for positive change. It encapsulates the insights gained throughout the book and leaves readers inspired to harness the full potential of blockchain to build a more sustainable, equitable, and inclusive future.

While the challenges our world faces are vast and complex, the Cardano Impact Report instills a sense of optimism and hope. It demonstrates that through decentralized communities and the transformative power of blockchain technology, we can forge a path towards a better world. It is my sincere belief that this report will ignite the spark of inspiration within you, encouraging you to join the ranks of those working tirelessly to create positive change.

May this report serve as a catalyst for further innovation, collaboration, and collective action, propelling us closer to a future where the values of sustainability, equality, and positive impact reign supreme. Together, let us continue on this remarkable journey towards a better world, fueled by the unwavering commitment of the Cardano community and the transformative potential of blockchain technology!

Dr Mihaela Ulieru
President IMPACT Institute for the Digital Economy, LLC
Expert, World Economic Forum
Chief Alchemist, Singularitynet
Impact Web3 & Sustainable ADA Advisor

Introduction by

Razali Samsudin

Founder of Sustainable ADA

"Vision without a task is merely a dream,
A task without vision is simply drudgery,
Vision with action can change the world."

ANONYMOUS

The United Nations Sustainable Development Goals (Source)

Overview of the Global Status Quo

In 2015, the United Nations (UN) adopted the Sustainable Development Goals (SDGs), a global framework providing a blueprint to end poverty and ensure all people enjoy peace and prosperity, whilst living within planetary boundaries. The UN has been actively exploring the potential of blockchain technology as a means to achieving the SDGs in rapid time.

As of today, the world is not on track to achieve all 17 SDGs by 2030, and due to the pandemic, decades of progress have been reversed (UN, 2020).

Urgent change is needed.

The Intergovernmental Panel on Climate Change (IPCC) made up of over 700 scientists globally have given us a very short window of opportunity to achieve our climate goals. There is a Climate Clock countdown.

The Climate Clock measures and visualizes progress towards our global climate targets. The date moves closer in time as emissions rise or pushes further back as they decrease. Each year, the clock is updated to reflect the latest global data, as well as our improving scientific understanding of what level of emissions is required to limit warming to 1.5 C.

Global Warming to date

+1.272161181868

Time left to + 1.5°C

9:00:02:00:16:30:59

years months days hours mins secs csecs

Tonnes CO^2 emitted

2,462,075,795,238

Climate Clock at 20/04/2023 14:29

"Today we are confronted by complex, multi-scale ecological and social problems, and the discourse of progress and technological invincibility is not serving us well, as it limits our capacity to conceive of solutions outside of the economic sphere."
~ *Wilson, 2019*

Confronting Complex Challenges

To achieve the Sustainable Development Goals (SDGs) by 2030, the finance gap is estimated at USD 5-6 trillion of investment annually, and this was estimated pre-pandemic (Abt, 2018).

We are living in the best of times and the worst of times.

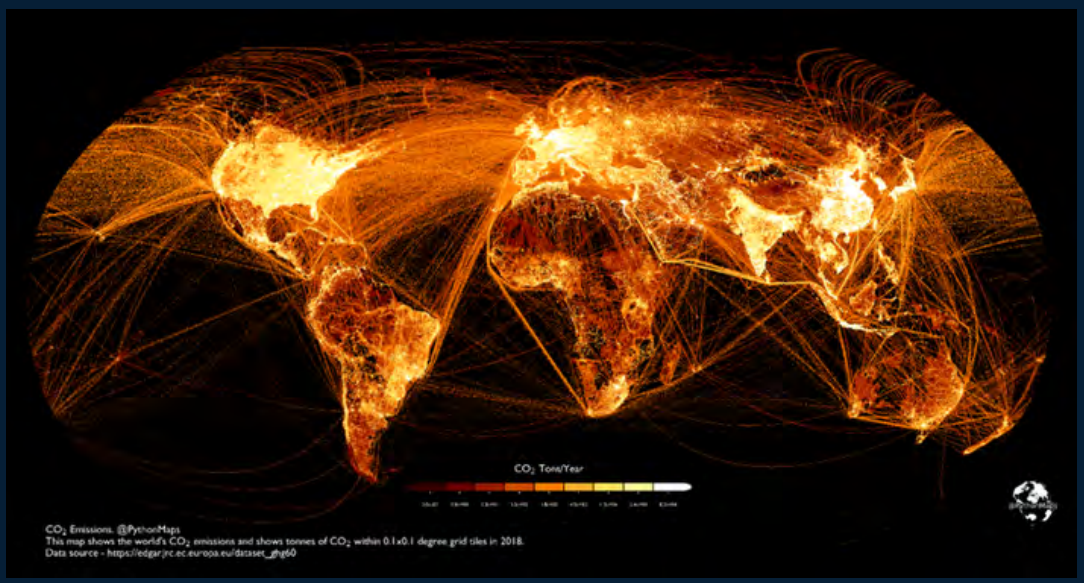
On the one hand, 2020 was the hottest year on record and climate related natural disasters are at an all time high (Nasa, 2021), whereas life expectancy rates have been steadily increasing for the past 200 years (Nature Education, 2008).

Furthermore, the pandemic plunged the global economy into its deepest recession since the Second World War, further exacerbating existing inequalities (Ha, et al., 2021). Paradoxically, public money is financing our own extinction with "at least $1.8 trillion a year, equivalent to 2% of global GDP" being spent to subsidize "the destruction of ecosystems and species extinction", with the breakdown shown in the figure below (Business Fornature, 2022).

In an increasingly globalized, digital world, the pandemic highlighted widening disparities with the ten richest men doubling their wealth from USD 700 billion to USD 1.5 trillion, whilst incomes of 99% of humanity fell, and over 160 million more people were forced into poverty (Ahmed, et al., 2022).

Moreover, the carbon footprints of the richest 1% of people globally, is on track to be 30 times greater than the level compatible with the 1.5°C goal of the Paris Agreement (UNFCCC, 2023), while the poorest half of the global population will still emit far below the 1.5°C-aligned level in 2030 (Gore, 2021).

(Source)



(Source)

Having said that, we shouldn't lose sight of the origins of the carbon footprint concept. Advertising company Ogilvy & Mather, in 2004, working for oil giant BP invented the personal carbon footprint. Despite being a useful innovation, it can be argued to have succeeded in shifting political pressure on to consumers, away from producers of fossil fuels, and the countries with a large share of CO2 emissions, and are subsidizing the fossil fuel industry.

Combating climate change by shifting to a more widespread use of renewable energy sources cannot ignore the fact that we will need greater cooperation, given how interdependent and interconnected our national and global economies are in an increasingly globalized world.

As illustrated in the graph below, most clean energy technologies are manufactured in China, be it offshore and onshore wind, solar, and electric vehicle components such as batteries. (IEA, 2021)

(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)

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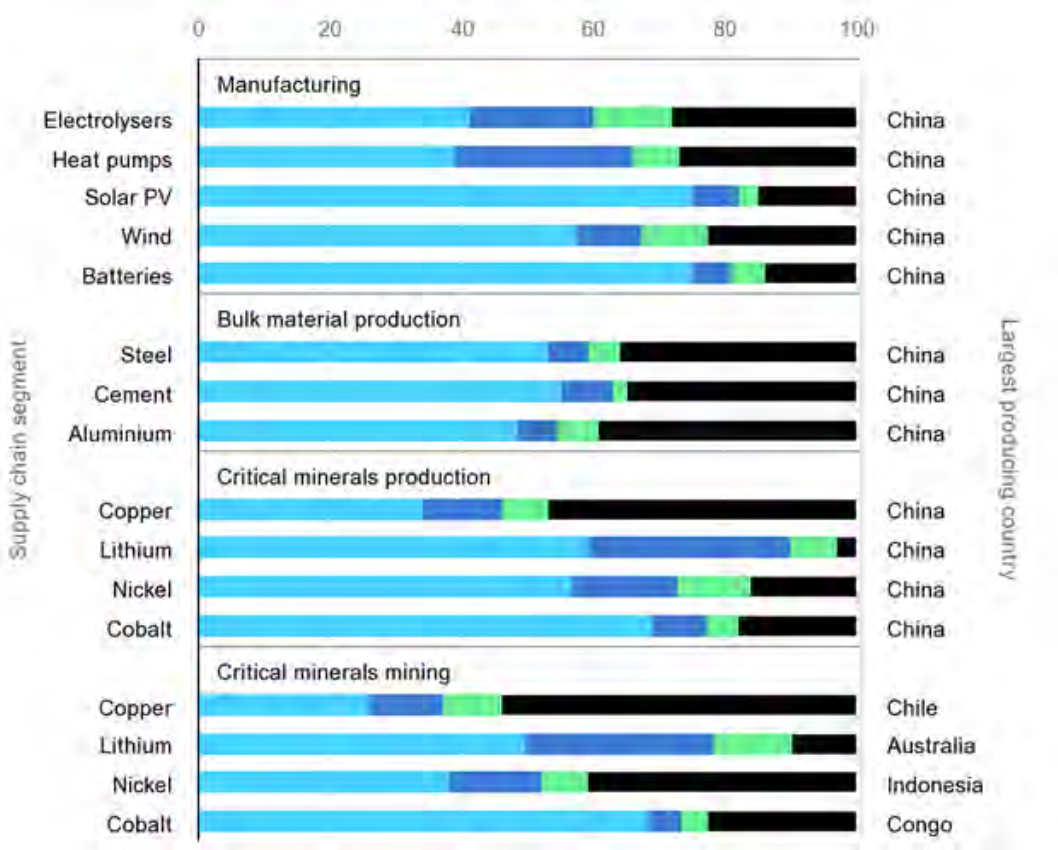
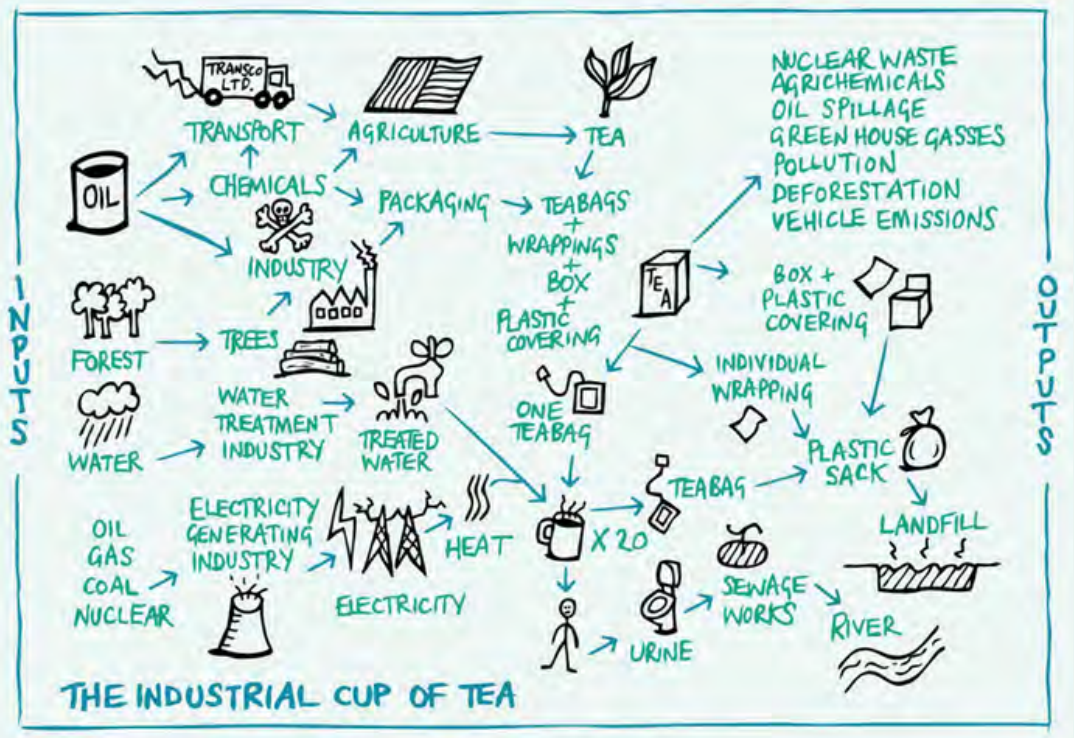


(Source)

All of this information may leave you feeling breathless, and in need of a cup of tea. Having a cup of tea can seem like a small action, yet it is part of a complex set of relations and interdependencies, with each sip embedding you into a system of systems beyond your imagination.



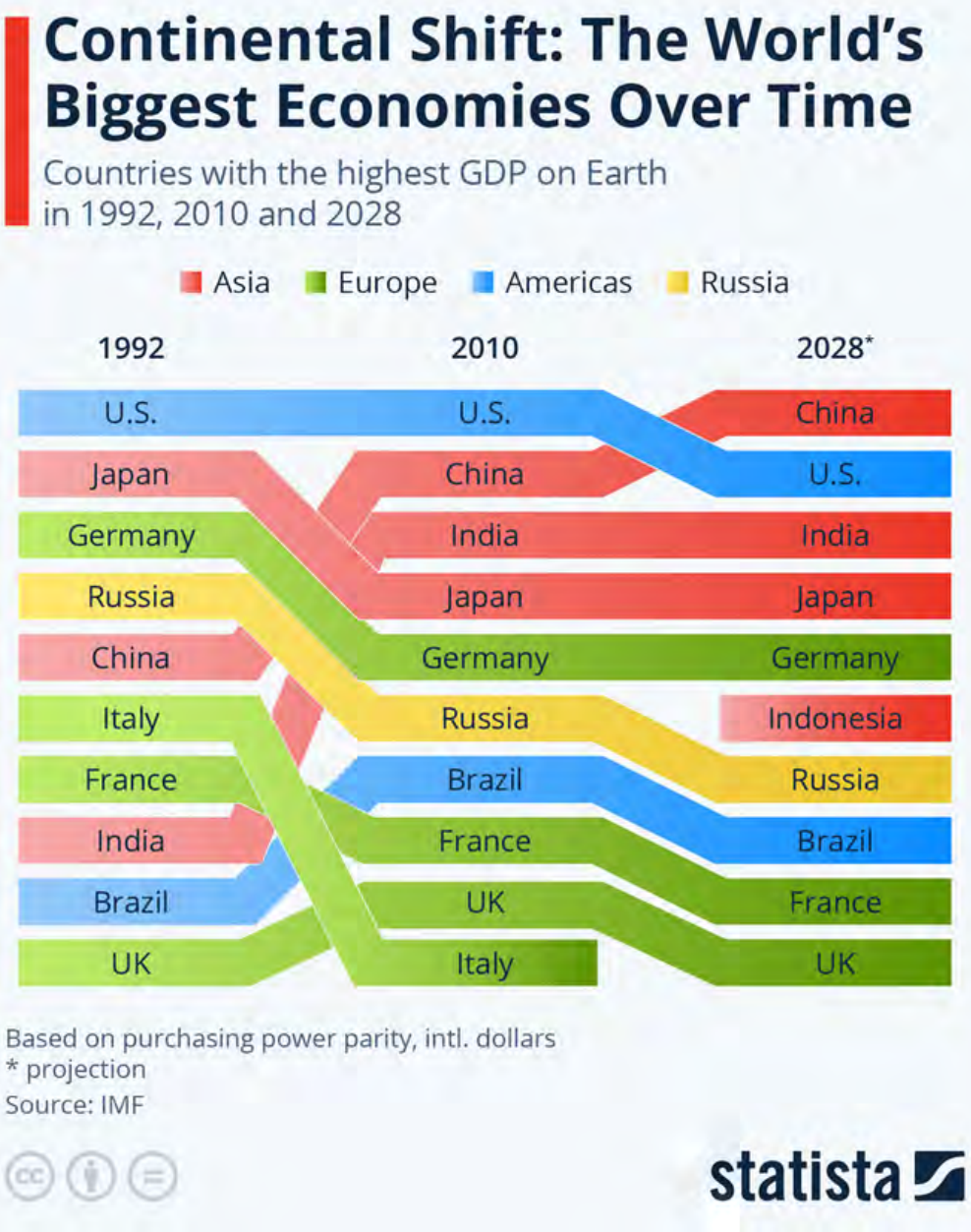
Example system 2: System analysis of the supply chain for a cup of tea

(Source)

Follow the money

The G20, made up of 19 countries and the European Union, representing 85% of global GDP, 75% of international trade and two-thirds of the world's population (OECD) would need to increase their annual spending by 140% before 2050, amounting to USD 285 billion, in order to tackle the interrelated nature of the climate crisis and land degradation (WEF, 2022).

A breakdown of the world's largest economies by GDP over time, with a projection into the future, is illustrated in the figure below:


Continental Shift: The World's Biggest Economies Over Time
Countries with the highest GDP on Earth in 1992, 2010 and 2028
Asia
Europe
Americas
Russia
1992
2010
2028*
U.S.
Japan
Germany
Russia
China
Italy
France
India
Brazil
UK
U.S.
China
India
Japan
Germany
Russia
Brazil
France
UK
Italy
China
U.S.
India
Japan
Germany
Indonesia
Russia
Brazil
France
UK
Based on purchasing power parity, intl. dollars
* projection
Source: IMF
statista

(Source)

"...it is not that this capital is lacking. Institutional investors alone, for example, hold $100 trillion in assets globally (OECD 2021a). Even just 4 percent of these assets would be sufficient to fill the SDG financing gap if channeled towards viable investments that address development goals... The challenge is in mobilizing these investments."

(WRI, 2022)

In a world with tensions escalating, geopolitical wars, and conflicts raging in Ukraine, South Sudan, Israel and Palestine, and territorial disputes in the South China Sea. Insecurity and inflation in energy and food prices, and a rising cost of living crisis tops the list of the most severe threats until 2025. Failure to mitigate climate change is the number 1 risk in the next 10 years, with environmental risks accounting for the top 4 global risks, and with 6 out of the 10 risks being environmental (WEF, 2023).

Meanwhile, global poverty is on the rise (World Bank, 2023). Amidst this context is an increasing tide of frustration, fragmentation and information asymmetry. It isn't the first time energy and food price shocks have occurred. In the UK, the rate of food price inflation is the highest on record in over 45 years (ONS, 2023). Globally, Lebanon tops the list of 10 countries hit hardest by food inflation, as shown in the table below. (World Bank, 2023)

Food Price Inflation: Top 10 List

Country	Nominal food inflation (%YoY)	Country	Real food inflation (%YoY)
Lebanon	352	Lebanon	89
Argentina	107	Rwanda	32
Zimbabwe	102	Egypt	30
Iran, Islamic Republic of	73	Zimbabwe	27
Türkiye	67	Iran, Islamic Republic of	20
Egypt	63	Uganda	18
Rwanda	63	Hungary	18
Suriname	59	Türkiye	17
Lao People's Democratic Republic	51	Burundi	16
Ghana	51	Netherlands	14

Source: International Monetary Fund, Haver Analytics, and Trading Economics.

Note: Food inflation for each country is based on the latest month from January 2023 to April2023 for which the food component of the Consumer Price Index (CPI) and overall CPI data are available. Real food inflation is defined as food inflation minus overall inflation.

(Source)

Climate change, geopolitical and sociopolitical factors are the fuel behind the food and energy crises, which often go on to provide the tinder that smolders before flames of conflict are fanned and swell up into uprising, as was seen in the Arab springs of 2011, following droughts, and rising food prices the previous year, and is illustrated in the graph below. (Center for American Progress, 2013).

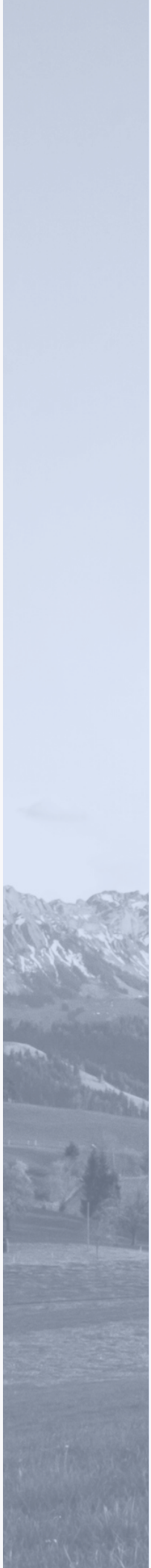
Soaring food prices fuel inflation pressures

Global wheat prices, FAO food price index at historic highs

(Source)

The narrative of our dependence on fossil fuels such as oil, and it's inextricable link to climate change, and the increasing occurrence and severity of extreme weather events such as drought, its impacts upon the price of energy and food, which in turn affects their price on global markets, leading to a price shock where people can no longer afford bread or heating, is a narrative with a history that most of humanity share to varying degrees, and a narrative where we all hold a pen on the pages of an unwritten future.

Today, millions worldwide are engaged in active protests as civil unrest rages on in 43 countries, on and off camera (Carnegie Endowment for International Peace, 2023).

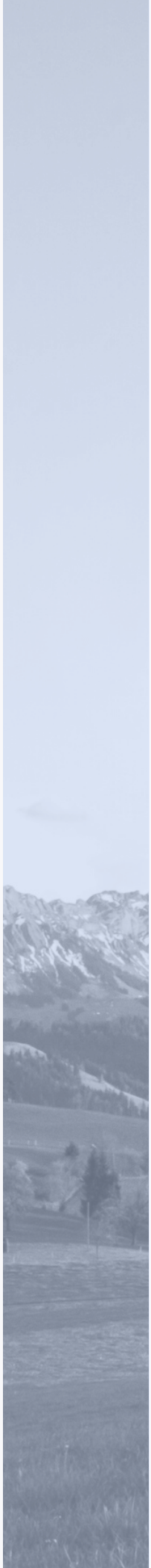


Scientifically driven, evidence based decision making can lead to lags in timely and accessible knowledge, filtering through to policymakers, changemakers on the ground, and those with capital to deploy. In turn further complicating approaches to holistically and systematically address the multitude of interrelated complex issues.

Technological tools such as blockchain and cryptocurrency are here to accelerate, facilitate and bring transparency to trustworthy knowledge, and value exchange and sharing, if only people, corporations and nation-states can cooperate. The UN has been researching the benefits and potential of blockchain (UNEP, 2020), and have been leveraging it at the Building Blocks World Food Programme (WFP, 2022), UNICEF CryptoFund (UNICEF, 2020), and UNHCR (UNHCR, 2022).

From top down to grassroots decision makers across civil society, people are assaulted with the challenge of discerning truth from falsehood. One can be left in a difficult position to decide what the best options are, especially when they aren't all presented transparently, plainly and, truthfully, for all to see.

If education is the most powerful weapon which we can use to change the world, this weapon is being systematically disarmed, as UNESCO estimated in 2015 that not only was there an annual financing gap of USD 39 billion over 2015 – 2030 in "global funding needed to enable all children to complete a high-school education", furthermore "45% of national education documents studied made little-to-no reference to environmental themes", (UNESCO, 2021; UNESCO, 2015) perhaps indicative of the reason there remains a lack of global consensus towards the urgency of climate change.



The role of Web 3 in challenging the status quo

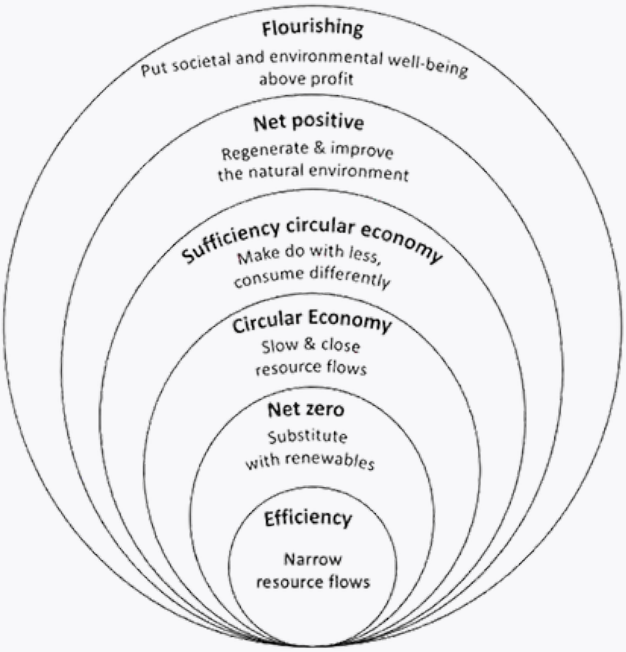
"We are living in a climate emergency. With rising costs of living, inflation, and conflict around the world, the stakes may never have been higher. Cardano, Project Catalyst and the Cardano community have a choice to make between investing in an equitable world and future, or funding a pathway towards a catastrophe."

Sustainable ADA

The Cardano Impact Report 2022 is a result of our collated investigations, conversations, and a presentation of our findings and perspectives following our survey of the Cardano ecosystem.

We have sought to connect the dots between projects building on Cardano, UN SDGs, and Environmental, Social and Governance (ESG) use cases, their actual and potential impact to improve upon our existing systems or replace them with better alternatives. Alternatives that are inclusive, empowering and enable people to improve their lives and the world around them.

As our societies become increasingly digitalized, it is imperative that solutions provided by blockchain technologies, namely immutability, trust and transparency are leveraged to redirect financial flows towards the critical development needs of humanity. If we are to avoid the continuation of the status quo, embodied by increasing inequalities, finance and governance must undergo a revolution. Such actions are necessary, for humanity's survival and for all to flourish and thrive on this beautiful planet, our only home.



(Source)

Along the way we must be conscious and cautious of the drive towards commodifying nature. The misguided belief that economic growth and 'progress' is the panacea to all our problems. Such mindfulness is necessary if we are to avoid the "danger in framing nature or humans only in terms of capital and not in terms of their intrinsic value." (Konietzko et al., 2023)

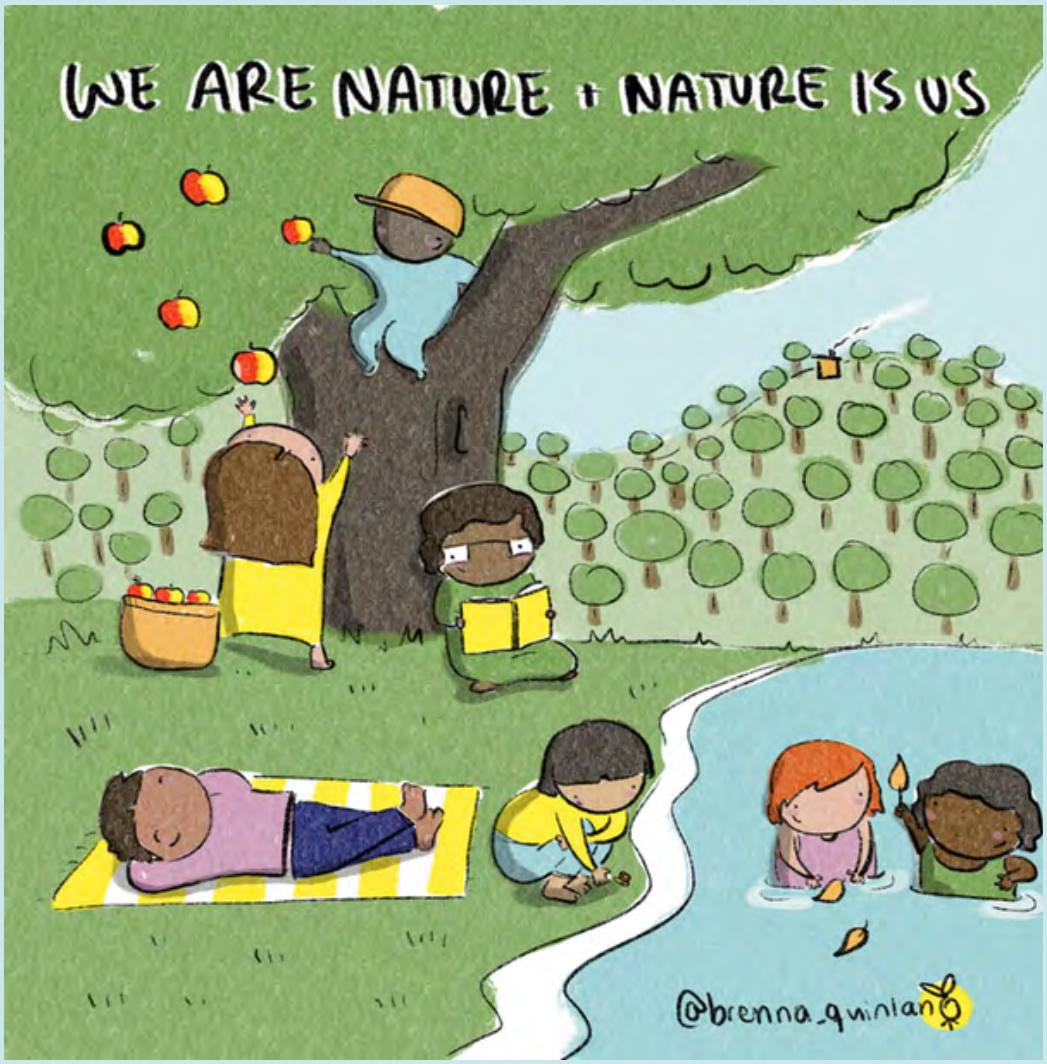
If we can accept that nature is more than something that is only valued in a monetary sense and a form of capital, then perhaps social change driven by necessity will be possible (Wilson, 2019).

As Polanyi put it in 1944, "to allow the market mechanism to be the sole director of the fate of human beings and their natural environment…would result in the demolition of society".

Like Wilson (2019), Sustainable ADA agrees with the assertion that "a humble recognition of our absolute dependence on the natural environment would alter our perspective immeasurably. It then becomes permissible to regard some ecosystem functions as so fundamentally important, both intrinsically and in a utilitarian sense, that they should be safeguarded through the most assured method possible. This lies not in standardized economic valuations, but in a range of context specific measures, such as legal protection, proactive conservation, existing local institutions, and research into socioecological interactions".

Essentially, moving beyond primarily using standard cost benefit analysis and economic valuations of ecosystem functions.

From this humble recognition, perhaps we all may contribute to the paradigm shift from “looking at nature (and humans) as ‘commodities’ and "capital", to a reintegration of humans in nature and approaching the overall well being of the whole through regenerative practices” (Ulieru, 2022).



(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)

With any disruptive technology that sends paradigm shifting shockwaves throughout the world, a degree of human fear and misunderstanding is to be expected.

However, in the so-called information era where information overload is real. Where fake news, misinformation and disinformation lurks in the shadows and in plain sight. Bad actors and profit seeking opportunists seek to prey and capitalize on market hype, on our online searches, data cookie crumb trail, social media profiles and digital selves, in turn shaping the views and actions of each and every unsuspecting, uncritical mind.

Flashback to 2008, with riots over rising food prices (World Bank, 2008), global unrest and outrage on the rise, whilst trust in Government, authorities and the 'experts' plummeting to significant lows (OECD, 2013). Moral hazard leading to an unprecedented bailout of banks considered 'too big to fail' in an effort to prevent the collapse of an exploitative system (Stiglitz, 2009). And so the stage was set.

Enter Bitcoin.

It is no coincidence that Satoshi Nakamoto decided for the first message embedded in the first mined block known as the Genesis block to be

"The Times 03/Jan/2009 Chancellor on brink of second bailout for banks".

An example of the cover of the newspaper being referred to in the Genesis block is shown on the right.


THE TIMES

£1.50

Eat Out from £5

More than 900 great restaurants, including four Gordon Ramsay favourites from £15

Israel prepares to send tanks and troops into Gaza

Michael Sheen Frost, Nixon and me

Working mums So that's how she does it

Detox in style The best spas on the planet

Chancellor on brink of second bailout for banks

Billions may be needed as lending squeeze tightens

Salman Rushdie I won't marry again

Giant killing? Guide to the FA Cup third round

99p

(Source)

Many will have read headlines and stories in the media focusing on the 'news' of how the price of Bitcoin, and generally the overall monetary value of the crypto market has 'crashed', 'plummeted' and 'dipped', into what people are calling a 'bear market', with billions of dollars lost, and where a plethora of would be traders and investors say that this the time to 'buy the dip' from 'paper hands' and over leveraged traders. Web 3.0 is the supposed movement and plot twist in the narrative where a handful of multinational companies have grown to amass monopolies across our digital space, capturing and monetizing our data at will. What is Web 3.0? Read on, and get ready to fall deeper into the rabbit hole.

(WRI, 2022)

Web 3.0

Web 3 technologies, which includes blockchain, known as the trust protocol, and also dubbed as "The Internet of Value" (Tapscott, 2016), is touted as restoring value and ownership to people. Coined by Gavin Wood, Polkadot and Ethereum Co-Founder, the core ideas of Web 3 include decentralization, permissionless, and a trustless ecosystem based on blockchain (Ethereum, 2023).

Web 1.0

In the beginning, the web introduced to us all the concept of websites. People who ran their own servers could upload whatever type of content they like onto what was called 'pages'.

However, there was a barrier to entry as only the technically proficient and those with plenty of capital could upload any data.

This could be summed up as the 'read-only era'.

Web 2.0

This era saw a shift towards enabling user participation. Users could not only read what was online, but thanks to external hosters, people could now write on pages.
For example, posting a picture of yourself and your family on Facebook is only possible because Facebook is hosting the picture and post.

This has brought about not only conveniences, but drawbacks too. Consideration over who owns such data rarely crossed people's minds as they flooded in the millions onto such platforms, uploading personal and sensitive data and information. Meanwhile, the likes of Facebook and other data consolidators amassed our data, and with our consent (in the fine prints of terms and conditions) permitted to censor and sell our data at will, without a penny being given to those who uploaded such data.

This era can be known as the 'read-write' era. In a so-called post-truth world, should we, can we, and how do we trust companies with our data?

This is where Web 3.0 comes in

Web 3.0: Read - Write - Own

Web 3 refers to the next generation of the internet that aims to create a more decentralized, open, and transparent web. An era of internet and digital ecosystem where individuals, regardless of age, sex, gender, nationality, religion and ethnicity can be empowered to have a voice and to have a platform to create and own their creation. Web 3 is giving people at the fringes a uniquely unprecedented opportunity. For minorities, and those largely unheard and unseen, a chance to be elevated, and for them to elevate themselves.

It promises to give more control to individuals over their data, identities, and digital assets, and reduce the power asymmetry between centralized platforms and their users.

Web 3 technologies like blockchain, peer-to-peer networking, and smart contracts, enable new forms of collaboration, value exchange, and governance.

By empowering individuals to own and control their online presence and participate in decentralized networks, Web 3 has the potential to elevate the voices of marginalized communities and empower people at the fringes. Web 3 is a promising paradigm shift that can transform the internet into a more democratic, equitable, and inclusive space for everyone.

Web 3 technologies such as blockchain offers individuals the chance to hold themselves and others accountable, and enables anyone to demonstrate their individual skills, for instance such as those outlined in the Inner Development Goals (IDG, 2021).

As we continue to study, experiment and learn within the landscape of blockchains and cryptocurrencies that are designed with values, ambitions and claims of accelerating progress towards a better world for all, we must be mindful of how value and impact are defined and understood. Which aligns with the work of the Inner Development Goals.

IDG framework

The work of Ekskäret Foundation in creating the Inner Development Goals posits that the lack of crucial personal skills to tackle complex societal issues demands that inner work is needed to achieve a more sustainable global society. The IDG framework is shown below:

(Source)

The IDG framework brings into focus how we can build such a world, starting with ourselves, and applying a prism of 5 dimensions broken down into 23 skills and qualities, cultivating an inner compass "where our deeply felt sense of responsibility and commitment to values and purposes relating to the good of the whole", guides us from positive intent to positive actions (IDG, 2021).

If we are to successfully push power to the edges, the value of universalism must be at the heart of discussions and actions. Our collective diversity of thought and cultures can be both challenging and enriching, as we grow and evolve fluidly between centralized, decentralized and distributed systems with the "understanding, appreciation, tolerance, and protection for the welfare of all people and for nature". (Schwartz, 2012).

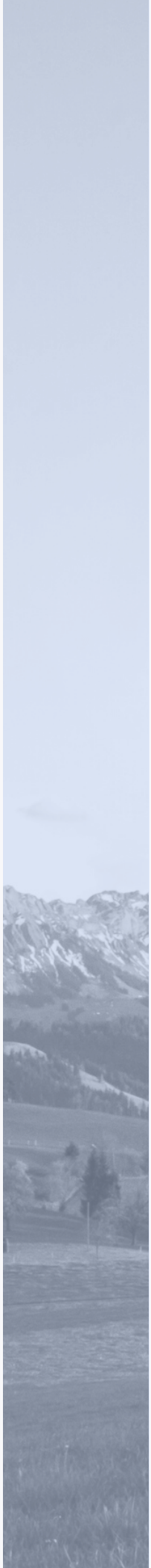
We are living in a time of progress

"The progress and democratisation of technology, via personal computers and smartphones, enables a web that can be built on decentralised infrastructure, with every participant of the web hosting it. Here, apart from 'reading' and 'writing' data, you can own it."
- Gajria, 2020.

The fate of Web 3.0, blockchain, and cryptocurrency therefore not only rests between the hands of the elite, Governments, and institutional investors, but most importantly, in the hands of civil society actors who should and will drive its future trajectory, paving the way towards widespread adoption and actual real life positive impact.

The value Cardano's Project Catalyst, and its native cryptocurrency ADA will hold, beyond a monetary sense, and its potential to catalyze change, will depend on its current and future users.

In 2020, most owners of cryptocurrency in the UK and USA were aged 18-29 (Dellatto, 2022). The future of this space will somewhat be shaped by the youth, who may be voting in national elections for their first time (Statista, 2020). A time where applications of theoretical concepts of liquid democracy and on-chain governance, such as Cardano's Project Catalyst, are coming to life to deliver on ambitious visions with evolutionary consequences.



Cardano is offering society tools, infrastructure, and pathways to organize people power more potently than perhaps ever known or possessed before.

Whether this will lead to a paradigm shift of a new economic order is not only a question of technical blockchain capabilities, but a question that requires a deep understanding of the complex interplay of political, social, economic, and environmental implications that such offerings will bring to society (de Filippi & Lavayssière, 2020).

We have come a long way since discovering fire. Perhaps we are at a tipping point, and with just the right push, a helping hand, and serendipity, a rippling positive multiplier effect can resonate outwards into the world, across waves, and the millions of miles of fiber optic lines that traverse our planet, both connecting us and dividing us.

As social entrepreneurs, we believe that through education, dialogue, and cultural exchange, we can learn to better live, work and thrive together during our relatively short time here on Earth.

With a better understanding and consciousness of our own values, we can rise to use the tools available, and apply our collective knowledge across our interconnected systems, to build a sustainable and equitable world for all. However, it won't come without challenges. The blockchain industry has considerable potential to make a significant contribution in accelerating the achievement of the SDGs. Nonetheless, there is a need for collaboration, education, and further development to achieve this potential (INATBA, 2021).

We offer this report as our humble contribution to the movement of progress towards social and climate justice. May this report shed light on a community of changemakers. Leaders and custodians, proponents of technology for good, but who at the core hold common values, and act to make their vision of a better world a reality.

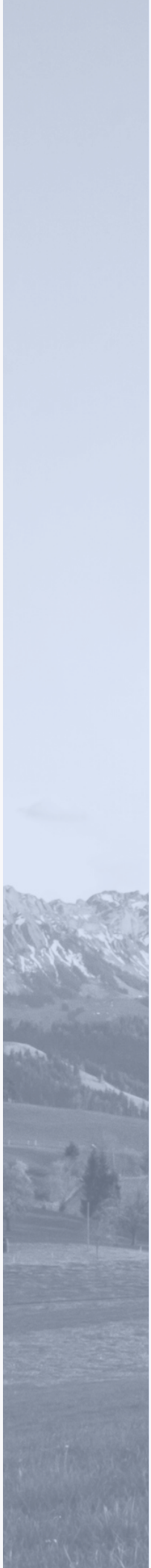
May this report act as a call to action for all who wish to be the change they wish to see in the world, and are seeking a way. "There is no way to peace, peace is the way." - Muste

"What will other people say about you after you're gone? I found this one of the most clarifying, eye-opening things I have ever done.

Once you know the end, the kind of person you want to be and the life you want to live, everything starts to fall into place.

The question then becomes how you get there. And the answer to that, is by letting your values show you the way; shaping your aims and guiding your decisions."

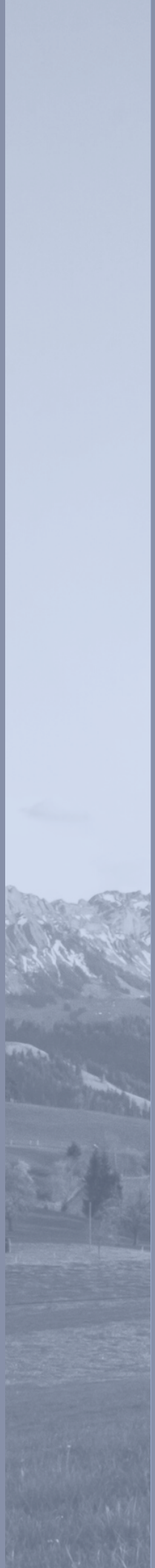
DR MANDEEP RAI



"Imagine a world in which you might thrive, for which there is no evidence. And then fight for it."

GARY YOUNGE

(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)



Authors:

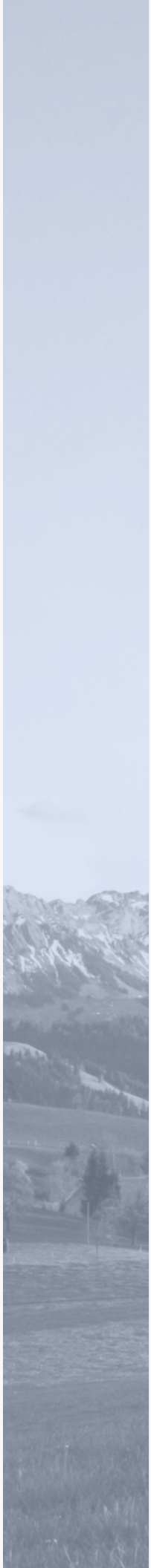
The Cardano Impact Report 2022 was created by Sustainable ADA, founded by Cole Bartlett and Razali Samsudin.

Through this process, the two have taken a high-level look at and analyzed 65 blockchain projects and companies helping make a positive impact with the use of the Cardano Blockchain.

COLE BARTLETT

Bachelors in Economics and Sustainability | Blockchain/Sustainability Researcher | Social Entrepreneur | Co-Founder of Impact Web 3 & Sustainable ADA | Positive Blockchain Contributor | Impact Measurement Expertise | Donation Officer for Yagazie Foundation | Blockchain Learning Center Core Member | Co-Founder of Vermont Fishing | Decentralized Lead Generation | UNITE 2030 Youth Delegate

Cole Bartlett is passionate about helping create a sustainable and equitable world for all. He cares about education and helping create clarity around the Sustainable Development Goals (SDGs) connection to blockchain. He believes that the blockchain space is going to be flourishing with Regenerative Finance (Refi) "a movement focusing on the power of blockchain and Web 3 to address climate change, support conservation and biodiversity, and creating a more equitable and sustainable financial system" (cryptoaltruism, 2023).



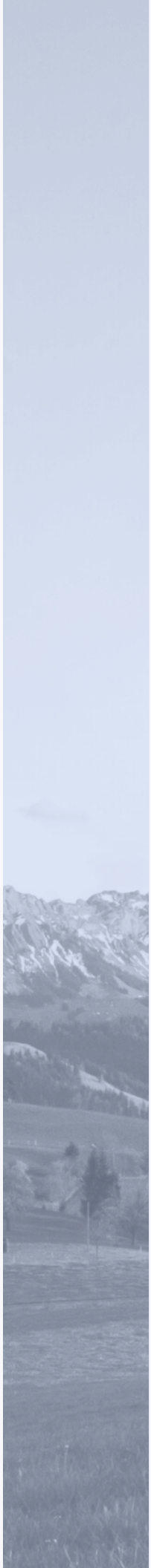
Projects that are going to help us close the gaps in achieving our Sustainable Development Goals. He is now focused on leveraging blockchain technology to help track companies' impacts and bring more investment to NGOs and impact associations.

This passion came from a love of the outdoors while growing up in Vermont, where in his free time he would go swimming at local watering holes, fly fish on warm sunny days, and ski powder during the winter months. While growing up Cole created his own fly fishing brand VTFishing with one of his best friends Max Akey back in 2014. The goal of VTFishing was to share the sport they and their friends loved while encouraging more people to get out in nature and enjoy what they love the most. During his studies at the University of New Hampshire, he focused on Economics and Sustainability and received a bachelor's degree in both majors.

While participating in the Sustainability Dual Major he found a strong interest and passion for sustainability and making sustainable change around the world. Part of this was from his experiences studying abroad in New Zealand through the Eco-quest educational center where he was focused on the indigenous culture, ecology, and sustainability.

After this experience, Cole continued through the Sustainability Dual Major, where he participated in a capstone. He helped educate children based in New Hampshire on what sustainability was and because of this kicked off the sustainability splash program at UNH.

Another opportunity where Cole found a strong connection to sustainability was while taking part in the B Impact clinic. The Clinic connects teams of cross-discipline undergraduate students to serve as consultants for regional companies working to complete the B Impact Assessment (BIA). The BIA is a rigorous, open-access assessment tool that comprehensively assesses a company's impact.



During Cole's senior year at UNH, in his free time, he was learning about blockchain technology. Because of his strong interest in sustainability, he was mainly focused on learning ways that blockchain and other revolutionary technology could help make the world more sustainable and equitable for all. This led him to learn that many people were uninformed and didn't believe blockchain could actually make a positive impact on both people and the planet. This is what led him to start Sustainable ADA with Razali.

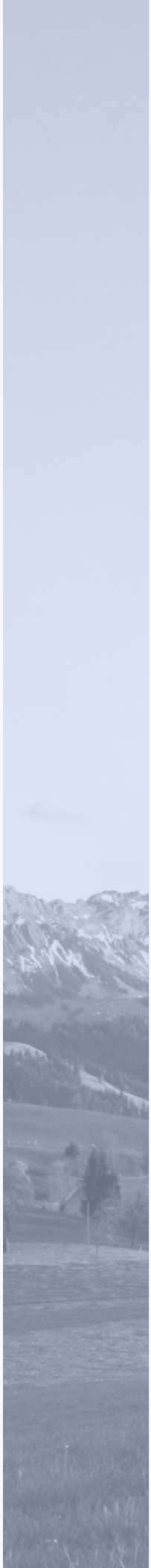
After spending time working in the blockchain space. He has learned and returned to the realization that education is one of the key aspects of life. That you should never stop learning or trying to learn new things.

This has helped Cole find a new passion and love to continue learning new things and to seize every experience or learning opportunity possible.

As there is so much unknown in the blockchain ecosystem around how these technologies can make a positive impact on the world and connect to sustainable development, Cole felt creating a sustainability report on value and identity transformation, and how blockchain technology use cases can help create a more sustainable world would help both the blockchain ecosystem and the greater world of learners have more insight into these issues.

"Blockchain can have many extraordinary use cases and provide a lot of benefits to many different parts of society. But I believe blockchain's main driver of becoming the next revolutionary technology of our generation are with use cases that create more environmental and social resilience across the globe, and help us combat issues like climate change. Using the blockchain and Web 3 technologies to create positive impacts from business operations to personal empowerment. Creating new forms of identity, value creation, and transparent and immutable ways to track and trace information. Blockchains are creating a new level of trust within society that will help create a more sustainable and equitable world for all."

COLE BARTLETT



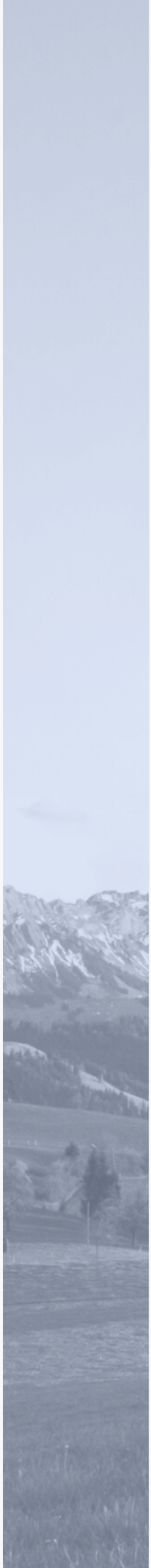
"When no one on earth has to worry about trust, the world will come together as one. To create a sustainable world, we have to come together. Blockchain can make this happen."

COLE BARTLETT

RAZALI SAMSUDIN

Multidisciplinary International Educator of 14+ years | Independent Researcher | Social Entrepreneur.
Led research connecting Cardano Project Catalyst to the UN SDGs, and tool building with Cardano AIM connecting Project Catalyst proposals to impact frameworks such as UN SDGs.
A Founder of Impact Web3, Sustainable ADA, A Samsudin Brothers Projek - Streets of ADA, UN SDG and Education Coordinator at Wada, Contributor at PositiveBlockchain.io, Cardano4Climate, and Cardano AIM. Contributed to the 2022 Blockchain for Good report.

A social entrepreneur and interdisciplinary educator who is committed to making a positive difference in the world, Razali was born in East London to parents from Malaysia and the Philippines, and raised in the UK, Malaysia, the Philippines, and Singapore. With a diverse cultural background and global perspective drawn from his experiences in 27 countries, he brings a unique perspective to his work in the education, impact, blockchain, and Cardano ecosystems.



Razali's academic background is in economics and social policy, with a MA from University Paris Dauphine in Sustainable Development and Responsible Organisations, and a MSc in Environmental Technology, specialising in Water Management from Imperial College. He has experience in interfaith dialogue and social action campaigning, which has equipped him with a multidisciplinary and systems thinking approach to problem-solving, ideation, and design towards a more sustainable and equitable world for all.

Razali's drive to bridge the gap between theory and actionable impact led him to carry out independent research, journalism, and join the Forest Team in Greenpeace Indonesia. He has published articles with Asialyst about the Forest fires of Indonesia and the transboundary haze affecting neighboring Malaysia and Singapore, the hydroelectric dam projects of China in the Tibetan Autonomous Region and their human and environmental impacts, and the supply chain impacts in the Coral Triangle from illegal fishing and globalization.

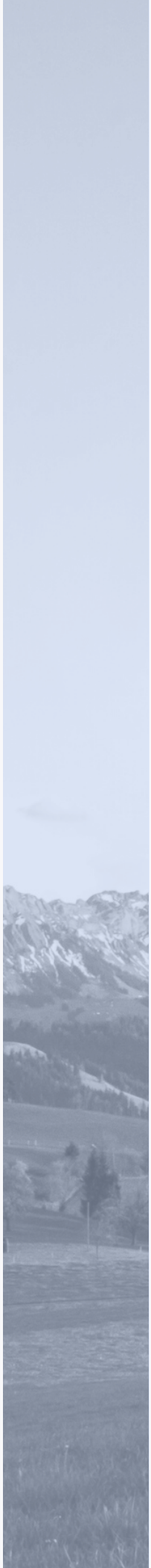
As an educator and former geography and humanities teacher in the UK and France, Razali led innovation in the classroom by teaching undergraduate Geography and Humanities university students at CY Cergy Paris University. He created novel project-based learning and research opportunities into how blockchain technologies can create a sustainable and equitable world and solve local and global problems.

This work led him to join the Cardano community, meeting Cole Bartlett, and co-founding Sustainable ADA, a blockchain education and research hub that connects the dots between blockchain, Cardano, and sustainability. With over a thousand members in its global community, Sustainable ADA aims to explore the connections between blockchain, sustainability, and Cardano. Razali is focused on impact measurement and transparency to tackle greenwashing, how to monetize impact, and driving catalytic finance and capital to where it's most needed, to help the best-placed actors solve local problems and scale solutions.

Razali believes that blockchain, crypto, and NFTs have the potential to accelerate sustainable development, particularly in Asia and Africa. He has featured in ADA Films' award-winning documentary "Chasing the WADA Dream What Does Blockchain Mean for Africa", Cardano's first on-chain film festival hosted by nucast. Such technologies can facilitate entrepreneurs and companies to raise the necessary finance and capital to accelerate the green energy transition and movement away from the commodifying of nature, of which humans are included, towards a world where regeneration is embedded into our systems by design, and values of equity, sustainability, and justice are central to our actions so that we may operate with a positive multiplier effect across the food/water/energy nexus in terms of security, poverty, and carbon emission reduction.

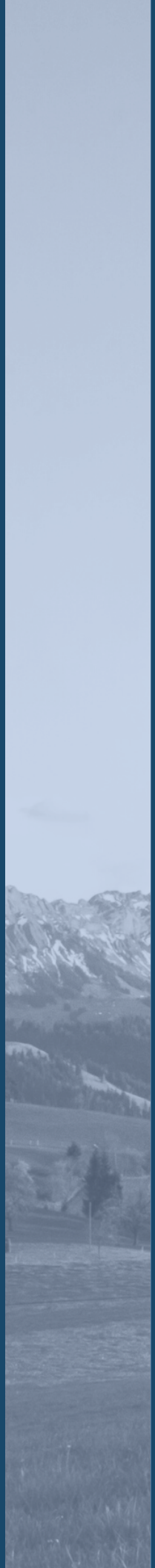
In addition, Razali co-founded Streets of ADA - A Samsudin Brothers Projek, developed in partnership with Palawan NGO Network Inc (PNNI) in the Philippines. This project is working on the frontlines of environmental law enforcement, challenging corruption, and tackling illegal logging, illegal fishing, illegal mining, and illegal poaching.

Razali is a contributor, advisor, and consultant to numerous startups in the blockchain for good and NFT4Good ecosystem. He is also an optimist with a drive to enable and empower those who want to make a positive impact on the world. He believes that education is the most powerful weapon which you can use to change the world, and that we are the ones we have been waiting for. He is based in Paris with his wife Sarah Margono Samsudin who works for UNESCO in the Education for Sustainable Development Department, and their son Zacary Indra Samsudin.



"You can't cross the sea merely by standing and staring at the water."

INDIAN NOBEL LAUREATE, RABINDRANATH TAGORE



"Knowing is not enough, we must apply.

Willing is not enough, we must do."

BRUCE LEE

Supported by:

IMPACT Institute	Dr. Mihaela Ulieru
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Climate Neutral Cardano	Rick Carstens (RCADA) Pool
Metera	Daniel Sampson, Ernesto Sampson, Santiago Portela, Andrea Cass
Profila	Michel Van Rory
GoKey	Craig Immel
Color The Blockchain	Sourav Deb (Mizo) & Sky Hayward
Sound Rig	Sunny Basra
Streets of ADA, A Samsudin Brothers Projek	Razali Samsudin, Affendi Samsudin

Additional Support/Interviews:

Earth Natives
Smart Contract Token
ADA Solar
ImpactScope
Empowa
Veritree
Algae Token
Open Litter Map
Cardano4Climate
Loxe.inc
Gimbalabs
littlefish
Wada
DirectEd
Blockchain Learning Center
Royal Dreads

Cardano Impact Ecosystem

SDG Use Case Comparison Chart

Use Case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	SDG Total
PositiveBlockchain				✓					✓							✓	✓	4
BLOCKCHAIN FOR GOOD				✓												✓	✓	3
ATALA PRISM				✓					✓							✓	✓	4
UNHCR Ukraine Cardano Foundation		✓						✓	✓				✓		✓			5
Sustainable Agriculture EMURGO		✓						✓	✓				✓		✓			5
Access to Health EMURGO			✓						✓									2
Renewable Energy EMURGO							✓		✓									2
Responsible Consumption EMURGO									✓			✓						2
Traceability of Raw Materials EMURGO									✓			✓						2
BLUE KORINTJI EMURGO									✓			✓				✓	✓	4
PROOFSPACE									✓							✓		2
IAMX OWN YOUR IDENTITY									✓							✓		2
Algae Token		✓					✓		✓				✓	✓				5
Immunify.Life			✓						✓									2
citaldoc			✓						✓									2
ADA Solar			✓				✓	✓		✓	✓							5
by erable°									✓		✓	✓						3
REVOLTE by erable°							✓		✓			✓	✓					4
scantrust									✓		✓	✓					✓	4
SUSTAINABLE ADA				✓					✓	✓						✓	✓	5
IMPACT SCOPE				✓					✓	✓			✓				✓	5
METERA									✓							✓	✓	3
Cogito									✓							✓	✓	3
Green Crypto Research				✓												✓	✓	3
erable°				✓					✓			✓				✓	✓	5
LIDO NATION				✓					✓								✓	3

The projects and their direct connections to the SDGs have been limited to a maximum of 5 SDGs as we deemed appropriate based on our assessments.

SUSTAINABLE ADA

SDG Use Case Comparison Chart

Use Case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	SDG Total
veritree								✓	✓				✓		✓	✓		5
OPEN Litter map				✓					✓		✓		✓		✓			5
				✓						✓			✓			✓	✓	5
CNC Alfa				✓					✓				✓			✓	✓	5
Profila				✓			✓					✓						3
				✓	✓			✓		✓							✓	5
empowa	✓					✓			✓	✓	✓							5
WORLD MOBILE								✓	✓		✓							3
SCAT DAO				✓					✓	✓								3
Loxe Inc.				✓					✓	✓						✓	✓	5
littlefish				✓					✓	✓						✓	✓	5
				✓	✓					✓						✓	✓	5
DirectEd				✓				✓	✓	✓							✓	5
one up one down				✓				✓	✓	✓							✓	5
wada				✓				✓	✓	✓							✓	5
BLOCKCHAIN				✓				✓	✓	✓							✓	5
COLOR				✓				✓	✓	✓							✓	5
REJUVE.AI			✓					✓	✓							✓	✓	5
Sophia DAO									✓							✓	✓	3
Jam Galaxy								✓	✓								✓	3
											✓		✓				✓	3
LANDANO	✓							✓	✓		✓					✓		5
GOKEY								✓	✓							✓		3
SOUNDRIG	✓		✓	✓				✓	✓									5
CARDANO SPOT				✓						✓							✓	3
CARDANO AIM				✓					✓							✓	✓	4

The projects and their direct connections to the SDGs have been limited to a maximum of 5 SDGs as we deemed appropriate based on our assessments.

SUSTAINABLE ADA

L

SDG Use Case Comparison Chart

Use Case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	SDG Total
ADAO									✓							✓	✓	3
SUMMON									✓							✓	✓	3
Clarity									✓							✓	✓	3
STAKEPOOL GOMA				✓					✓	✓	✓		✓					5
jpg.store				✓					✓				✓			✓	✓	5
BOOK.io				✓	✓			✓	✓									4
EARTH NATIVES									✓		✓	✓	✓				✓	5
STREETS OF ADA				✓					✓	✓			✓			✓		5
ROYAL BREADS								✓		✓		✓	✓					4
			✓						✓		✓	✓	✓					5
SERENITY PICTURES				✓					✓	✓								3
nucast			✓	✓	✓			✓	✓									5

The projects and their direct connections to the SDGs have been limited to a maximum of 5 SDGs as we deemed appropriate based on our assessments.

SUSTAINABLE ADA

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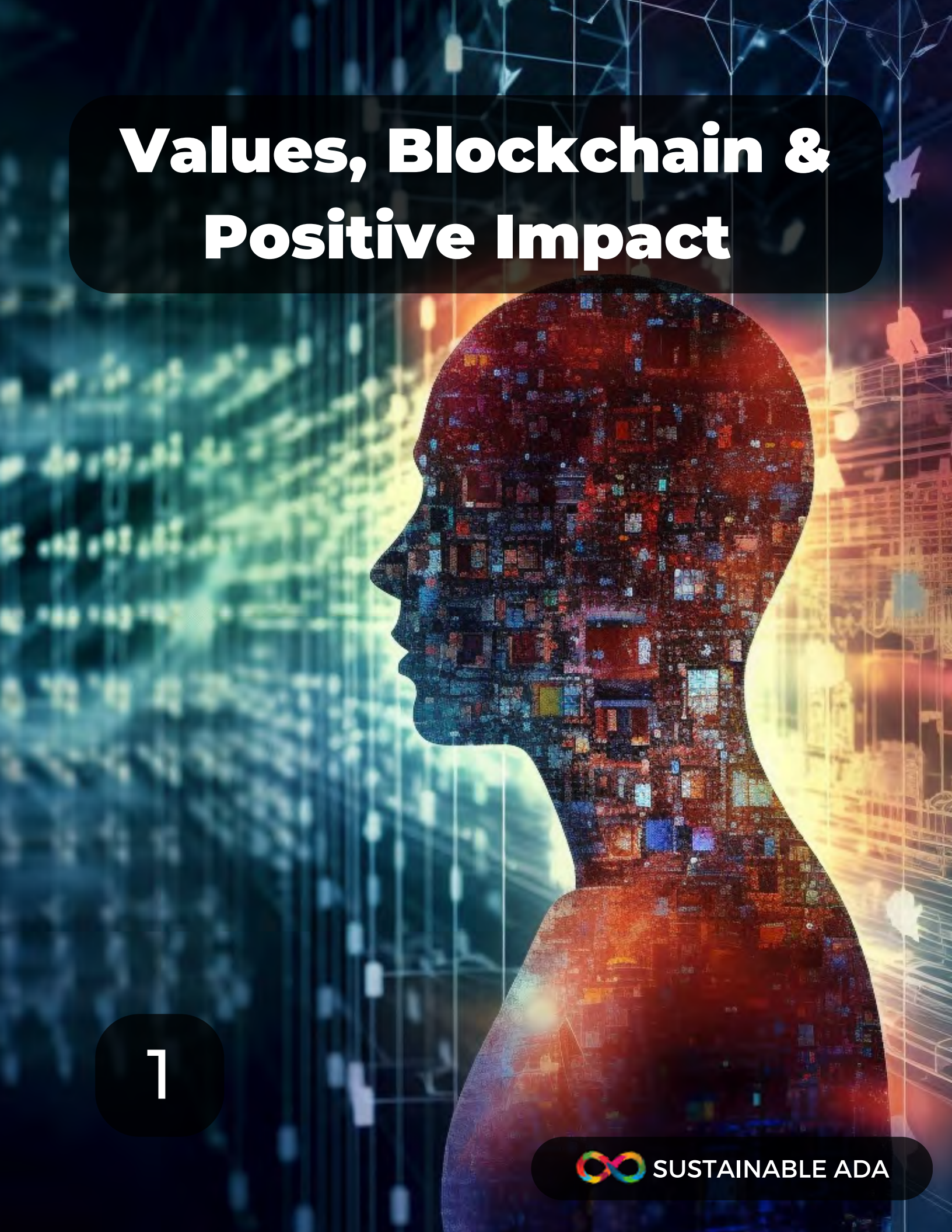
Sustainable ADA | Cardano Impact Report 2023

Values, Blockchain & Positive Impact



1

SUSTAINABLE ADA

Chapter 1 Overview:

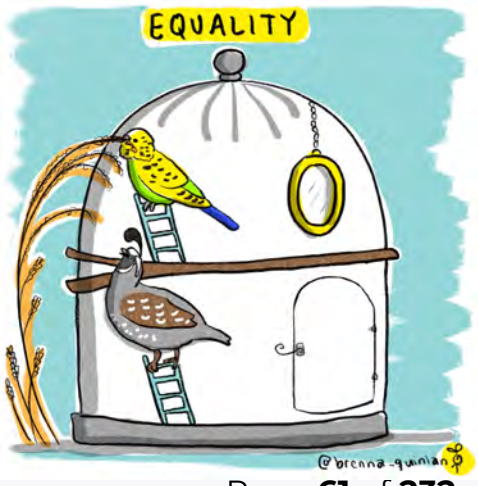
“Be Honest” ***- Maria Ressa***

In this era of rapid technological advancement and global challenges, blockchain technology has emerged as a potential catalyst for transformative change. It offers a decentralized, transparent, and secure platform that can revolutionize various domains, including finance, governance, sustainability, and value creation.

In this chapter, we explore the concept of impact and its role in evaluating the progress of systems, while examining the potential of blockchain technology, particularly Cardano, to drive positive social, environmental, and economic impact.

The concept of impact measurement has gained significant importance in today's world. By measuring impact, we can gain insights into the effectiveness of our actions and make data-driven decisions to improve outcomes.

Sustainability, which involves balancing environmental, economic, and social systems, is a key aspect of impact measurement. While economic factors have traditionally been prioritized, there is a growing recognition of the need to address environmental protection and social challenges such as poverty and inequality.

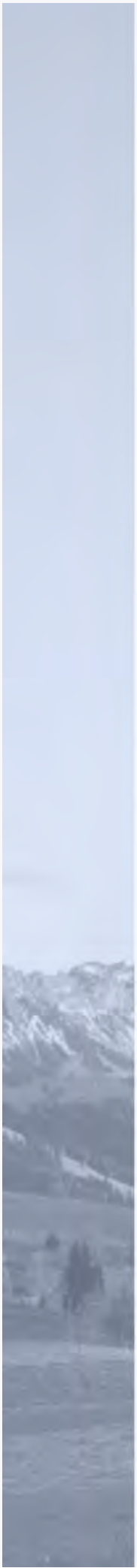


Blockchain technology, with its transparent and decentralized nature, has the potential to revolutionize impact measurement. By storing data on the blockchain, impact measurement becomes tamperproof, transparent, and trustworthy. Blockchain can enable the tracking and verification of various initiatives, such as tree planting efforts, supply chain transparency, financial inclusion, and ethical production practices. It enables new models that incentivize positive behavior and rewards actions that have a positive social and environmental impact.

Cardano, one of the leading blockchain protocols, stands out with its value-driven philosophy and approach. Guided by principles such as people, purpose, technology, research, and opportunity, Cardano aims to create a sustainable future and empower communities worldwide. Through collaboration with international bodies and a focus on education and social entrepreneurship, Cardano seeks to address inequities and foster a fairer and more inclusive global society.

The potential of blockchain technology extends beyond financial systems. By redefining value and incentivizing positive actions, blockchain can foster a shift towards a more sustainable and equitable world. Programmable money and crypto wallets offer solutions for financial inclusion and access to services and capital. By embedding ethical standards within financial systems and tracking social and environmental impacts, blockchain technology promotes transparency, trust, and accountability.

However, to fully realize the potential of blockchain in driving positive impact, regulation and legislation are necessary. Responsible and effective use of the technology requires a contextual understanding and cooperative efforts between governments, businesses, and civil society.



In summary, blockchain technology, particularly Cardano, has the potential to revolutionize impact measurement and value creation. By prioritizing sustainability, inclusivity, and trust, blockchain can drive positive social, environmental, and economic change. Embracing this technology and reevaluating our values can pave the way for a future that prioritizes the well-being of individuals and societies, creating a regenerative and sustainable world.

Chapter 1 Conclusion

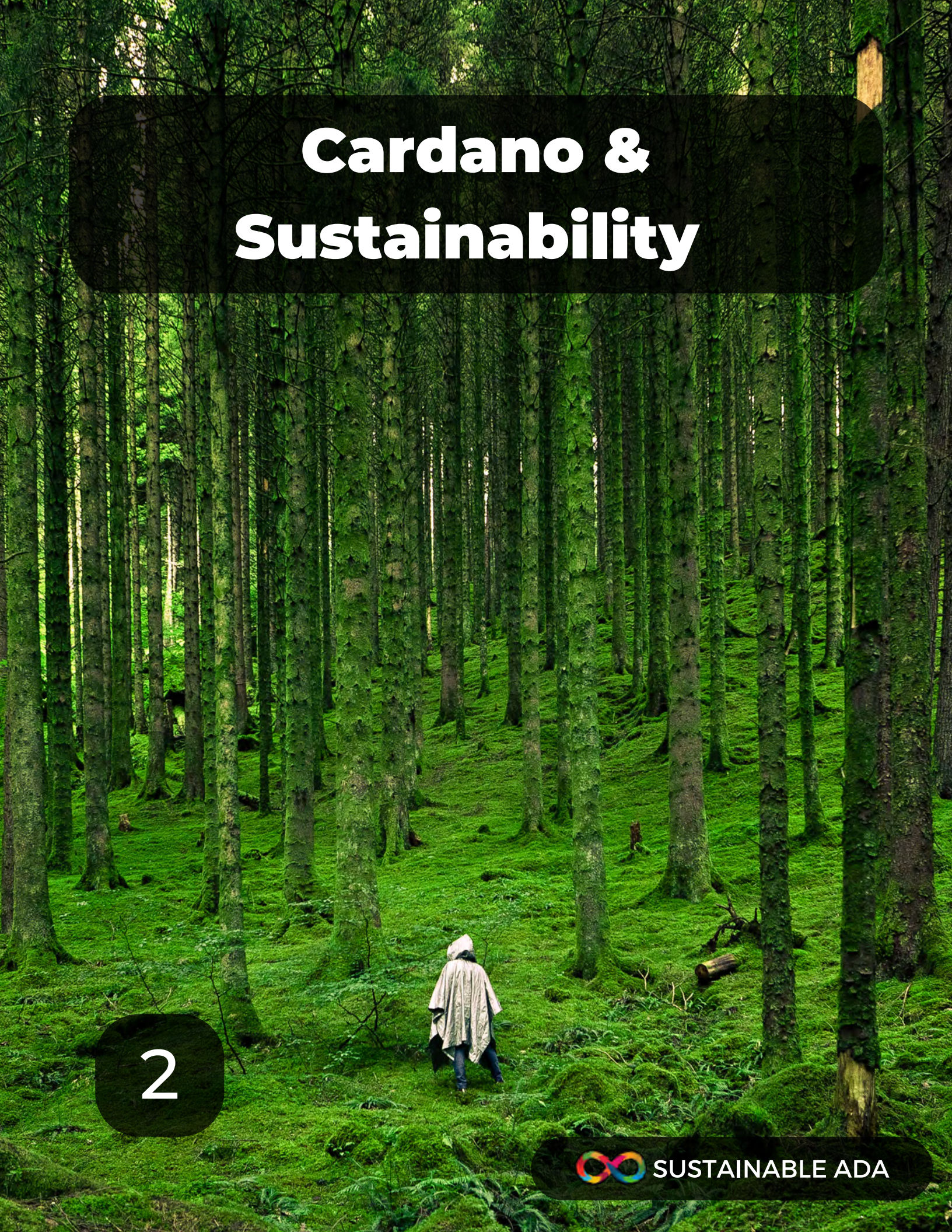
The concept of impact and its evaluation play a crucial role in understanding the progress of systems and making data-driven decisions to improve outcomes. Sustainability, which involves balancing environmental, economic, and social systems, requires us to prioritize environmental protection and address systemic issues contributing to inequality. While traditional measures like GDP have been used to assess success, alternative metrics such as life expectancy and citizen happiness provide a more comprehensive understanding of well-being.

Blockchain technology, particularly Cardano, offers a transformative solution to measuring and enhancing impact. Its transparent and decentralized nature allows for the verification of impact in a trustworthy manner, addressing issues like greenwashing and promoting sustainable practices. By incentivizing positive behavior and rewarding actions with a positive social and environmental impact, blockchain redefines value and encourages businesses to prioritize sustainability.

Cardano's value-driven philosophy, guided by principles like people, purpose, and technology, sets it apart in the blockchain space. Collaboration with international bodies and a focus on education and social entrepreneurship empower diverse stakeholders and accelerate the adoption of blockchain solutions in developing and emerging economies. By challenging the status quo, fostering cooperation, and promoting shared values, Cardano aims to create a sustainable future and address global challenges.

However, for blockchain technology to realize its full potential, regulation and legislation are necessary to ensure responsible and effective use. Embracing blockchain and innovative solutions can pave the way for a future that prioritizes the well-being of both people and the planet, creating a regenerative and sustainable world.

Cardano & Sustainability



2

SUSTAINABLE ADA

Chapter 2 Overview:

In the realm of sustainable development and impact investing, blockchain technology is emerging as a powerful tool for creating positive social and environmental change.

Alongside the Cardano Foundation, IOG and Emurgo, the Cardano Community, through various projects, is actively harnessing the potential of blockchain to address global challenges and contribute to the Sustainable Development Goals (SDGs).

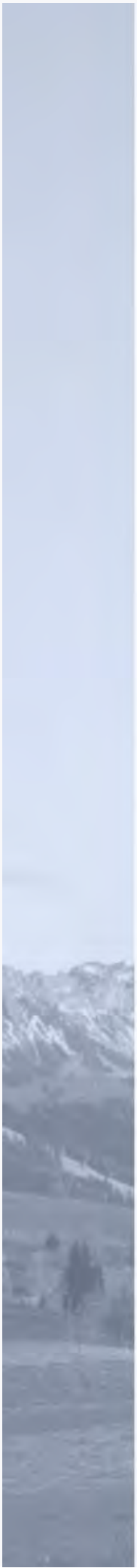
Atala Prism, ProofSpace, IAMX, Algae Token, Immunify.Life, Citaldoc, ADA Solar, PYXO, Revolte, and Scan Trust/Baia's Wine, Impact Web 3 & Sustainable ADA, Impact Scope, Metera Protocol, Cogito Protocol, Green Crypto Research, Empowa and World Mobile are notable projects within the Cardano ecosystem.

These projects cover a wide range of sectors, including decentralized identity, self-sovereign identity, sustainable agriculture, healthcare data management, and remote medical consultations. By aligning their solutions with specific SDGs, these projects demonstrate versatility and impact.

Blockchain technology enables individuals to control their digital identity, safeguard personal data, and access essential services, thereby contributing to SDG 16, which focuses on peace, justice, and strong institutions.

It also empowers financial inclusion, access to healthcare and education, and promotes digital trust and security, essential for a sustainable digital economy.

Projects like Algae Token revolutionize sustainable agriculture by establishing modern farming systems that produce nutrient-dense microalgae, addressing global challenges such as malnutrition, CO2

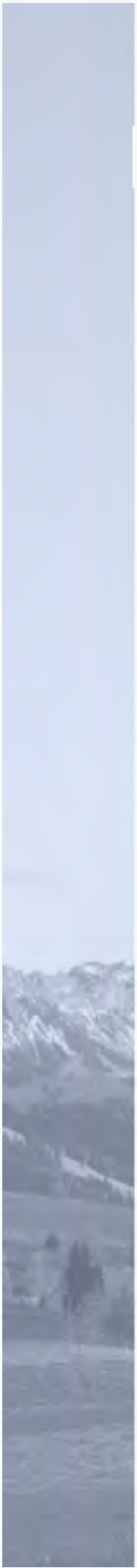


emissions, and reliance on ocean harvesting. Through their contributions to resource efficiency, renewable energy, climate action, and sustainable communities, they align with multiple SDGs.

In the realm of impact investing and ESG, blockchain technology offers transparency and verification, combating greenwashing and providing an honest account of impact. The Cardano ecosystem leverages blockchain to timestamp and connect impact data to non-fungible tokens (NFTs), creating Proof of Impact NFTs that can be linked to evidence of impact. This transparent and accessible data empowers communities, provides evidence for impactful work, and facilitates direct support at scale.

Initiatives like Impact Web 3 and Sustainable ADA, ImpactScope, the Metera Protocol, Cogito Protocol, and Green Crypto Research (GCR) within the Cardano ecosystem are leveraging blockchain technology to drive positive change. They focus on grassroots support, impact verification, tokenized portfolios, stability in crypto markets, ESG ratings for cryptocurrencies, and comprehensive evaluation of digital assets' impact.

These projects and initiatives within the Cardano ecosystem and the broader crypto space strive to promote transparency, accountability, and effectiveness in achieving positive social and environmental impact. By harnessing the potential of blockchain technology and innovative approaches, they are making significant strides in various sectors, contributing to the achievement of the SDGs and paving the way for a more sustainable future.

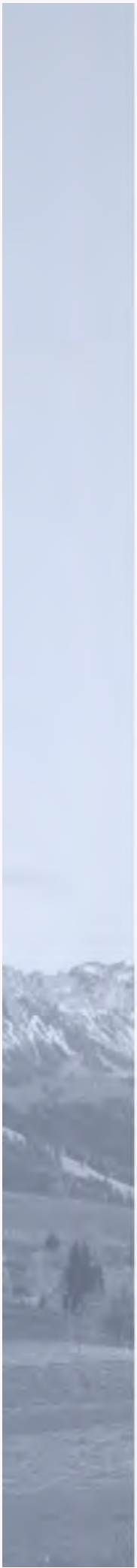


2.2 - Cardano Foundation and Sustainability

Cardano Foundation: tackling sustainability along three core focus areas

The Cardano Foundation is actively working alongside key partners as well as the Cardano community to demonstrate the power of blockchain technology in driving positive change on a global scale. The Foundation does this by leveraging its three core focus areas of operational resilience, education, and adoption, and approaches Blockchain for Good through activities that relate to both blockchain for sustainability and sustainability of blockchain.

Blockchain for sustainability applies blockchain technology to use cases that align with sustainability frameworks – such as the UN SDGs – and



that also contribute to the current and future systems of the world by upgrading legacy business models and defining radically innovative business models. It frequently employs DApps, data analytic and forensic tools, track & trace systems, as well as utility NFTs.

On the other hand, sustainability of blockchain refers to the Cardano blockchain's ability to meet present day needs without compromising on its future capabilities and capacity. It requires ensuring the predictability, reliability, and resilience of Cardano, while simultaneously contributing to blockchain education and adoption.

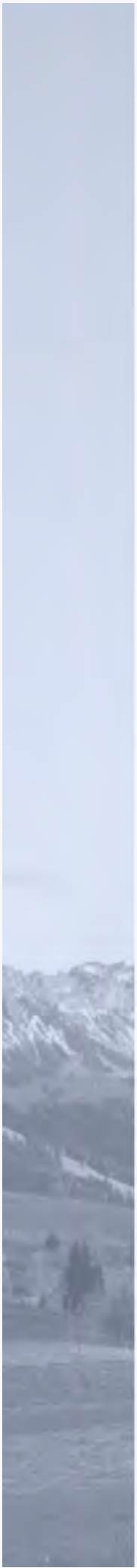
2.2.2 - Blockchain for Sustainability

A core component of the Cardano Foundation's work in Blockchain for Good is the Cardano Global Impact Challenge, which looks to activate the Cardano community's might and enthusiasm for positive change towards an innovative proof-of-concept use case on the Cardano blockchain.

The first Global Impact Challenge launched at the Cardano Summit 2021 in partnership with Veritree, a global land and tree restoration enterprise that uses fungible and non-fungible tokens on Cardano to track donations and land restoration records respectively. Over 1 million ADA was donated by the Cardano community to plant 1 million verifiably planted trees in Kenya – 350,000 trees have been planted to date.

The announcement of the second Global Impact Challenge happened during the Cardano Summit 2022, this time in collaboration with Switzerland for UNHCR, the UN Refugee Agency's national partner in Switzerland. Inspired by the incredible work done by Cardano SPOs donating rewards to pro-social causes, Switzerland for UNHCR officially launched its charity stake pool WRFGS in January 2023 at the "Blockchain for Good" conference in Davos. The Cardano Foundation made the initial delegation to the stake pool with 3.5 million ada. Taurus, a leading infrastructure provider, operates the pool. The UNHCR's Innovation Funds will receive 20% of any stake pool rewards, with the remaining 80% supporting on the ground missions to aid forcibly displaced people.

The project establishes an innovative approach to the use of blockchain for resource mobilization. Instead of the routine crypto-philanthropy approach that has donors making direct crypto donations to a charity, the collaboration between the Foundation and Switzerland for UNHCR creates the possibility for continuous support. Ada holders have the opportunity to delegate to a stake pool that automatically directs any potential reward towards Switzerland for UNHCR's mission. Switzerland for UNHCR can therefore receive long-term support, whereas donors



may continually help while still maintaining their original delegated stake.

With the Foundation's assistance, the WRFGS stake pool is the centerpiece in Switzerland for UNHCR's foray into leveraging blockchain technology for additional innovative philanthropy engagement models. For example, the two parties have already further collaborated with NMKR and TURF to create a proof of concept for NFT-based giving at Paris Blockchain Week, which can be adopted to onboard users from other Web 3 ecosystems as well as non-Web 3 users. Switzerland for UNHCR iterated this proof of concept at Consensus 2023, and also communicated the work they are doing with Cardano as part of a panel discussion featuring other UN organizations. The Cardano Foundation and Switzerland for UNHCR plan to develop more initiatives in 2023 that seek to connect the Cardano and UNHCR communities for mutually beneficial collaborations using blockchain to support displaced people.

2.2.3 - Sustainability of Blockchain

Adoption includes both partnerships plus encouraging and assisting the development of open source tooling like Aiken, Hydra, and the Decentralised Application Backend (DAB). Similarly, leveraging the full potential of blockchain requires not just the increased on-chain utility brought by adoption, but also a widespread understanding of the technology coupled with a thoroughly reliable and robust technology. Indeed, combining the Cardano Foundation's core focus areas of adoption, education, and operational resilience will lead to greater on-chain participation, ensuring the sustainability of Cardano for years to come.

The Cardano Foundation supports the developer community in multiple ways and through various channels. Chief among these are the maintenance of the Developer Portal and the optimization of the Cardano Improvement Proposal (CIP) process. The Cardano Foundation's integrations team consistently provides technical support for the integration of Cardano to third parties such as exchanges and projects building on Cardano, whether during a hard fork or in finding solutions to ad-hoc technical challenges. Furthermore, the Foundation uses its treasury to contribute to decentralization by delegating to stake pool operators who build tools and create value for the Cardano ecosystem. It also leverages one wallet to vote in Project Catalyst, helping to decentralize innovation on Cardano by voting for challenges which focus on core infrastructure as well as those aiming to do good at scale.

The Cardano Foundation equally supports Cardano community meetups through its Ambassador program and seeks to provide a platform for Cardano projects whenever possible. In addition, the Foundation plays an active advocacy role in sharing knowledge with various stakeholders about the Cardano blockchain and ecosystem, while also clarifying misconceptions about blockchain technology as a whole. To do so, it proves crucial to participate in diverse events focusing on Web 3 and traditional audiences alike, be it with an emphasis on finance, regulation, sustainability, or technology. Moreover, the Foundation frequently

engages with regulators and policy makers across the world by responding to regulatory consultations, participating in roundtables, and interacting with the working groups of industry associations, as well as contributing a variety of reports and publications. Through these, the Cardano Foundation advocates for nuanced, evidence-led blockchain regulation, and highlights the technology's potential use cases, often addressing questions concerning the environmental impact of the technology (Cardano Foundation, 2023).

2.3.5 - Sustainable ADA & Impact Web 3

The idea for Sustainable ADA was created on April 20th 2021.

Cole Bartlett and Razali Samsudin Co-founded Sustainable ADA and Impact Web 3, and have been shaping it into what it is today.

It all started with the initial idea for Sustainable ADA back on April 20th of 2021 (Sustainable ADA 2021). Together, we co-founded it in June of 2021. We have backgrounds, professional experiences, and knowledge in education, economics, sustainability, and how blockchain technologies can be harnessed for good.

Razali brought his knowledge, expertise, mentorship and experiences of working with disadvantaged, and Special Educational Needs and Disabilities (SEND) individuals and their families. He worked to close the digital divide in Tower Hamlets, the poorest borough of London, with the highest population growth rate, and highest rates of child poverty in the UK.

An educator for 15+ years, working and teaching in the UK, France and Indonesia, with a focus on Social Sciences, Geography, History, Religious Studies, Politics, and Sustainability in secondary schools, and undergraduate and postgraduate students in university.

Working on the frontlines to spread awareness and address systemic problems were fueled from experiences growing up in London, Malaysia, the Philippines and Singapore. This brought him to work cross-sectorally at educational institutions, publishing articles with online news agency Asialyst on the issues of forest fires and transboundary haze in Indonesia, hydroelectric dams in Tibet, and the effects of illegal fishing on the ecosystem in the Coral Triangle.

Experiences at nonprofits and NGOs such as Forum for the Future and Greenpeace Indonesia in the Forest Team, and social enterprises such as Solutions for the Planet have enabled Razali to connect the dots. With proper Governmental regulation, coupled with finance and capital effectively and efficiently allocated, blockchain technologies are a key game changer in helping to provide greater trust, transparency and accountability.

With the knowledge that in the long term education is the most important solution to tackling the problems of today, this shared conviction led to Razali and Cole joining forces.

Together they have worked to build an online platform where one can continue their lifelong journey of learning. Awareness and access to tools, and the knowledge of how to wield them, while working collaboratively, in diverse, interdisciplinary teams are all keys to build a more sustainable and equitable world, and achieve our Sustainable Development Goals by 2030.

Through the experience of building Sustainable ADA side by side, many learnings have been discovered along the way, with the development of strong partnerships helping drive positive impact in the ecosystem.

Sustainable ADA's goals are to create long-term positive impacts. To bridge people into a world where they are welcomed on their lifelong learning journey and invited into the Cardano community where they can collaborate for greater impact.

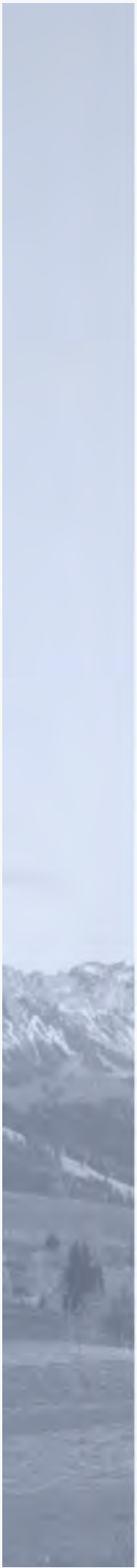
Ultimately, enabling and empowering visitors to create solutions and uplift themselves, and their communities by discovering, acquiring and nurturing an understanding of what blockchain is, its limitations and its possibilities.

Sustainable ADA & Project Catalyst

We joined Project Catalyst, Cardano's decentralized innovation fund, during fund 4. After applying and learning from both funds 4 and 5 along with lots of support from Cardano community members and teams, we were able to construct a strong proposal together that focused on our goals and ambitions for Sustainable ADA, and the Cardano community's goals. We submitted a proposal focused on helping Grow Cardano, and Grow Africa.

With this funding, we had more capacity to focus on researching and sharing stories from change-makers in Africa and the diaspora, who are engaging with Cardano, creating a better tomorrow, today.

Thanks to the Cardano community and the use of their voting power from holding and staking ADA, we successfully secured the funding we



were seeking. This helped us to take significant steps towards fulfilling our vision and mission having secured these crucial and helpful funds.

Through our time in the Project Catalyst ecosystem, we have been able to create a lot of strong and exciting partnerships with projects and businesses all across the world. This has led us to develop new ambitions for the work we do and to expand beyond education.

Projects developed through Catalyst

Sustainable ADA Hub

Fund	Description	Project
6	Share stories from change agents in Africa and diaspora, engaging with Cardano in cascading disruption, creating a better tomorrow, today.	Global Sustainable Stories/Use cases
7	Researching the basis of creating a platform + token for impact investing, directly connecting you to SDGs projects you're passionate about.	Sustainable Goals Token Research
7	Facilitating and increasing meaningful participation from multi-language groups + stakeholders globally within and external to Cardano.	Sustainable Hub for all Backgrounds
7	Share stories from change agents in Latin America, engaging with Cardano in cascading disruption, creating a better tomorrow, today.	Sustainable LatinAmerican Use Cases
7	Facilitating the sharing of sustainable projects + stories from the Japanese community and diaspora, within + external to Cardano.	Sustainability Hub for Japan

Additional Projects

Fund	Description	Project
7	Researching the basis of an Impact Measurements Tool to help define KPIs, and measure and report them, with a focus on SDGs impact.	Impact Measurement Tool Research
8	Feasibility study of the microfinance sector to determine an appropriate design of a Cardano based microfinance investment platform dApp,	Microfinance on chain 3.0
8	Developing new users and project owner functionalities on the Positiveblockchain platform + inviting Cardano projects to claim their pages.	Positive Blockchain Database / Cardano Project Directory
8	Innovative 'Cardano Impact Community' model that generates business collaborations for those seeking to be blockchain for impact pioneers.	Community Lead Generator
8	Modelling interoperability in the Cardano Impact Community to generate multi-chain collaborations & be a key player in impact collaboration.	Cross-Chain Impact Lead Generator

Projects developed through Catalyst

Cardano Aim x Sustainable ADA

Fund	Description	Project
6, 7, 8	Provide a tool that guides proposers through the process with access to numerous frameworks that assist with structure, such as the UN Sustainable Development Goals framework.	Proposal Framework Tool
6	Researching the basis of creating a platform + token for impact investing, directly connecting you to SDGs projects you're passionate about.	SDG Ratings to Catalyst Proposals
6	Research how specifically UN Sustainable Development Goals & other frameworks applied in Project Catalyst can enhance impact and value.	Research in Applying Frameworks
6, 7, 8	Share stories from change agents in Latin America, engaging with Cardano in cascading disruption, creating a better tomorrow, today.	Proposal + SDGs
7	Research, analysis, and evaluation of the Catalyst ecosystem, develop bespoke, custom dedicated strategies ready for implementation.	Strategy Framework

Onboarding Newcomers

Fund	Description	Project
8	Build an onboarding model through an active catalyst community to welcome, connect, and support onboarding newcomers	Impact Onboarding
9	Feasibility study of the microfinance sector to determine an appropriate design of a Cardano based microfinance investment platform dApp,	Onboarded Companies Playbook

We are taking the next steps, building upon our research to create an impact measurement platform and Decentralized Autonomous Organization. We are calling these Proof of Impact Platform (PIP) and Domino DAO.

What is PIP & Domino DAO?

Vision/Mission:

The Proof of Impact Platform (PIP) and Domino DAO are blockchain-powered solutions that convert illiquid, unmonetized, and hard-to-measure NGO and Impact Association's impact into purchasable, liquid, digital assets.

The Proof of Impact Platform (PIP) is a SaaS company aiming to help citizens financially and morally support the causes and actions carried out by grassroots activists, communities, NGOs, and impact associations.

The primary products are an easy-to-use app to upload Impact KPI data. Along with a blockchain-powered platform that enables individuals and organizations to support NGOs and impact associations and get rewarded for their actions.

PIP will use blockchain, NFT, and related technologies to capture and showcase the reported and proven impact of NGOs, and associations, through a purchasable Proof of Impact NFT, containing metadata evidence connected to the positive impact beneficiaries have experienced.

We have partnered with Talk to Loop, who will be our on the ground partner to support capturing local community testimonials. For our PIP pilot project, Streets of ADA - A Samsudin Brothers Projek are creating Proof of Impact NFTs in partnership with the Palawan NGO Network, in the Philippines, made up of 39 NGOs and Impact Associations. Streets of ADA NFTs will help raise funds to challenge corruption, protect activists and protect the planet.

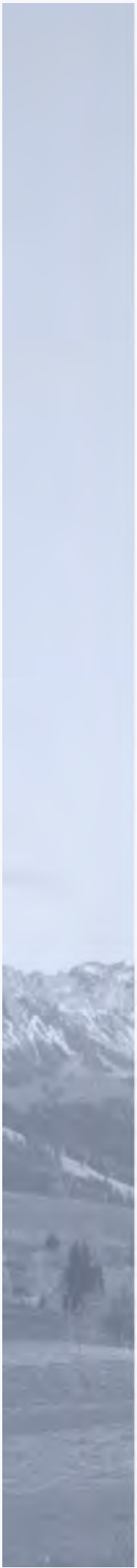
“Loop is an open platform raising the voices of local people into the digital space. Making sure that impact is measured by their experiences and priorities! This collaboration is helping to use their views to inform Proof of Impact rather than letting other people define it." ***- Alex Ross, Loop Lead***

PIP's marketplace will make NFTs available for purchase. Smart contracts will automatically send funds from the sale of the NFT to the NGO's wallet, while also incentivizing users by rewarding them with platform tokens/funds for their actions and needs.

Domino DAO is a decentralized autonomous organization (DAO) that aims to govern the Proof of Impact Platform and employ a diverse group of Impact Evaluators, with a focus being on community and grassroots led action.

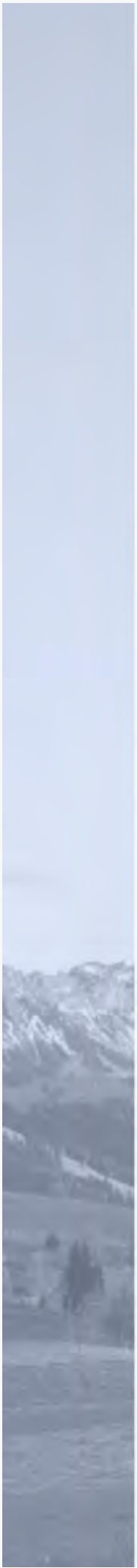
Domino DAO will facilitate PIP governance, helping create rules and incentives for the platforms and equipping users and stakeholders with useful tools. The DAO will govern and manage the platform's token, which will allow token holders to participate in the platform's decision-making process.

The goal of the DAO is to create a local and global community of impact driven people, evaluators, and investors. Helping create a vibrant and inclusive community, focused on funding, growing, and rewarding impact projects, investors, and evaluators.



We will be creating a project based learning education framework. A course and mandatory certification for anyone to become a 3rd party impact evaluator, enabling individuals to access a new income stream.

Our ambitions are to overtime strengthen the relationships between ESG/impact investors and the Social and Environmental impact projects. To bring more investment to these projects so they can sustainably scale and create greater impact. Furthermore, we can connect impact investors to the projects they want to invest in and support. We envision a model where investors input certain impact investment criteria based on their investing preferences. Then using that information, they are connected with impact projects in our ecosystem, helping impact investors make more conscious and informed investing decisions.



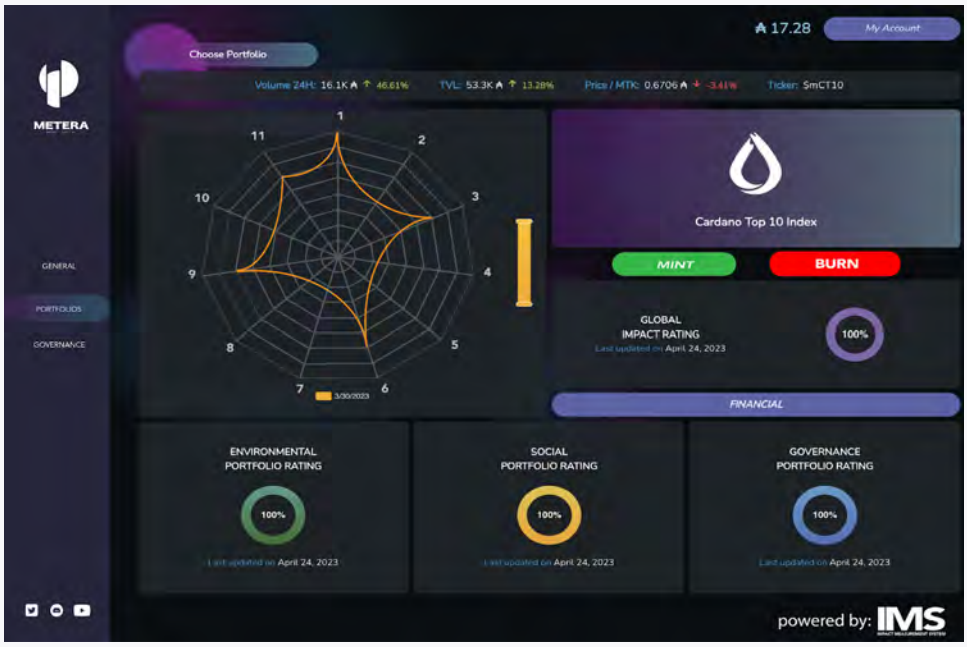
2.4.2 - Metera Protocol Impact Oracle System

The world is becoming increasingly conscious of the need for sustainability and social impact, and investors are no exception. As a result, impact investing has become a popular way for investors to support projects that align with their values while generating returns. Metera is a decentralized protocol built on the Cardano Blockchain that allows the community to create and support tokenized portfolios (MTK's). What sets it apart is the commitment to transparency and security. Assets held in the MTKs are held in vaults using a smart contract, and can only be accessed by the smart contract owner. This ensures that investors' asset funds are secure and that the Metera team cannot mismanage them.

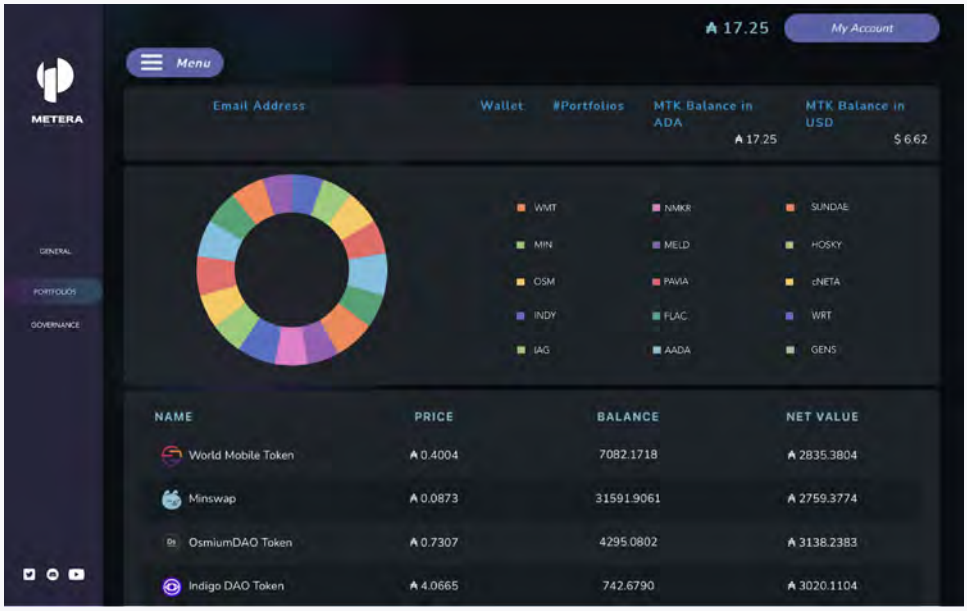
Metera is pioneering the use of the Impact Measurement System (IMS) to reward projects that generate more impact by assessing the sustainability and impact aspects of decentralized digital asset, as an oracle system to assign a Global Impact Score to each tokenized portfolio (MTK), providing investors with valuable insights into the social, governmental and environmental impact of their investments.

The Protocol provides an impact tab on its dashboard, which permits the community to track and report the effects of their investments in real-time. The dashboard is entirely connected to the IMS, ensuring that investors receive precise and current information on the consequences of their investments. This simplifies the communication of the beneficial

impact of investments to all interested parties for investors (Metera, 2023).



MVP - Impact tab on the Metera Protocol Dashboard



MVP - Portfolio tab on the Metera Protocol Dashboard

Metera Protocol is disrupting the world of impact investing, providing investors with a transparent and reliable rating system and a user-friendly

impact dashboard. By using the IMS rating system and giving it a full section on the impact dashboard, investors can easily understand the environmental, social and governmental impact of their investments and make informed decisions that drive positive change.
Metera Protocol is helping to create a more sustainable future for all, one investment at a time.

Impact Measurement System (IMS): A Comprehensive

Evaluation Tool for crypto native assets

Introduction

Traditional ESG rating systems are insufficient in evaluating the social, governmental and environmental impact of digital assets. These systems are designed for evaluating the impact of traditional assets such as stocks and bonds, which have different characteristics and operating principles than digital assets. Most digital assets operate within a decentralized ecosystem and can have unique social, governmental and environmental impact criterias that are not accounted for by traditional ESG metrics.

Furthermore, digital assets are often used to fund projects and initiatives that have a specific impact focus, which requires a more comprehensive and tailored evaluation approach to prevent green-washing or misleading impact advertisement.

The Impact Measurement System (IMS) was specifically designed to address these gaps and provide a holistic evaluation on the impact of

digital assets on society and the environment while trying to give a more accurate and transparent methodology so that many parties can keep building and improving.

Background

Enigma Crypto Capital is thrilled to introduce the Impact Measurement System (IMS). The IMS is a comprehensive evaluation tool designed to assess the social and environmental impact of digital assets. It is the first holistic rating system for digital assets, combining the best of four distinct impact rating methods.

Our team recognized the urgent need for tools that could provide a holistic evaluation of digital assets' impact on society and the environment, which would ultimately promote sustainability and social responsibility in the industry. We were struck by the lack of comprehensive tools to evaluate the impact of digital assets, which led us to develop the IMS.

We are proud to offer the IMS as a valuable tool for promoting sustainability in the digital asset industry. The IMS provides a standard set of metrics that can be used by stakeholders to ensure that digital assets are sustainable and socially responsible. It represents a growing interest in sustainability within the digital asset industry and tools like the IMS are essential in ensuring that digital assets are sustainable and socially responsible.

Methods

The IMS tailors each asset rating using four main systems:

1. Manual Rating System, designed to provide investors a more comprehensive and objective assessment of a project sustainability and impact dimensions.

2. GSRM Rating System, that helps to evaluate and monitor the sustainable aspects of decentralized applications (DApps) and entities (DAOs).

3. United Nations Sustainable Development Goals Indicators (SDGs) for a global perspective, and the

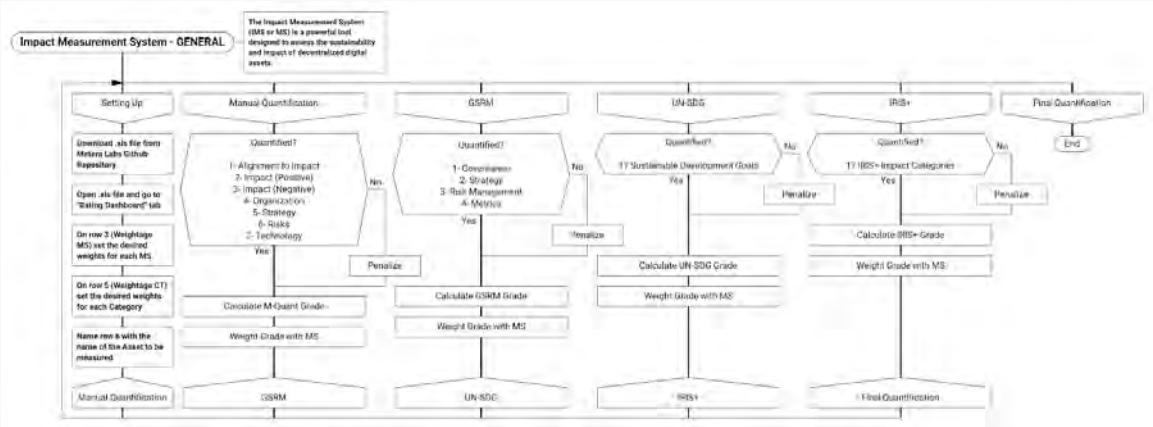
4. IRIS+ System by the Global Impact Investing Network to assess the impact of investments.

These four main systems provide a comprehensive evaluation of the social, governmental and environmental impact of digital assets, by exploring key categories such as alignment to impact investment, positive and negative impacts, organization, strategy, risks, technology, industry, governance, business models, risk management, environmental impact, and more.

The IMS is a game-changer in the digital asset industry, representing the first step towards building comprehensive tooling for sustainability-related solutions, and the main objective is to continue building and refining these tools with the community. With the IMS, we are laying the foundation for a wave of open-source tools that can help identify and track projects that are truly making a positive real impact. Also, by developing and sharing open-source tools, Enigma Crypto Capital hopes to inspire others in the industry to join the movement and work together towards a more sustainable and socially responsible future.

Results: Final Report

The following diagram explains how to build the final report for an asset evaluation using the Impact Measurement System (IMS). The diagram begins with the initial data collection step and moves through each stage of the evaluation process, including Manual Rating, GSRM, SDG, and IRIS+.



You can learn more about the IMS and download the Report here:
(https://digital-asset-impact-measurment.gitbook.io/impact-measurement-system/intro/overview)

Final Report Overview

CLEN TOKEN EX

GLOBAL IMPACT SCORE **B+**

F D C B A

Description: Provide a brief context and background on the asset, and a description of what it does. Include a brief description of how the asset will be evaluated using the IMS.

Key Features:

25% Manual Rating = 25%

25% GSRM = 25%

25% SDG = 25%

25% IRIS+ = 25%

0 to 100 Rating of Four Distinct Impact Rating Methods: Include a chart or table that displays the overall rating of the asset on a 0 to 100 scale for each of the four distinct impact rating methods.

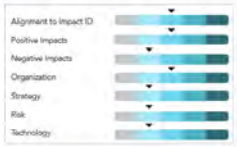
Global Impact Score:

Summary of Asset Global Impact Score: Include a summary of the asset's Global Impact Score, which is a unified score composed of the final scores from each measurement system, with each measurement system weighted according to its importance. The summary should provide an overall picture of the asset's impact based on the ratings from the four distinct impact rating methods.

1- Manual Rating = 25%
Manual Rating Evaluation Full Description:

Provide a detailed evaluation of the asset based on the Manual Rating System, which evaluates assets based on Alignment to Impact Investment Definition, Positive Impacts, Negative Impacts, Organization, Strategy, Risk, and Technology. For each of these key categories, provide a description of how the asset was evaluated and what the score was.

Alignment to Impact Investment Definition = **5 / 20**
Positive Impacts = **3 / 20**
Negative Impacts = **5 / 20**
Organization = **3 / 20**
Strategy = **3 / 20**
Risk = **3 / 20**
Technology = **4 / 20**

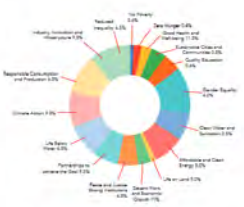


Page Two

2- GSRM = 25% (5, 5, 5, 7)
GSRM Evaluation Full Description:

Provide a detailed evaluation of the asset based on the GSRM Rating System, which evaluates assets based on Governance, Strategy, Risk Management, and Metrics. For each of these key categories, provide a description of how the asset was evaluated and what the score was.

Governance = **10 / 20**
Strategy = **5 / 20**
Risks = **5 / 20**
Metrics = **5 / 20**



3- SDG = 25%
SDG Evaluation Full Description:

Provide a detailed evaluation of the asset based on the United Nations Sustainable Development Goals (SDGs), which have 17 categories, each with its own sub-categories. For each of these categories, provide a description of how the asset was evaluated, what indicators were used, and what the impact measurement was.

4- IRIS+ = 25%
IRIS+ Evaluation Full Description:

Provide a detailed evaluation of the asset based on the IRIS+ Rating System, which categorizes sustainability efforts into 17 themes, with each theme having multiple strategic goals. For each of these themes, provide a description of how the asset was evaluated and what the score was.

	Direct Positive	Indirect Positive	No Impact	Indirect Negative	Direct Negative
Agriculture	4.0	3.0	6.0	4.3	0.3
Air	6.3	3.2	6.5	6.3	2.9
Biodiversity & Ecosystems	0.6	4.5	0.6	3.6	4.6
Climate	5.8	0.8	6.8	2.8	6.7
Diversity and Inclusion	4.0	1.0	4.1	0.5	1.2
Education	3.0	5.0	5.0	4.0	3.4
Employment	2.6	2.5	2.6	3.6	2.5
Energy	6.7	3.7	7.7	6.1	6.6
Financial Services	9.1	0.1	2.1	9.1	9.4

	Direct Positive	Indirect Positive	No Impact	Indirect Negative	Direct Negative
Health	4.0	3.0	6.0	4.3	0.3
Infrastructure	6.3	3.2	6.5	6.3	2.9
Land	0.6	4.5	0.6	3.6	4.6
Oceans and Coastal Zones	5.8	0.8	6.8	2.8	6.7
Pollution	4.0	1.0	4.1	0.5	1.2
Real Estate	3.0	5.0	5.0	4.0	3.4
Waste	2.6	2.5	2.6	3.6	2.5
Water	6.7	3.7	7.7	6.1	6.6

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Page Three

Conclusion:

Provide a conclusion that summarizes the findings of the report and what the asset's overall impact score is. This should include recommendations on how the asset can improve its impact score, and what actions can be taken to ensure sustainable practices and promote social, environmental, and economic development.

CATEGORIES & GLOSSARY OF TERMS

Categories and Glossary of Terms:
Include a list of the categories used to evaluate the asset, along with a glossary of terms that explains each of the terms used in the report.

The Categories and Glossary of Terms section of an Impact Measurement System (IMS) report provides a comprehensive list of key terms used throughout the report, as well as any necessary definitions and explanations. This section is crucial for readers who may not be familiar with the terminology used in the report.

The Categories section provides an overview of the different categories evaluated in the report. This includes the Manual Rating System, GSRM, SDG, and IRIS+ systems, as well as any other categories that may be relevant to the asset being evaluated. For each category, a brief description is provided, along with a list of subcategories and key metrics that were evaluated.

The Glossary of Terms provides a more detailed explanation of the key terms used throughout the report. This includes terms such as Alignment to Impact Investment, Impact (Positive and Negative), Organization, Strategy, Risks, Technology, Industry, Governance, Business Model, Risk Management, Environmental Impact, and more. For each term, a definition and any relevant explanations or examples are provided to ensure that readers have a clear understanding of the terminology used in the report.

For example, the term "Alignment to Impact Investment" refers to the extent to which an asset aligns with the principles and goals of impact investing, which aims to generate positive social and environmental impact alongside financial returns. This may include factors such as the asset's social and environmental impact, governance and management structure, and risk management practices.

Another example is the term "Environmental Impact", which refers to the positive or negative impact that an asset may have on the environment. This may include factors such as carbon emissions, water usage, waste production, and biodiversity.

Overall, the Categories and Glossary of Terms section of an IMS report is essential for ensuring that readers have a clear understanding of the terminology and categories used throughout the report. By providing clear definitions and explanations, this section helps to ensure that readers can accurately interpret the results of the evaluation and make informed decisions about the sustainability and social responsibility of digital assets.

Page Four

The Global Impact Score is composed of the final scores of each Measurement System. The weightage assigned to each MS can be modified and adapted depending on the analyst's objectives.

After assigning a final numerical score to each asset, the next step is to assign a letter score.

F	D	C	B	A
<60%	60-69%	70-79%	80-89%	90-100%

STANDARD DISCLOSURES

Include any standard disclosures required for the report, such as a statement of independence, limitations of liability, and conflict of interest disclosures.

The Standard Disclosures section of the report provides information about the rating system itself, rather than the asset being evaluated. This section typically includes information on the methodology and assumptions used in the rating process, as well as any limitations or caveats that should be considered when interpreting the results.

As an example, one standard disclosure that may be included in the report is the following:

"DISCLAIMER: THE IMPACT MEASUREMENT SYSTEM (IMS) IS AN EVALUATION TOOL DESIGNED TO PROVIDE A HOLISTIC ASSESSMENT OF THE SOCIAL AND ENVIRONMENTAL IMPACT OF DIGITAL ASSETS. WHILE THE IMS IS BASED ON A THOROUGH AND COMPREHENSIVE METHODOLOGY, IT IS IMPORTANT TO NOTE THAT THE RESULTS ARE SUBJECT TO CERTAIN ASSUMPTIONS AND LIMITATIONS. THE IMS SHOULD NOT BE CONSIDERED AS A SUBSTITUTE FOR PROFESSIONAL ADVICE OR AS AN ENDORSEMENT OF ANY PARTICULAR DIGITAL ASSET."

Another possible disclosure that may be included is:

"CONFIDENTIALITY: THE RESULTS OF THE IMS ARE CONFIDENTIAL AND INTENDED SOLELY FOR THE USE OF THE INTENDED RECIPIENT. THE IMS SHOULD NOT BE DISCLOSED OR DISTRIBUTED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF X."

Other potential disclosures could include information on the sources of data used in the evaluation, any conflicts of interest that may exist, and any other relevant legal or regulatory disclosures.

It is important to note that the specific disclosures included in the report may vary depending on the particular circumstances of the evaluation and the requirements of the intended audience. However, including a comprehensive and transparent set of standard disclosures can help ensure that the rating system is viewed as credible and trustworthy by all stakeholders.

METERA

2.5 - Green Crypto Research ESG Rating

2.5.2 - Introduction & Overview

A - Sustainable cryptocurrencies:

Wishful thinking or visionary reality?

The 2008 financial crisis changed our world profoundly. The loss of trust in financial institutions was particularly significant. In response, Satoshi Nakamoto developed Bitcoin aiming to bypass intermediaries in financial transactions. Decentralization became the credo of a new generation of blockchain enthusiasts, early adopters and interested crypto investors.

At the time, climate change was not yet making big headlines and sustainability appeared more of a fringe issue. That changed in 2015, two years after the creation of Ethereum. At that time, almost all countries

signed the Paris Climate Agreement and committed to limit global warming to 1.5 degrees by 2100. Since then, sustainability issues have become increasingly prominent and are now fundamental to business models, services, and technologies in many industries.

All the more surprising that sustainability does not carry more weight in the crypto universe today. After all, this sector has been growing up in a world where climate activists are occupying highways, CO2 emissions are being curbed by law, and entire industries are being rebuilt to become circular. Instead of reflecting these claims, cryptocurrencies have, on the contrary, come under particularly heavy criticism.

Digital currencies are accused of harming the planet and producing enormous amounts of greenhouse gas emissions. At this point, it should be noted that such criticism is often based on half-knowledge and frequently construed in a particularly one-sided manner when compared to traditional industries. Moreover, critics often lump all cryptocurrencies together, even though there are significant differences when comparing different coins and tokens.

It is therefore important to know sustainable factors in the context of digital currencies and to develop a basic understanding of the influencing variables before making a final judgment.

The world’s 1st ESG rating for cryptos Green Crypto Research (GCR) has set out to improve the transparency of sustainable efforts in the crypto industry by assessing it holistically – similar to industry standards for stocks, real estate, or bonds. Just like any other financial product, digital assets need to fulfill certain standards to be considered sustainable or “green”. They should have a low environmental footprint, a positive social impact, and a governance structure that ensures fairness and security for all participants. Building on this rationale, GCR has developed the world's first holistic framework to determine the sustainability of cryptocurrencies in three dimensions: environmental footprint, social impact, and governance (ESG).

B - Sustainability in the context of ESG

According to the trend research institute “Exploding Topics”, there were over 560 cryptocurrencies as of November 2015. The vast majority, like Bitcoin, were relying on a proof-of-work consensus algorithm. Seven years later, the same institute counts 9,314 cryptocurrencies that are actively used or have value. It is unknown how many of these are built on the same technology as Bitcoin.

GCR has found, however, that of the 100 cryptocurrencies with the highest market value, only a handful can be considered fully sustainable. This report sheds light on which data is relevant for the rating, the methodology used for GCR’s sustainability assessment and how Cardano performs from an ESG perspective (Howarth, 2022).

2.5.3 - Assessment logic and ESG rating framework

A - Rating Methodology

The label "ESG" is becoming increasingly important in the world of finance. It helps sustainability-oriented investors to better assess opportunities and to align them with their own values. GCR was founded with the very goal to empower investors to make sustainability a factor in their investment process for digital assets

On one hand, GCR aims to enable all investors in cryptocurrencies to have access to sustainability information. On the other hand, it wants to sharpen and broaden the understanding of sustainability within the crypto community. It is worth noting that GCR does not provide financial advice but aims to promote an understanding of the links between sustainability and cryptocurrencies.

GCR's ESG rating is a relative ranking. This rating method compares the characteristics of several cryptocurrencies to put them in a linear order. Namely, from the most sustainable to the least sustainable. The comparisons between cryptos are based on numerical values that represent the relative degree of importance attached to each measurement criterion. In other words, the cryptocurrencies are benchmarked against each other. The ESG rating is based on three separate assessments: An environmental assessment, a social assessment, and a governance assessment. For each of these three sustainability dimensions, an average score is calculated based on quantitative and qualitative data. There are ten possible scores in each of these three categories and a total of four ratings. The overall ESG rating is equal to the lowest score from the three assessments. This ensures that issues in a single category cannot be offset by good scores in the other two.

Rating	Scores	Assessment	Description
A	A+ | A-	sustainable	Can be held and traded without negative environmental or social impact within a governed framework.
B	B+ | B | B-	with potential	Low environmental and/or social impact with potential governance optimizations. Can be held and traded if there is no better alternative.
C	C+ | C | C-	sustainability issues	Negative environmental and/or social impact expected with potential governance issues. Trading and holding are to be avoided if possible.
D	D+ | D-	not sustainable	Negative environmental and/or social impact with potential deficiencies in governance. Trading and holding are to be avoided altogether.

Think for example of TerraUSD (UST). GCR analyzed the token in the beginning of April 2022, a few weeks prior to the crash. UST received an

overall ESG rating of C despite being rewarded with an A- in the environmental score and a B+ in the social score. However, the token only scored a C+ in the governance category, mainly due to conflict of interests and intransparent data. If the overall score had been composed equally of all three ESG dimensions, UST would have received a higher score.

B - Blockchains vs. Tokens

In its rating methodology, GCR distinguishes between coins and tokens, as there are key differences between these two types of cryptocurrencies. The most important for our ESG rating is that coins are native to their own blockchains, which record every transaction. Meanwhile, a token is a cryptocurrency built on an existing blockchain. It has a broader functionality than coins and typically relies on smart contracts for transactions. Rating blockchains and native coins means assessing the technology while rating tokens equals the assessment of a project.

The analysis of tokens is more complicated since they may run on various blockchains. We incorporate this additional complexity of tokens by counting the ESG rating of the underlying native blockchain as one-third and the standalone ESG rating of the token as two-thirds.

C - Assessment criteria

In total, GCR analyzes 90 to 110 data points per cryptocurrency in the evaluation process. They are grouped into thematic clusters.

Dimension	Clusters	Description

Environment	• Energy consumption • Pollution and waste • Aspiration to achieve net zero	Most metrics for the environmental score are model based. For proof-of-work blockchains, GCR uses a top-down approach where it estimates the total energy consumption for the entire blockchain and breaks it down for single transactions. Key data points are hash rates, the hash algorithms, the energy consumption of the mining hardware typically employed by miners and the electronic waste. For proof-of-stake blockchains (and similar types of consensus algorithms), GCR goes bottom-up and directly estimates the energy consumption per transaction. Key inputs are the number of validator nodes and transactions per node. Other factors, such as the importance of ecology in technical decisions of the network and/or the intention to improve the coin's footprint are based on more qualitative assessments.
Social	• Social impact • Asset distribution • Entry and usage barriers	There are several quantitative as well as qualitative factors that impact the social score. Qualitatively, there are many "soft components" that impact the assessment, including the network's vision, whether it is for-profit or not[1], whether it aims to have a positive impact on society, etc. However, there are quantitatively measurable factors that play an important role in making the technology available to everyone (not just the wealthy) such as low transaction costs, equitable asset distribution, and overall low entry barriers.
Governance	• Network diversification • Governance issues • Network security and incidents	For the governance score, GCR applies a mixture of qualitative and quantitative metrics. The distribution of miners or validators, for example, is a quantitative factor that feeds into network stability, alignment of incentives and is key to avoid manipulations of any kind. However, to assess the security and conflicts of interest of a blockchain, GCR's research team concludes an in-depth analysis of how the network operates, whereby soft factors play the most important role.

[1] GCR is ideologically neutral and does not favor non-profit networks over profit-focused ones. Therefore, profit orientation is not automatically valued lower as long as it follows a purpose or a vision. The same applies vice versa for non-profit blockchains - here, too, purpose and goals play a significant role in the assessment.

		If we look at conflict of interests, for instance, it is crucial to understand who has a quasi-controlling influence. This may be due to a large stake in the asset, copyright of the code, a seat in the council, etc. Especially for less decentralized networks, it is important that a rather small number of validators or council members do not get too powerful.[2] For network security, GCR looks at past incidents, congestion, and/or structures that make a blockchain more vulnerable to attacks as well as other experts/developers that are raising concerns or red flags.

D - Regulations

In the fight against climate change and with demands for more transparency in the financial sector, regulatory pressure is increasing. For example, the EU has issued various directives for the financial sector as part of the European Green Deal, in particular the Sustainable Financial Disclosure Regulation (SFDR) and the EU Taxonomy. Although it is not yet decided to what extent the new rules will also apply to crypto assets, it can be assumed that the crypto sector will be subject to more regulation in the near future.

In this environment, ESG ratings are becoming increasingly important. Although SDRF compliance has no direct impact on the ESG rating of blockchains and tokens, GCR determines for each crypto asset whether the new EU regulations are met. This is important for investors and asset managers looking to operate with crypto-based financial products in the future.

The SFDR aims to improve the transparency of sustainable investment products, prevent greenwashing, and increase the transparency of

[2] GCR does not per se favor decentralized networks. We observe that more centralized networks tend to have better environment scores due to a more effective network operation. However, they tend to perform less well in the governance rating.

sustainability claims made by EU-regulated asset managers, financial advisors, and certain non-EU asset managers. Among other things, it imposes comprehensive disclosure requirements for a wide range of environmental, social and governance (ESG) criteria at the company and product levels.

Under the SFDR, funds and financial products advertised or labeled as ESG must meet the requirements for one of three classifications - Articles 6, 8, or 9[3]. The articles build on each other, i.e., the requirements of the preceding article must be met in order to achieve the next level. Products and funds falling under Articles 8 and 9 are considered sustainable, with Article 9 providing more restrictive criteria.

- **Article 6:** This is the default classification, and the one most appropriate for products or funds with no ESG focus. Products in this class must transparently disclose and describe potential sustainability risks.
- **Article 8:** Products in this class are also referred to as “Light Green”. They promote investments or projects with positive environmental or social characteristics and with principles of good corporate governance. They must integrate and declare sustainable risks and must comply with the "do no significant harm" principle.
- **Article 9:** Products in this class are also referred to as “Dark Green” and pursue either a sustainable investment objective or a reduction in carbon emissions. They must demonstrate that none of the six objectives of the EU taxonomy are compromised and actively contribute to at least one of them.

GCR reviews each blockchain for Articles 6, 8, and 9 in the SFDR framework, with Article 9 being the highest possible classification.

[3] Descriptions based on the draft regulatory technical standard published by the European Supervisory Authorities ("ESAs") on February 4, 2021, and Deloitte's interpretation thereof.

E - Data and sources

GCR collects large amounts of data that form the basis for its quantitative estimation models as well as for qualitative expert judgment. Typically, quantitative estimates such as the energy consumption per transaction will be model based, while other assessments like the analysis of potential conflicts of interest require at least some level of qualitative assessment and ultimately expert judgment. The combination of numerical models with analytical expertise effectively ensures consistency in the assessment of different cryptocurrencies while taking into account the specifics of each blockchain.

The cryptocurrency space is continuously evolving and simultaneously we keep up with the current development of the industry by regularly revising our models, incorporating the latest research, and benchmarking our approach with results and publications from blockchain developers and academics. In the same spirit, we periodically update our rating to reflect changes and trends in the data that form the basis of our analysis.

GCR includes a variety of sources in its assessments including the whitepaper, self-published reports from the cryptocurrency in question, academic journals and news media, on-chain transaction data, community chats and social channels. The independent assessment of data quality is of utmost relevance. For this purpose, GCR uses its own models and, wherever possible, its own calculations to check the plausibility of the data.

F - Rating Reviews and updates

GCR's ratings are constructed with robustness and continuity in mind. All ratings and underlying data undergo a thorough semiannual review process. Additionally, all on-chain data is updated and reviewed every three months. This continuous review process is important to ensure GCR ratings are in sync with the current developments in crypto,

academia and society.

If a change in the rating becomes highly likely, the cryptocurrency in question is placed on a positive or negative outlook. The rating is adjusted if necessary after the expiration of three months. This ensures that outliers and short-term disruptions are not overstated. In case of special events like the Ethereum Merge in September 2022 where GCR expected a large impact on different ratings, all ratings underwent a full review.

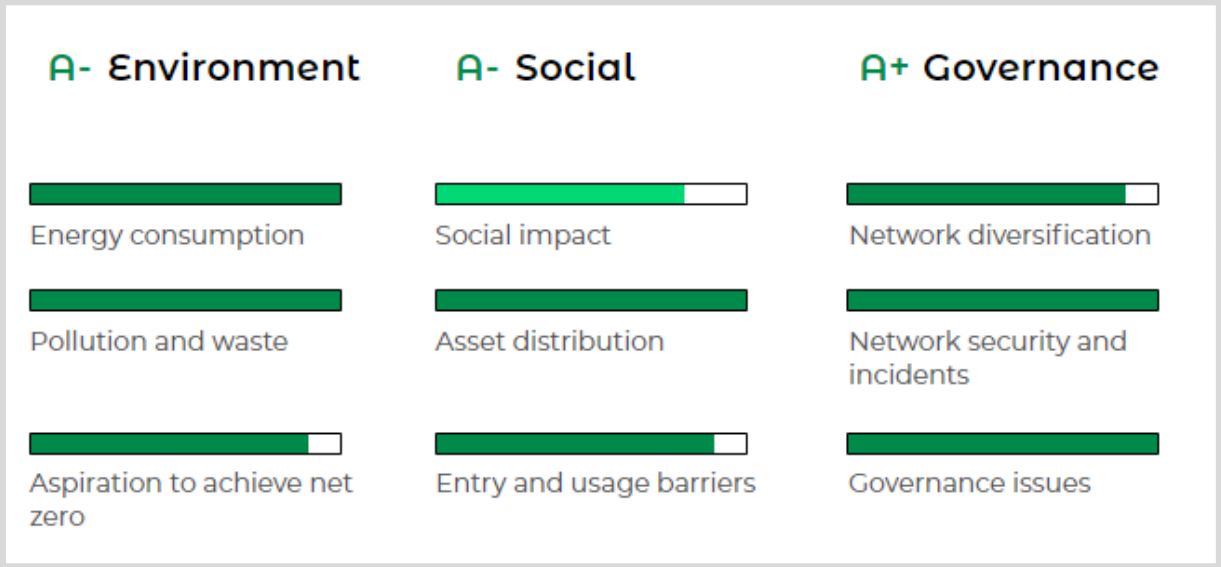
G - Challenges

The ESG assessments of cryptocurrencies are highly complex and labor intense. This is mainly due to the lack of standardized, transparent, and independent data on crypto assets in general and sustainability in particular. There is also some reliance on non-independent estimates from blockchain developers, foundations, and companies. In addition, relatively little academic research is done on sustainability in the crypto universe. Last but not least, let's not forget that this is an entirely new market with high volatility and limited scalability for the time being.

2.5.4 - ESG Rating for Cardano

Cardano belongs to the largest cryptocurrencies by market cap and is among four crypto assets that have recorded an A rating since Green Crypto Research published its ESG rating for crypto assets in October 2021. Unlike some of its peers, it has neither been downgraded nor lost sub-points in the semi-annual reviews since then. The blockchain may thus rightfully be called a sustainable pioneer in the crypto universe.

Cardano is a proof-of-stake (PoS) blockchain with the long-term vision to enable economic empowerment for people in need. It differs from similar projects by taking a research-based approach. It was founded in 2015 by Charles Hoskinson, a Co-founder of Ethereum.



Environmental Score: A-

In GCR's ESG rating, Cardano receives a score of A- in the environmental category. The score is composed of data for the total electricity

consumption of the network in annual terawatt hours (tWh), the electricity consumption for individual transactions with ADA in kilowatt hours (kWh) and the annual total of electronic waste in tons caused by the Cardano network.

A - Power consumption

A decisive factor in the environmental impact of a crypto asset is the power consumption. The proof-of-stake algorithm ensures that this is considerably lower for the Cardano network than for many blockchains of the older generation, which operate with proof-of-work consensus. According to GCR's calculations, Cardano's power consumption amounts to around 0.003 tWh per year.

According to our calculations, Cardano’s power consumption hovers around 0.03 kWh per transaction. In contrast, Bitcoin pours in 1300 kWh per transaction. While Ethereum's proof-of-stake data is not yet mature enough for comparison, first estimates show that the energy consumption per transaction is almost 40 times higher compared to Cardano. However, other proof-of-stake cryptos such as Solana (0.00091 kWh) or Tron (0.00003 kWh) outperform Cardano in this specific evaluation criterion, as they confirm significantly more transactions in a block in comparison and the energy savings are correspondingly greater.

B - Electronic Waste

E-waste is constantly increasing in the digital age. In the case of cryptocurrencies, the type of consensus algorithm plays a particularly important role. Since proof-of-work based blockchains such as Bitcoin or Dogecoin rely heavily on computing power to mine cryptocurrencies, the

amount of electronic waste is disproportionately higher than in proof-of-stake based projects.

Often, proof-of-work algorithms use specific high-performance computers whose Central Processing Unit (CPU) does not have a long lifetime because it runs at the limit most of the time. Proof-of-stake is less energy-intensive and allows the use of regular "day-by-day" computers and other components that can be reused. GCR's e-waste calculations assume that most proof-of-stake CPUs live an average of 10 years longer than proof-of-work CPUs.

As a proof-of-stake project, Cardano therefore naturally generates a relatively small amount of e-waste. According to GCR's calculations, it amounts to a level of 0.3 tons per year.

Social Score: A-

In GCR's ESG rating, Cardano receives a score of A- in the social category. The score is composed of qualitative and quantitative data. GCR evaluates information on the social intention of the blockchain as well as figures on the average amount of transaction costs over 180 days in U.S. dollars. In addition, the rating association identifies and evaluates the distribution of assets within the network. To this end, GCR analyzes the percentage of addresses with more than ten percent ownership and addresses with more than one percent ownership.

Social intention

Essentially, the social category answers the question of whether Cardano empowers people economically and/or socially. This assessment is made along strict guidelines. While the social intention of the blockchain is a qualitative criterion, GCR rationalizes it in quantifiable terms for further calculations. To claim social intent, the blockchain must be able to demonstrate distinct use cases that are supported by trusted sources and whose data is transparently accessible. In the case of Cardano, there are several projects that are supported and pushed by IOHK, the engineering and research company behind the cryptocurrency. In the process, the blockchain is being used to provide access to financial services to a broad range of people in various African countries.

Cardano settles at a three on said scale. This classification testifies to a social intention in Cardano's vision and the fact that people with less money will gain an advantage from the solution or at least be treated equally - keywords here being entry barriers and transaction costs. Cardano is examined in the ESG Rating for questions on specific issues: Does it take a special computer to participate, or will a cell phone suffice? Are the transaction costs affordable for people from poorer backgrounds, or is active participation only possible for people with a certain basic income? Does the crypto asset support negative social effects such as illegal activities or money laundering?

C - Transaction Fees

Low transaction fees and an equitable distribution of the asset are crucial to ensure broad accessibility of a technology and prevent malicious behavior. Cardano is characterized by low transaction fees. At the last data check at the end of 2022, the network registered fees between 0.16 and 0.17 ADA per transaction. Converted, this corresponded to an average of about 20 to 40 cents. That is worlds ahead of Bitcoin (currently around 1.1 USD) and Ethereum (currently around 3 USD), which recorded massively higher fees in the same period. However, there are various

other cryptocurrencies whose fees are cheaper than Cardano, for example Tezos (2 cents) or Tron (7 cents). If we consider the historical data, Cardano shows itself to be relatively stable in terms of transaction costs. There have been no major outliers since the beginning of the measurements for the ESG rating.

D - Distribution of Assets

Cardano gets top marks for the fair distribution of its coins. In January 2023, only one wallet owned more than 1 percent of all ADA. The top ten holders own a little over 6 percent of all assets, and the largest wallet owns about 2.3 percent. Cardano plays in the upper league for this evaluation criterion. Bitcoin, Ethereum, Tezos, Avalanche and Cronos are other blockchain projects that demonstrate a similarly fair distribution of wealth.

Governance Score: A+

In GCR's ESG rating, Cardano receives a score of A+ in the governance category. The Governance category contains the most data points. GCR reviews the number of active miners or mining pools and determines how many are needed to take over 50 percent of the network.

Potential governance issues are analyzed within a binary framework. Here, for example, GCR analyzes potential conflicts of interest between the management respectively the controlling entity and the community and ADA owners and evaluates the impact of negative headlines.

Last but not least, network security has a big impact on the Governance Score. GCR checks how many days the project exists without

experiencing security issues, how many developers are responsible for the network, and whether there are security and technology audits or bounty programs, among other things.

E - Network security

An important indication of the security of a blockchain is the distribution of miners or validators as in the case of Cardano. Groups of individuals joining together and becoming too large can quickly lead to an imbalance of power and trigger conflicts of interest.

In Bitcoin, the four largest mining pools currently share well above 50 % of all mined blocks. Theoretically, these pools could collectively take control of the network. This is highly unlikely, as it would probably lead to a crash in the Bitcoin price, which is not in the interests of the mining pools. Nevertheless, the example shows that with enough hashing power it is possible to attack the Bitcoin network even if the attacker does not own a single Bitcoin.

This is different with Cardano. In contrast to Bitcoin, Cardano has over 3,000 validators. To overtake the network the validators need to own/stake more than 50 percent of all ADA. It makes it very expensive and almost impossible to take control of the network by allying several staking pools. In comparison, this makes Cardano one of the blockchains with the best distributions, but it is still behind Polkadot, Solana, Tron, Avalanche, Vechain and Filecoin.

Cardano's decentralized network went live in September 2017, making it one of the oldest, largest, and most tested proof-of-stake algorithms. Since the launch of the main Cardano network, there have been no known incidents that have raised doubts about its security.

F - Conflicts of Interest

Like many other blockchains, Cardano has a foundation. Its main focus revolves around further developing Cardano ADA as a secure, transparent, and sustainable cryptocurrency. Unlike other comparable entities, the Cardano Foundation transparently discloses its mission, team members, and partners (EMURGO and IHOK). This reduces the risk of conflicts of interest and has a correspondingly positive effect on the ESG rating.

Cardano is not involved in any legal investigations at the time of this assessment and is not engaged in any frequent pump-and-dump scheme. There is also no above-average risk of money laundering compared to other cryptocurrencies. All of these aspects have a positive impact on the governance score.

G - Regulations

Cardano is considered Article 8 compliant. Article 8 of the SFDR requires that financial products with environmental or social features must incorporate and declare sustainable risks and not cause significant harm.

Within the GCR framework, Article 8 is considered compliant if the requirements of Article 6 are met and the crypto asset does not cause significant harm across the three ESG dimensions.

Bottom Line: A Rating

In a direct comparison with 33 blockchains and over 50 tokens, Cardano performs very well in all three ESG dimensions and can even be considered "Best in Class" in the governance category. In line with GCR's strict assessment criteria, only five blockchains currently receive an A

rating. In addition to Cardano, these include Solana, Tezos, Avalanche and Polygon.

Cardano looks to a promising sustainable future. Currently, GCR rates the ESG Outlook as neutral, which means that no rating changes are likely in the medium term.

Crypto	Consensus	ESG Rating	Environment	Social	Governance
Cardano	PoS	**A**	**A-**	**A-**	**A+**
Bitcoin	PoW	**D**	**D-**	**B+**	**A-**
Ethereum	PoS	**B**	**B**	**B-**	**A-**
Algorand	PoS	**B**	**A+**	**A-**	**B+**
Litecoin	PoW	**C**	**C-**	**A-**	**C+**

2.5.5 - Empowa Rating

Empowa is an ambitious decentralized finance (DeFi) project that aims to empower more people in Africa with access to home ownership by drastically reducing the cost of finance. By leveraging the power of the Cardano blockchain, the project aims to provide affordable housing in the under-served mortgage market, with the EMP token as its currency.

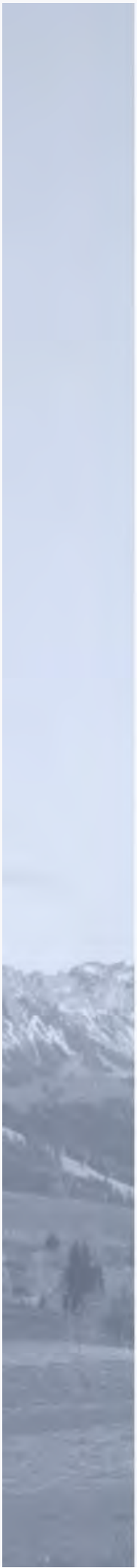
In terms of environmental, social, and governance (ESG) considerations, the project is making an impact in several ways.

Firstly, in the realm of environment, the project claims to use climate-friendly materials for its housing projects and by creating wealth for people with fewer resources. In countries like Mozambique, this may lead to more environmentally responsible behavior.

Secondly, Empowa has a strong social focus, with the goal of providing mortgages and generating wealth for financially excluded people, particularly women, who are currently priced out of the market due to high interest rates. The aim is also to give more Africans a permanent roof over their heads.

Thirdly, while the project has compelling goals, there are questions around the governance structure and decision-making process, which are not currently transparent. Token holders do not have a say in decision making.

Empowa is trying to solve a big problem - providing affordable housing to people in Africa - and it's using innovative technology to do it. But, in order for it to really make a difference, it needs to grow and reach more people. And for that to happen, we believe it is important that the project's leadership is more open and transparent. From a governance perspective, there is no opportunity for EMP holders to influence strategic decisions of the project, which causes severe conflicts of interest.

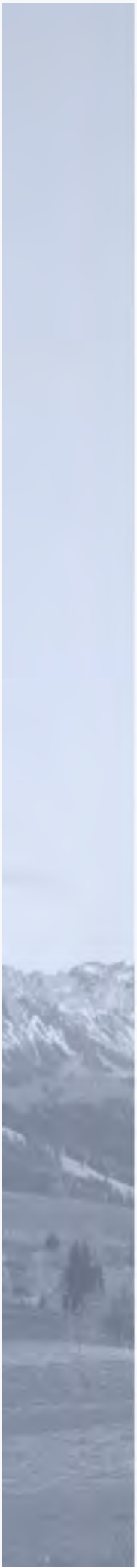


2.5.6 - World Mobile Rating

World Mobile is a mobile network built, operated, and secured by people for people through blockchain. World Mobile provides a platform that allows individuals to bring the internet to remote locations where it is too expensive for traditional mobile providers by connecting small computers to internet connections. This allows individuals who support the network to earn an income (WMT - World Mobile Token).

While the project is particularly interesting from a social perspective, it presents shortcomings in the environmental dimension. On the one hand, World Mobile enables people to access the Internet even in remote places, which empowers people economically and thus has a positive impact on the social score.

On the other hand, additional nodes, servers, antennas, etc. must be installed and operated to run the network. This results in additional power consumption and electronic waste, which has a negative impact on the environment.



The governance of such a young and still small project cannot be assessed. In conclusion, World Mobile is an exciting project with a positive social impact, which certainly cannot receive a top rating in environmental. It remains to be seen how the share of carbon footprints and electronic waste can be reduced in the future and how the topic of recycling or circular economy will develop in this regard.

2.5.7 - What makes a sustainable cryptocurrency?

Conclusion

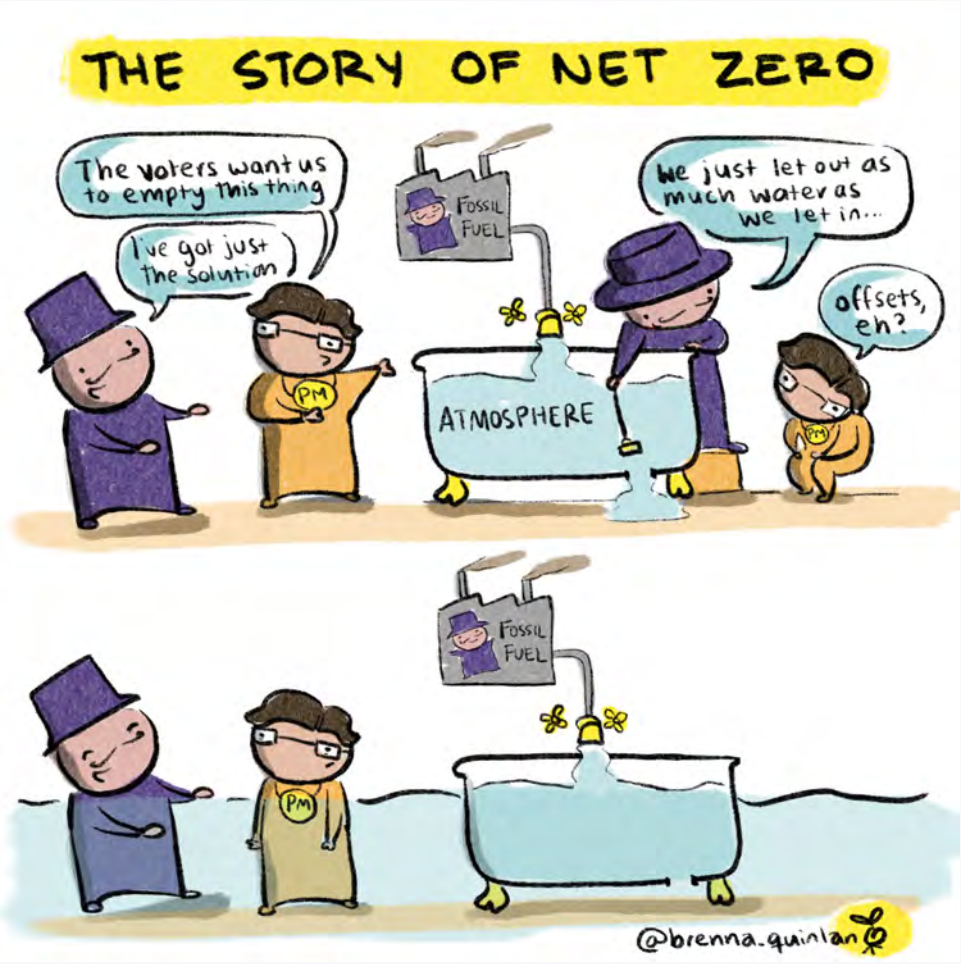
There are several key points to consider when developing a sustainable coin.

- The blockchain must be based on an energy-efficient consensus mechanism such as Proof of Stake or Proof of History.
- Speed is similarly important as it relates to power consumption per transaction. The more transactions we can perform per second, the better the energy is used.
- A key factor to receive a high score in the environmental dimension is the verifiable commitment of a crypto's community, foundation or board. They must commit to sustainability with a tangible roadmap and offset their carbon footprint by, for example, planting trees like Cardano or buying carbon credits like Polygon.
- Social intentions must be understandable and comprehensible. It is not enough to "include the unbanked" in a mission statement. True inclusion means ensuring that transaction fees remain low.
- It is necessary to safeguard the distribution of assets in an equitable manner. Large or very large holders result in deductions during the assessment process. Ultimately, it is about building a platform that follows democratic processes.
- Last but not least, network security is crucial for a high ESG rating. GCR looks at the number of security incidents since the introduction of the blockchain and evidence of good governance, for instance on the basis of audits carried out or the existence of bounty programs

***

About Green Crypto Research

Green Crypto Research (GCR) is a non-profit association based in Zug, Switzerland, that specializes in evaluating the sustainability of cryptocurrencies. The organization was founded in May 2021 and has developed the world's first ESG rating for cryptocurrencies. With that, GCR enables professional investors, asset managers and crypto exchanges to offer sustainable crypto solutions to their clients.



(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)

Chapter 2 Conclusion:

In the realm of sustainable development and impact investing, blockchain technology is emerging as a powerful tool for creating positive social and environmental change.

The Cardano Community, in collaboration with the Cardano Foundation, IOG, and Emurgo, is at the forefront of this movement, actively harnessing the potential of blockchain to address global challenges and contribute to the Sustainable Development Goals (SDGs).

A multitude of projects within the Cardano ecosystem showcase the versatility and impact of blockchain technology across various sectors. From decentralized identity solutions like Atala Prism and ProofSpace, to self-sovereign identity models like IAMX, these projects empower individuals to control their digital identity and access essential services, aligning with SDG 16's focus on peace, justice, and strong institutions.

Additionally, projects such as Algae Token, Immunify.Life, and Citaldoc are revolutionizing sustainable agriculture and healthcare by leveraging blockchain technology. These initiatives address pressing global challenges like malnutrition, CO2 emissions, and healthcare data management, while also contributing to multiple SDGs related to resource efficiency, renewable energy, and climate action.

Within the realm of impact investing and ESG, blockchain technology offers unprecedented transparency and verification. Through the creation of Proof of Impact NFTs, the Cardano ecosystem ensures that impact data is time stamped and connected to tangible evidence, enabling communities to take ownership of their stories and providing reliable accounts of impactful work. This transparent and accessible data combats greenwashing and facilitates direct support at scale.

Various initiatives, including Impact Web 3, Sustainable ADA, ImpactScope, the Metera Protocol, Cogito Protocol, and Green Crypto

Research (GCR), further amplify the positive impact of blockchain technology. These projects focus on grassroots support, impact verification, tokenized portfolios, stability in crypto markets, and ESG ratings for cryptocurrencies, all aiming to promote transparency, accountability, and effectiveness in achieving positive social and environmental change.

Through their innovative approaches and dedication to sustainability, the Cardano ecosystem and the broader crypto space are making significant strides in driving positive social and environmental impact. By leveraging the potential of blockchain technology, these projects are paving the way for a more sustainable future and contributing to the achievement of the SDGs.

Environmental Impact

3

SUSTAINABLE ADA

Chapter 3 Overview:

The impact of organizations, products, and policies on the environment is a crucial consideration in today's world. Environmental impact assessment plays a vital role in evaluating the potential effects of projects or programs on the natural environment, enabling organizations to understand and mitigate these impacts. Measuring environmental impact is essential for responsible decision-making and sustainable development.

Cardano stands out for its energy efficiency and sustainability compared to other blockchains like Bitcoin and Ethereum. Research shows that Cardano is significantly more energy-efficient, with one transaction consuming only a fraction of the energy used by Bitcoin or Ethereum.

Cardano's commitment to sustainability goes beyond energy efficiency, as it supports renewable energy sources and initiatives like the Cardano Forest by veritree, Cardano Foundation and Cardano Trees, which aims to plant 1 million trees and track their environmental impact using the blockchain.

These advantages position Cardano as an environmentally friendly choice within the blockchain industry, addressing concerns about the environmental impact of such technologies. By prioritizing energy efficiency and supporting sustainable initiatives, Cardano demonstrates responsible environmental stewardship in the crypto space.

Cardano's focus on sustainability extends to various projects aimed at reducing the carbon footprint and promoting transparency in supply

chains. Veritree, Algae Token, Open Litter Map, CNC Ala, and Cardano4Climate are examples of projects leveraging Cardano's blockchain technology to create a sustainable and environmentally friendly future.

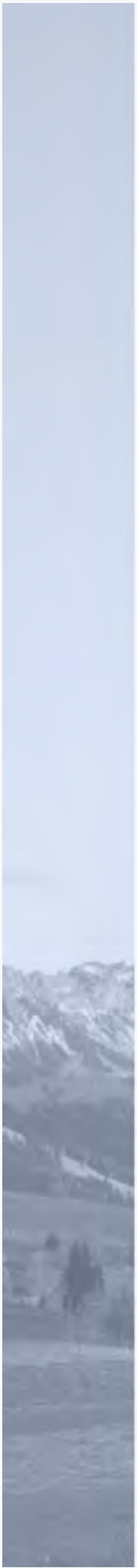
Veritree tackles the issue of questionable ownership in corporate restoration by providing a Restorative Operating System on the Cardano blockchain. This system ensures transparency and eliminates greenwashing by tracking and verifying corporate restoration projects. Veritree aims to plant 1 billion trees by 2030 and raise awareness about the transformative power of restoration.

Open Litter Map engages citizens in tracking litter pollution on the Cardano blockchain through a game-like experience. By collecting data on litter and plastic pollution, Open Litter Map identifies global litter hotspots and promotes responsible consumption and production.

Cardano4Climate is a community-driven initiative that fosters collaboration and addresses climate change through social and environmental solutions. The initiative participated in the Cardano Summit 2022, showcasing impact projects built on the Cardano blockchain and highlighting the potential of blockchain technology for positive change.

Cardano's commitment to addressing climate change is evident in these projects, aligning with the United Nations' Sustainable Development Goals and promoting global cooperation for positive social and environmental outcomes. With its energy efficiency and sustainability focus, Cardano is leading the way toward a more sustainable future in the blockchain industry.

In summary, Cardano's initiatives and projects demonstrate a strong commitment to addressing environmental concerns and promoting sustainability. By leveraging the transparency and security of the blockchain, Cardano is making a significant impact in creating a more sustainable world. Through collaboration and community involvement,



Cardano and other blockchain protocols have the potential to drive positive change and shape the future of technology for the benefit of all.

Chapter 3 Conclusion

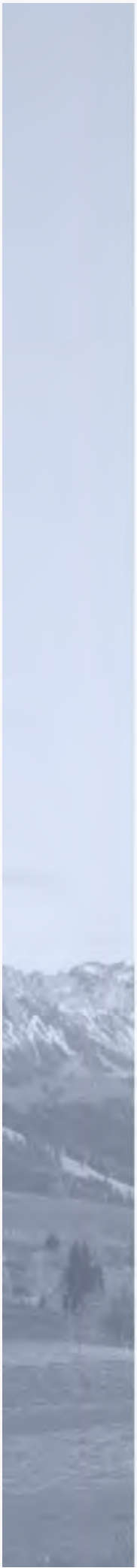
Cardano's blockchain technology stands out as a symbol of energy efficiency and sustainability in today's rapidly changing world where minimizing human impact on the environment has become crucial.

The Environmental Impact chapter provides valuable insights into the significant positive impact that the Cardano Community is having on the environment. As demonstrated by its eco-friendly approach and low carbon footprint, Cardano is leading the way toward a sustainable future for the blockchain industry.

Unlike Bitcoin and Ethereum, Cardano consumes far less energy per transaction, demonstrating its commitment to sustainability. However, Cardano's dedication to the environment goes beyond energy efficiency. It actively promotes renewable energy sources and leads projects like the Cardano Forest, which uses blockchain technology to track the environmental impact of planting 1 million trees.

By prioritizing energy efficiency and driving sustainable initiatives, Cardano emerges as a leader in environmental responsibility within the blockchain industry. It directly addresses concerns about the environmental consequences associated with such technologies. Cardano's devotion to sustainability is further evident through projects aimed at reducing carbon footprints and enhancing supply chain transparency.

Veritree, for example, employs the Restorative Operating System on the Cardano blockchain to ensure transparency and authenticity in tracking and verifying corporate restoration projects. Through this initiative, Veritree aims to raise awareness about the transformative power of restoration, combat greenwashing, and strive to plant 1 billion trees by 2030.



Open Litter Map engages citizens in tracking and combating litter pollution using the Cardano blockchain. By collecting data on litter and plastic waste, Open Litter Map identifies global hotspots and advocates for responsible consumption and production.
The community-driven initiative Cardano4Climate brings together diverse stakeholders to address climate change through social and environmental solutions. It showcases impactful projects built on the Cardano blockchain and highlights the immense potential of blockchain technology in driving positive change.

Cardano's projects align with the United Nations' Sustainable Development Goals and foster global cooperation, demonstrating a steadfast commitment to addressing climate change and promoting positive social and environmental outcomes. With its emphasis on energy efficiency and sustainability, Cardano leads the blockchain industry toward a more sustainable future.

In summary, Cardano's initiatives embody an unwavering dedication to addressing environmental concerns and advancing sustainability. By utilizing the transparency and security of blockchain technology, Cardano is making significant progress toward a more sustainable world. Collaborative efforts and community engagement further amplify the potential of Cardano to revolutionize technology for the benefit of all.

Social Impact

4

SUSTAINABLE ADA

Chapter 4 Overview:

In the fast evolving world of technology and innovation, organizations are recognizing the importance of social impact and sustainable development.

Cardano is at the forefront of leveraging its technology to drive positive change in society. Through a range of impactful projects, Cardano demonstrates its commitment to empowering individuals, addressing social challenges, and creating a more inclusive and responsible digital ecosystem.

One notable project within the Cardano ecosystem is Profila, a web-based relationships platform that puts individuals in control of their data. Profila enables users to manage how brands access and utilize their data, fostering personalized and ethical interactions. By prioritizing privacy, education on digital marketing, and consent-based advertising, Profila aligns with the United Nations' Sustainable Development Goals (SDGs) such as quality education, affordable and clean energy, and responsible consumption and production.

Gimbalabs serves as a gateway for individuals interested in exploring Cardano's potential. Through initiatives like Dandelion and Plutus Project-Based Learning (PPBL), Gimbalabs empowers new community members, fosters collaboration, and provides valuable learning experiences. Its work aligns with multiple SDGs, including quality education, gender equality, decent work and economic growth, reduced inequalities, and partnerships for the goals.

Empowa, a fintech company in Africa, leverages Cardano's technology and decentralized finance (DeFi) to enable financially excluded individuals to access safe and sustainable homes. Their lease-to-own model and Empowa Pay mobile app address the housing shortage, promote economic empowerment, and contribute to SDGs such as no poverty, gender equality, and sustainable cities and communities.

World Mobile revolutionizes the telecom industry by building a blockchain-based mobile network to connect the unconnected. Through their innovative approach, individuals can become network operators and earn rewards. Their efforts align with SDGs such as decent work and economic growth, industry, innovation, and infrastructure, and sustainable cities and communities.

SCAT DAO focuses on providing independent and conflict-of-interest-free audits and research to the Cardano blockchain. By redefining the audit process and offering free code reviews, SCAT DAO enhances trust and critical infrastructure for project success. Their services align with SDGs like quality education, industry, innovation, and infrastructure, and reduced inequalities.

Loxe Inc. revolutionizes mediation by leveraging Cardano's speed and security. By reducing turnaround times and providing a platform for certified mediators, Loxe Inc. enhances the mediation experience. Their work contributes to SDGs such as industry, innovation, and infrastructure, peace, justice, and strong institutions, and partnerships for the goals.

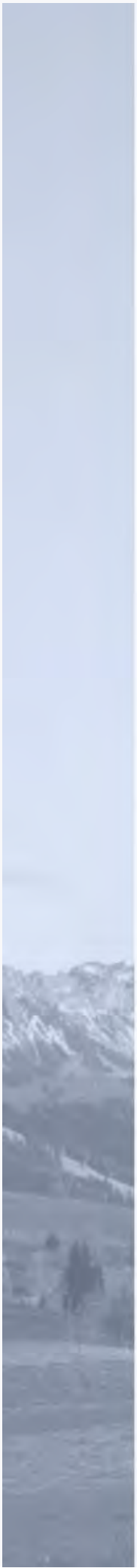
These projects exemplify Cardano's commitment to leveraging blockchain technology for positive change. Additionally, organizations like DirectEd Development Foundation, OneUpOneDown, Wada, the Blockchain Learning Center (BLC), Color The Blockchain, Rejuve.AI, Sophia DAO, JamGalaxy, Hotel Ginebra, Landano, GoKey, SoundRig, and Cardano Spot are all driving social impact and transformative change within the Cardano blockchain ecosystem and beyond.

By aligning with the United Nations' Sustainable Development Goals, these organizations are utilizing blockchain, AI, and decentralized systems to address critical challenges and create inclusive opportunities.

They contribute to various SDGs, including quality education, gender equality, decent work and economic growth, sustainable cities and communities, no poverty, good health and well-being, industry,

innovation and infrastructure, reduced inequalities, peace, justice and strong institutions, and partnerships for the goals.

Overall, these innovative projects within the Cardano ecosystem showcase the transformative potential of blockchain technology and its positive impact on society. By promoting inclusivity, transparency, and sustainable development across different industries, they demonstrate the power of AI, blockchain, and decentralized technologies to drive social impact, economic growth, and create fair and transparent systems.



(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)

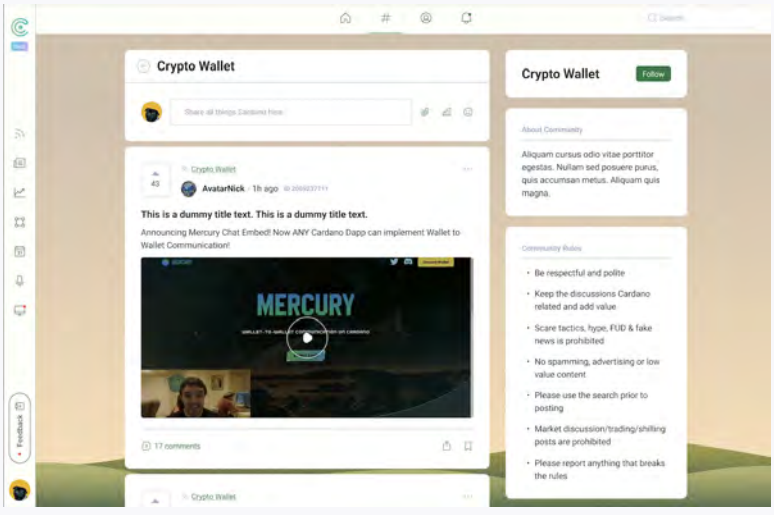
4.2.22 - Cardano Spot

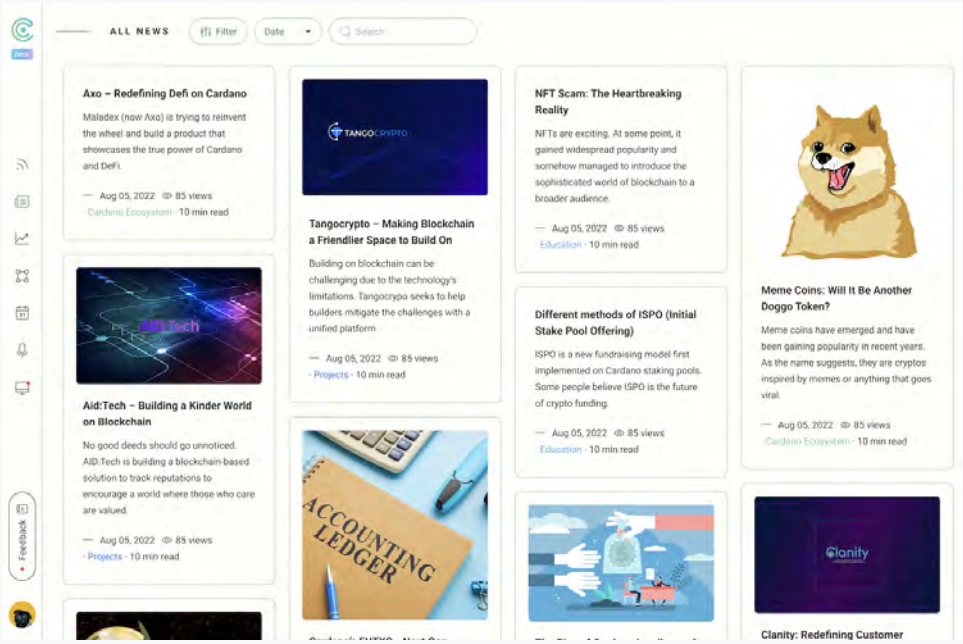
The Social Platform for Everything Cardano

Cardano has over 1200 projects building on top of it and has a very strong social layer with 4 million community members. We bring in various features that could help serve these native projects and their communities:

Community Hub:

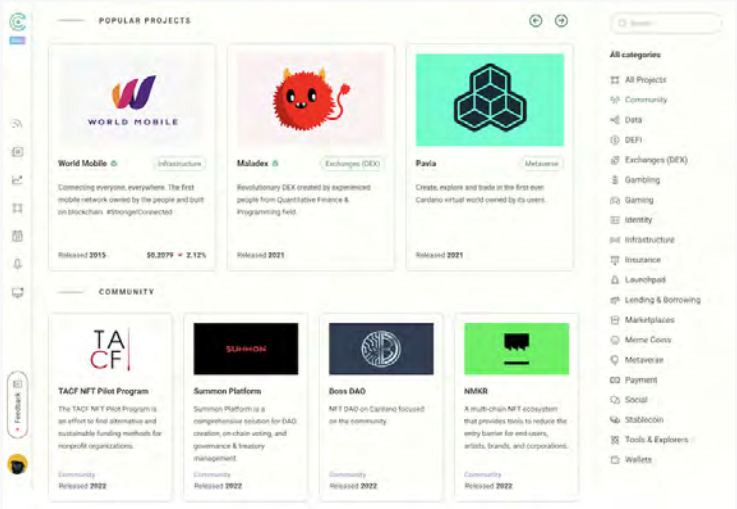
A personalized and curated home feed. Create content, follow creators, and find like-minded community members (Cardano Spot, 2023).





News Feed:

Find the latest updates and insights on the Cardano Ecosystem. Content like educational posts, articles, and video material to learn new topics and expand your expertise (Cardano Spot, 2023).



Project Library:

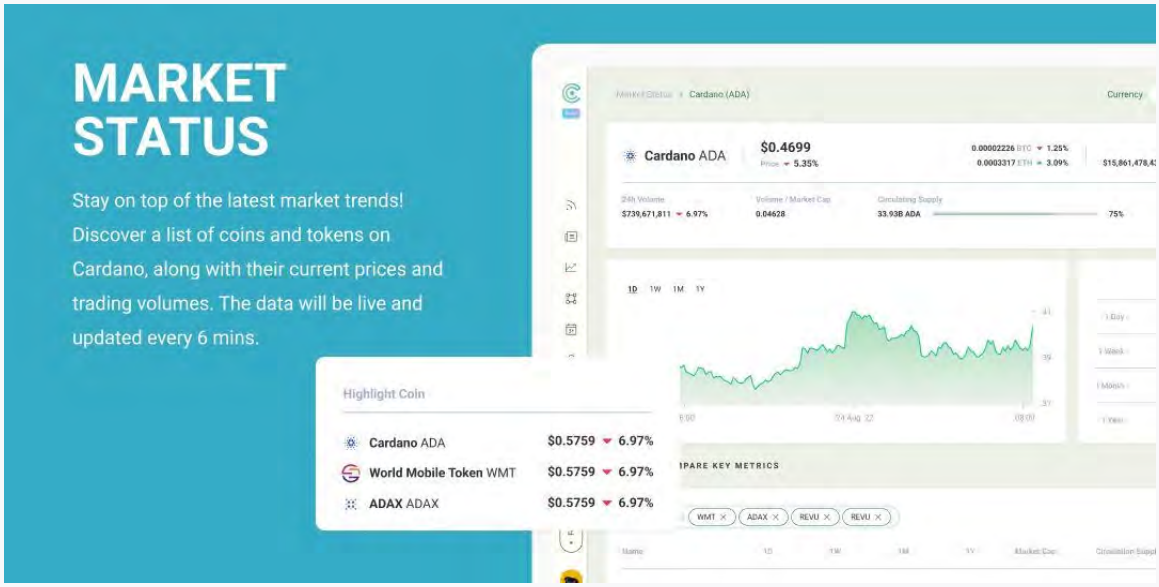
Discover and learn about Cardano projects and the latest trends in the Cardano ecosystem. The content-rich library facilitates a project description, whitepaper, explainer video, and links to help you research a

project. It is your go-to place for DYOR on Cardano projects (Cardano Spot, 2023).

Events Calendar:

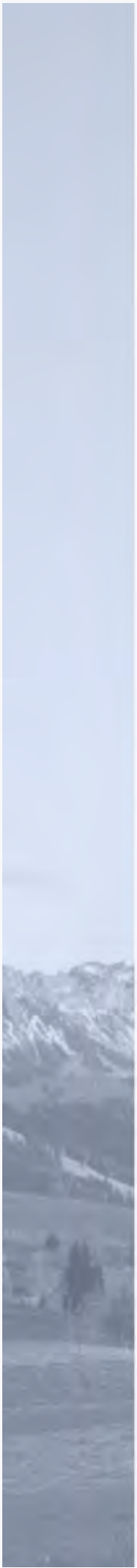
Never forget in-person and online crypto events with our events calendar. The events calendar will list all the Cardano-related upcoming events like webinars, meetups, discussions, product launches, and more (Cardano Spot, 2023).

Market Status:



Check the latest information regarding token prices, market cap, and tokenomics (Cardano Spot, 2023).

In its roadmap, the platform aims to have a reward system that will incentivize users to interact with the Cardano native projects. This will help foster a vibrant and engaged community of Cardano enthusiasts that will be able to share their knowledge with each other. Cardano



Blockchain has over thousand projects being built on top of it, along with over 4 million community members.

Conclusion

Overall, Cardano Spot is a go to platform for anyone interested in the Cardano blockchain and the Web 3 space. It provides users with a secure platform to connect with the Cardano community and to interact with developers, creators, and other blockchain enthusiasts. Additionally, the platform also provides users with a range of tools and resources to stay up to date with the latest news and developments in the crypto space. Check up with all major Cardano upgrades that introduced smart contracts and decentralized applications (dApps) to the network.

About Cardano Spot

Cardano Spot is the first product from EMURGO Media. This Cardano enthusiasts-focused social network serves end-to-end information for the Cardano community. It provides a user-generated interactive platform specifically designed for investment in, distribution, consumption, and monetization of Cardano content. Cardano Spot solves the issue of fragmented content in the Cardano ecosystem by aggregating valuable, quality content from reliable sources in the Cardano ecosystem to give up-to-date developments in the Cardano (Cardano Spot, 2023).

Chapter 4 Conclusion

The projects within the Cardano ecosystem epitomize the significant role that technology plays in fostering social impact and sustainable development.

Cardano, through its diverse initiatives, showcases a strong commitment to empowering individuals, addressing societal challenges, and building an inclusive and responsible digital ecosystem.

These social impact projects on Cardano are having an effect on different communities across the globe. Learning about Profila, Empowa, World Mobile, Gimbalabs, SCAT DAO, Loxe Inc., littlefish, Women of Cardano, DirectEd, OneUpOneDown, Wada, Blockchain Learning Center, Color The Blockchain, Rejuve.AI, Sophia DAO, Jam Galaxy, Hotel Cardano, Landano, GoKey, Sound Rig, and Cardano Spot.

Cardano is promoting social change by addressing critical issues and promoting inclusivity, diversity, and education.

Showcasing how projects built with boots on the ground are creating a positive impact and are encouraging community-led initiatives and promoting social responsibility.

We explore Cardano's Social Media platform through Emurgos Cardano Spot. Looking at how Cardano Spot is impacting the Cardano community and contributing to a better world by supporting sustainable projects and ecosystem growth.

By promoting the Social Impact caused by these initiatives, Cardano is demonstrating its commitment to creating a socially responsible and sustainable future. Through these projects, Cardano is fostering a culture of inclusion and empowerment, enabling communities to thrive and make a positive impact on the world around them.

Cardano Trailblazing New Models of Governance

5

SUSTAINABLE ADA

Chapter 5 Overview:

Governance plays a crucial role in shaping the impact and sustainability of the Cardano blockchain ecosystem.

In this chapter, we delve into the innovative governance models that make Cardano stand out in the blockchain space. Governance plays a pivotal role in the Cardano ecosystem, ensuring transparency, inclusivity, and effective decision-making. We explore Project Catalyst, a groundbreaking initiative empowering the community to shape the future of Cardano through decentralized funding and decision-making.

We examine the impact of Decentralized Autonomous Organizations (DAOs) on Cardano, highlighting the prominent examples of ADAO, Clarity DAO, and the Summon platform. Lastly, we explore the Cardano Improvement Proposals (CIPs) and their significance in facilitating continuous development and improvement of the Cardano network.

Governance on Cardano

We start by providing an overview of the governance ecosystem on the Cardano blockchain, discussing its importance in maintaining the integrity and sustainability of the network. The decentralized nature of Cardano's governance ensures that decision-making power is distributed among stakeholders, fostering a more inclusive and resilient ecosystem.

Project Catalyst:

In this section, we delve into Project Catalyst, an ambitious initiative that has revolutionized community engagement and decision-making on Cardano. We explore the fundamentals of Project Catalyst, its objectives,

and the mechanisms through which the community can participate in shaping the future of the network. We also examine the alignment of Project Catalyst with the Sustainable Development Goals (SDGs), showcasing Cardano's commitment to social impact and global sustainability.

Provide a comprehensive explanation of Project Catalyst, outlining its purpose, structure, and key components. By empowering the community to propose, evaluate, and fund projects, Project Catalyst enables decentralized innovation and ensures that diverse perspectives are represented in the decision-making process.

We also explore the profound impact of Project Catalyst on the achievement of the Sustainable Development Goals (SDGs). We highlight how Cardano's unique governance model enables the funding and execution of projects that address critical social, economic, and environmental challenges.

Showcasing exemplary projects funded through Project Catalyst, illustrating the breadth and depth of community-driven innovation on Cardano. Specifically, we focus on Erable, Lidonation, and Cardano AIM, highlighting their objectives, and how they support impact projects, and Project Catalyst being a part of their growth roadmaps.

DAOs on Cardano:

This section explores the emergence of Decentralized Autonomous Organizations (DAOs) on the Cardano blockchain, revolutionizing governance and decision-making processes. We discuss the fundamental concepts of DAOs and their role in fostering decentralized, community-driven ecosystems.

Learning about prominent examples of useful tools created by ADAO, a Decentralized Autonomous Organization that plays a vital role in building tools to help govern the Cardano ecosystem. We explore ADAO's structure, what they do, and the impact they have on the community and network development.

discover the innovative Summon Platform, which facilitates decentralized governance on Cardano. Explore how Summon empowers stakeholders to participate in decision-making processes. The Summon Platform provides an easy to use tool for anyone to build a DAO on Cardano. They help ensure a more inclusive and transparent governance framework.

Showcase the Clarity DAO, another prominent example of a Decentralized Autonomous Organization on Cardano. Clarity DAO's has a strong participation in the Project Catalyst community. Though its objectives, and governance mechanisms. Clarity plays an important role in fostering community collaboration and innovation.

Cardano Improvement Proposals (CIPs):

We also explore an important Cardano governance feature, the Cardano Improvement Proposals (CIPs). CIPs have a significance in driving continuous development and improvement of the Cardano network. We discuss the purpose and structure of CIPs, emphasizing their role in enabling open collaboration and allowing community members to be a part of fundamental changes to the protocol.

C - Cardano AIM

AIM is the Assembly Inspiring Masses. It is a group of Cardano Catalyst community members who follow the philosophy of "build tools, not rules" (Cardano AIM, 2023).

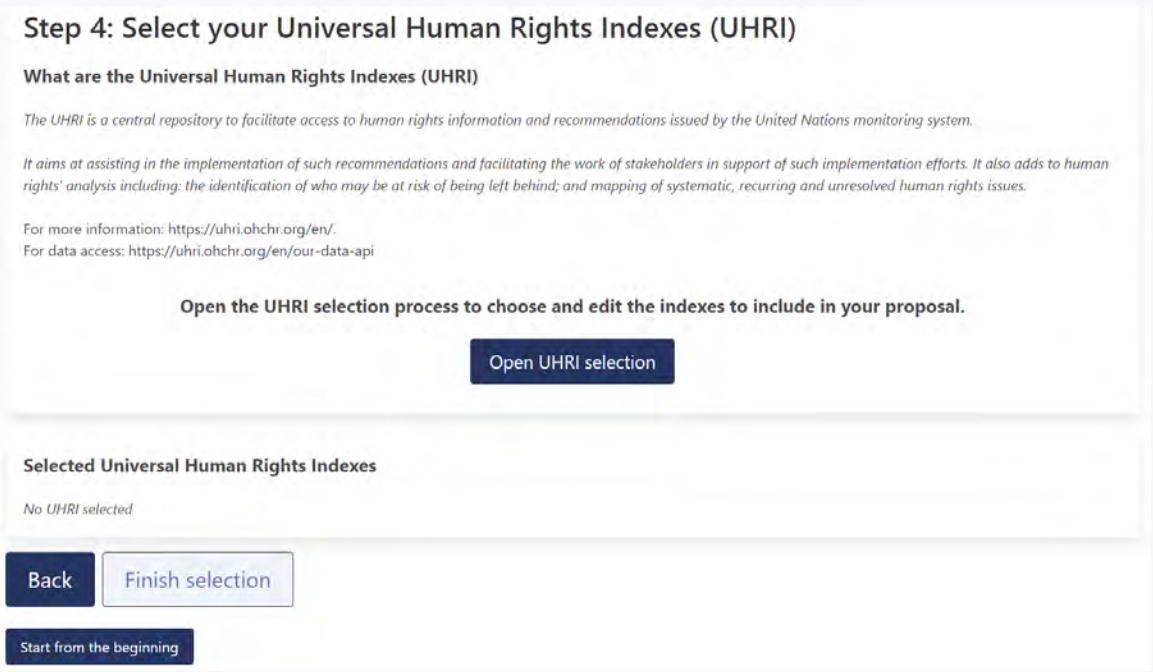
Independent teams from different projects or businesses who collect under the umbrella of the AIM. It is a new type of organization, one for a blockchain era. One where each project is made up of its supporting participants.

AIM community members have built tools 'for the community, by the community', to support the development of Project Catalyst and its ecosystem.

Community Tools:

Tools to support community members in Project Catalyst, including tools to bridge the Cardano community to global UN frameworks in a more widespread and easy to access and apply fashion, were researched, conceptualized and driven by Razali Samsudin of Sustainable ADA in collaboration with team members of Cardano AIM: Sustainable Development Goals (SDGs), Universal Human Rights Index (UHRI) , Planetary Pressures Adjusted Human Development Index (PHDI), integrated into the Proposer Tool (Cardano AIM, 2022). The Proposer Tool has been integrated into the formal proposal submission form.

([SDG Proposer Tool])

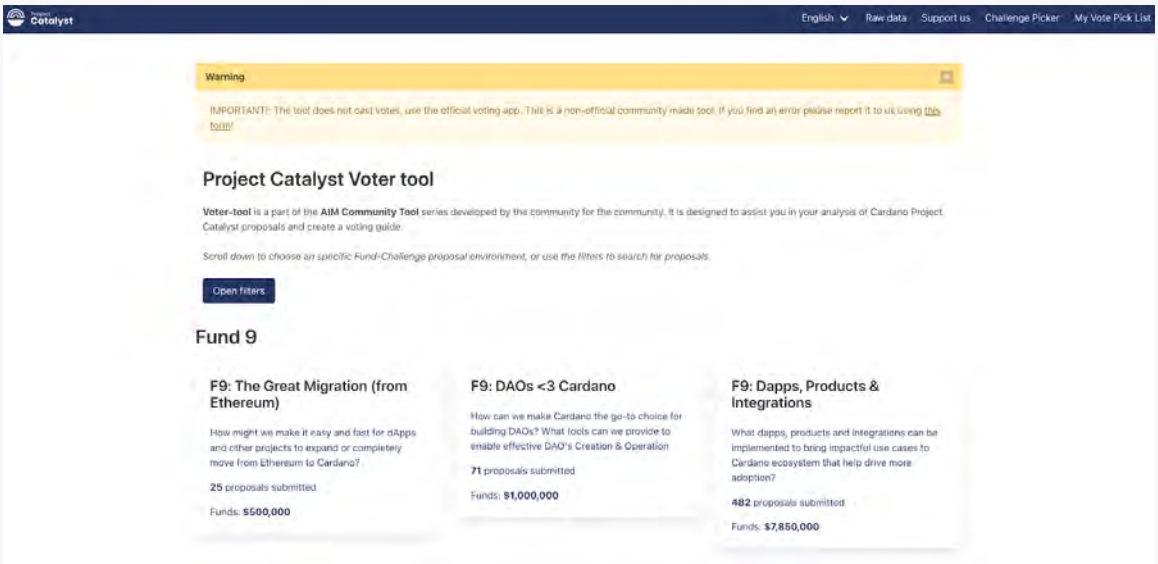


([Universal Human Rights Index])

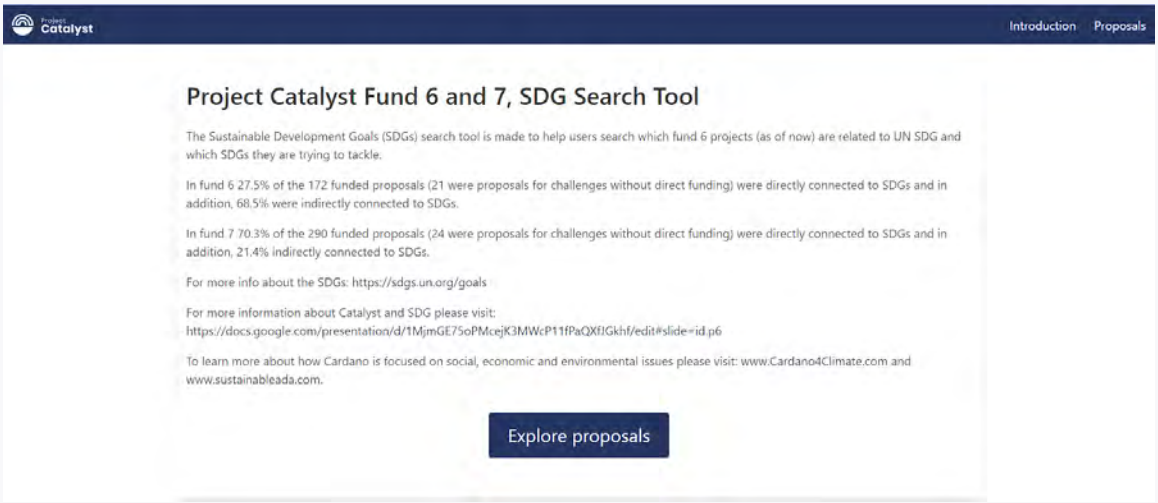
Cardano Aim has created a plethora of tools for the Cardano community that help support Cardano during its governance process. These tools are for Proposers, Voters, and Community Advisors.

The tool that has helped support the Cardano community the most would be the community Voter Tool. The Tool is designed to assist a voter with their analysis of Cardano Project Catalyst proposals and create a voting guide for other community members. This was the first voter tool on Cardano and really helped automate the process for early funds of Catalyst.

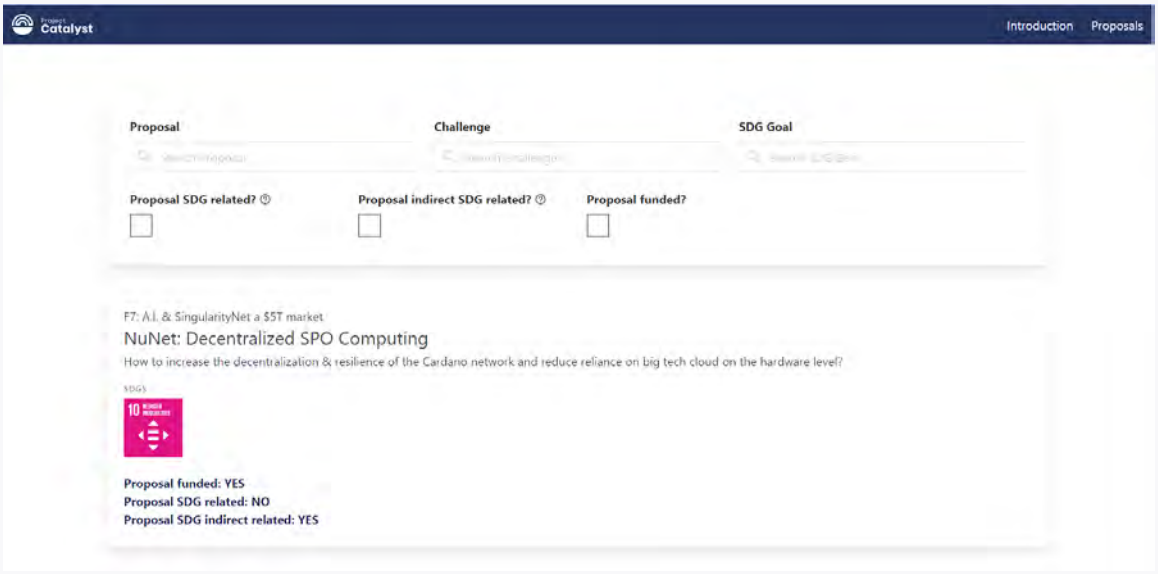
Community Voter Tool



A searchable database that allows users to view proposals that connect to the UN SDGs in Funds 6 and 7 (soon to be added Fund 8), can be found in the SDG Search Tool (Cardano AIM, 2022).



([SDG Search Tool])



([Exploring proposals in the SDG Search Tool])


Impactful Stake Pools
& Alliances
6
SUSTAINABLE ADA

Chapter 6 Overview:

In this chapter, we delve into the significant role of Stake Pools and Alliances within the Cardano ecosystem. Showcasing their impact on the network's growth, sustainability, and positive social and environmental outcomes.

We explore Cardano's dedication to environmental responsibility with its environmentally friendly stake pools. We focus specifically on the Climate Neutral Cardano (CNC) community and pools.

Also sharing the inspiring story of Goma Stake Pool in Africa. Goma is exemplifying the transformative power of stake pools in empowering underserved communities. Their stake pool is also run off of solar energy which means it has a positive impact on the impact through its general operations.

Stake Pools and Alliance’s Role in The Space:

We begin by discussing the pivotal role that stake pools and alliances play in shaping the Cardano ecosystem. These entities act as driving forces behind the network's growth, adoption, and sustainability. The stake pools on the Cardano blockchain run the network and Cardano would be nowhere without them, and not nearly as decentralized. We explore how stake pools and alliances foster collaboration, decentralization, and impact, contributing to the overall success and resilience of Cardano.

Climate Neutral Cardano:

Highlighting the Cardano's communities commitment to climate neutrality, and the projects they have deployed to start the process to getting there. We underscore the network's dedication to environmental

responsibility and the importance of reducing carbon emissions. Including the Cardano Forest initiative. These strategies helped Cardano achieve carbon neutrality, which ensures a sustainable and eco-friendly blockchain infrastructure.

Environmentally Friendly Stake Pools:

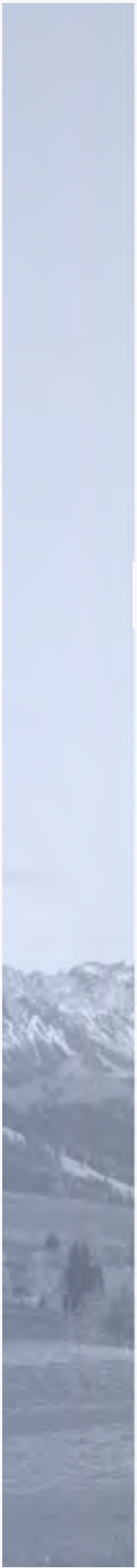
Here, we showcase the emergence of environmentally friendly stake pools within the Cardano ecosystem. These pools align with the principles of sustainability and promote energy-efficient operations. We specifically focus on the Climate Neutral Cardano (CNC) pools, providing an in-depth exploration of Climate Neutral Cardano (CNC). Helping shed light on their operational practices, carbon offset initiatives, and their role in promoting a greener and more sustainable blockchain network. These pools are exemplifying the commitment of Cardano's stakeholders to mitigate carbon emissions.

Goma Stake Pool in Africa:

We share the inspiring story of the Goma Stake Pool in Africa, exemplifying the transformative power of stake pools in empowering underserved communities. We delve into the impact of the Goma Stake Pool on the local economy, job creation, and social development. With a focus on the positive changes, it has brought to the lives of individuals in the region. The story of Goma Stake Pool showcases how stake pools can act as catalysts for economic empowerment and social inclusion, creating opportunities in previously marginalized areas.

Through the exploration of Impactful Stake Pools and Alliances including the Climate Neutral Cardano (CNC) pools and the remarkable story of the Goma Stake Pool in Africa. This chapter emphasizes the positive influence of these entities on the Cardano ecosystem.

Their commitment to environmental responsibility, and social impact aligns with Cardano's vision of creating a sustainable, inclusive, and transformative blockchain network.



Chapter 6 Conclusion

In conclusion, Impactful Stake Pools and Alliances have a pivotal role in the Cardano community. Stake pools aren't just maintaining network security and processing transactions.

Stake pools also act as responsible global citizens, taking strides towards sustainable practices and promoting sustainability through pool operations. The value they are rewarded through pool operations and helping secure the network, in a lot of cases is used to donate or support other NGOs or impact organizations. This helps introduce new communities to Cardano and drives more people to use Cardano for good. Key among these projects are the climate neutral initiatives, particularly Climate Neutral Cardano. Who is focused on helping Cardano distinguish itself as the go-to eco-friendly blockchain solution. Their initiatives help push the large community of eco-friendly stake pool operators to reach their mission as a collective collaboratively. Creating a large inspirational force of good in the community to drive sustainability initiatives.

The exploration of environmentally friendly stake pools reinforces the potential for blockchain technology to align with global sustainability goals.

The examination of specific initiatives, such as the Goma Stake Pool in Africa, brings light to the global reach of its community, and how there is a similar ethos of users across the world focused on Cardano's commitment to sustainability. Demonstrating how green energy can effectively power these operations.

As blockchain technology continues to mature, the efforts of these stake pools and alliances set a noteworthy piece of history for future developments on Cardano. Reinforcing the notion that technology and environmental responsibility can indeed go hand in hand.

NFT 4 Good

7

SUSTAINABLE ADA

Chapter 7 Overview:

In this chapter, we explore the exciting world of Non-Fungible Tokens (NFTs) and their potential for positive impact within the Cardano ecosystem. We dive into the NFT4Good ecosystem, highlighting the various tools, platforms, and projects. These projects drive meaningful change through NFTs. Looking at NFT tooling, verified NFTs, and marketplace platforms. Learn how books are used on the blockchain, and how it is revamping the Ebook industry along opening up a diverse range of opportunities and innovations in the NFT space.

Provide insights and analysis into project use cases and the metrics and data surrounding NFTs. Including royalties for creators, and minimizing barriers to entering the space because of Cardano's fundamental fee architecture.

NFT4Good Ecosystem:

We begin by introducing the NFT4Good ecosystem, which aims to leverage the unique properties of NFTs for social, environmental, and cultural impact. We explore the overarching vision behind NFT4Good, highlighting its potential to drive positive change and empower creators, artists, and communities.

NFT Tooling: NMKR:

This section focuses on the NFT tooling available on Cardano, with a specific emphasis on NMKR. We delve into the features and capabilities of NMKR, showcasing how it enables creators to easily mint, manage, and showcase their NFTs on the Cardano blockchain.

Verified NFTs (VNFTs):

We explore the concept of Verified NFTs (VNFTs) in this section, emphasizing their importance in establishing authenticity, ownership, and provenance within the NFT space. We discuss how VNFTs provide a trust layer for buyers and collectors, ensuring the integrity and value of NFT assets.

NFT Marketplace: JPG Store:

Here, we showcase the NFT marketplace platform on Cardano, specifically focusing on JPG Store. We delve into the features, functionalities, and user experience of JPG Store, highlighting its role in facilitating the buying, selling, and trading of NFTs on the Cardano blockchain.

Books on the Blockchain: Book.io:

This section explores the innovative integration of books and literature into the blockchain through Book.io. We discuss how Book.io harnesses the potential of NFTs to enable authors and readers to interact, purchase, and own books in a secure and decentralized manner.

Project Highlights:

In this section, we highlight various NFT projects that have made a significant impact within the Cardano ecosystem. We showcase projects such as Earth Natives, Streets of ADA, Royal Dreads, Empowa NFT, Firefly Shire, Serenity Picture, and nucast, highlighting their unique features, artistic expressions, and contributions to the NFT4Good movement.

NFT Metrics and Data:

Here, we delve into the metrics and data surrounding NFTs on Cardano. We discuss the importance of tracking and analyzing NFT metrics, including transaction volumes, market trends, and user engagement, to gain insights into the growth and impact of the NFT4Good ecosystem.

Royalties for Creators:

We also explore the concept of royalties for creators within the NFT space, emphasizing the importance of fair compensation and ongoing support for artists, even when the piece of art has already been sold. We discuss the mechanisms through which royalties are implemented and the positive implications for creators' financial sustainability and artistic growth.

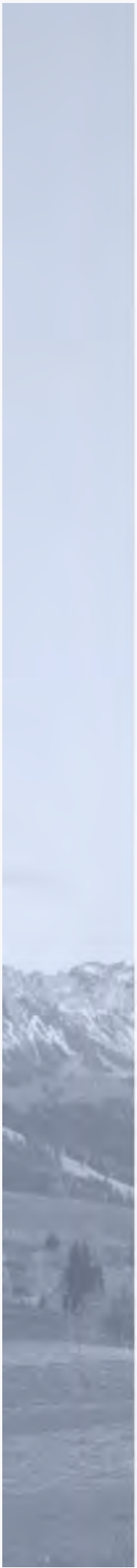
Through the exploration of the NFT 4 Good ecosystem. We take you through NFT tooling, verified NFTs, marketplace platforms, blockchain books, project highlights, and the metrics and data surrounding NFTs. This chapter helps showcase the transformative potential NFTs have within the Cardano ecosystem. The NFT 4 Good movement on Cardano is not only redefining the digital art landscape but also driving positive social, environmental, and cultural change.

7.1 - NFT 4 Good Ecosystem

The Cardano ecosystem is full of vibrant and game-changing NFT projects and a large proportion of the chain's activity is based around NFTs. From buying, selling, and trading to projects building new incentive schemes. NFTs can hold many different properties and their attributes can vary based on the purpose of the project.

NFTs can have a positive impact on the world and open up new ways for projects to interact with their communities and finance positive real world work. NFTs can be considered NFT 4 Good projects by creating new forms of funding mechanisms for NGOs, revolutionizing transparency for tree planting projects, helping with funding the development of sustainable homes, and fighting the mental health crisis.

We see revolutionary developments with a multitude of NFT 4 Good projects on the Cardano blockchain. Projects like NMKR, JPG Store, Booki.io, Earth Natives, Empowa, Streets of ADA, nucast, and Mandala are leveraging the power of NFTs. Enabling their projects to have a greater impact on their communities and beneficiaries across the world.



7.2 - NFT Tooling: NMKR

A portal for anyone to mint NFTs on the Cardano blockchain

What is NMKR?

An all-in-one, easy to use NFT minting platform that enables any business to enter the blockchain space and use NMKR's tools to bring benefits to their brand or project. NMKR is helping break down barriers for mass adoption, and is focused on onboarding as many new users to Cardano as possible.

The Vision & Mission of NMKR is "Empowering artists, brands, and enterprises to build communities, improve their business & reach a new audience by enabling them to sell NFTs directly from their website".

NMKR creates a bridge between projects and their communities through their no-code NFT tools, ultimately enabling projects to become self-sustainable businesses (NMKR, 2023).

Why Create NMKR?

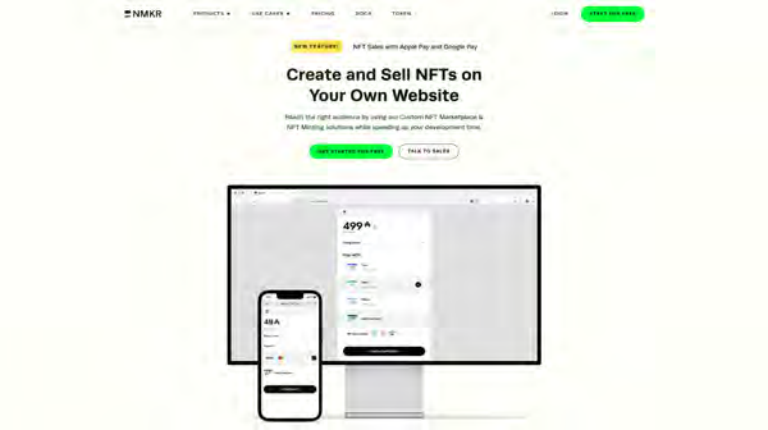
The Cardano community had long awaited the ability to have NFTs on Cardano, and when the update that enabled NFTs finally came, there was no easy way for non-technical people to create NFTs.

To meet this demand, founders Patrick Tobler and Fahim Popalzai created NFT-MAKER V1, the first easy-to-use no-code NFT minting tool on Cardano. There was never a roadmap for NFT-MAKER, the project was made as fast as the two founders came up with the name for it.

NFT-MAKER quickly turned into the most used minting platform on the Cardano blockchain. This eventually led the founders to follow up with their pro NFT minting tool, NFT-MAKER PRO, which soon became a staple of the company and later (after a company rebrand) became NMKR Studio, which has powered thousands of projects and minted nearly 2 million NFTs since its inception in 2021.

Challenges in the blockchain space NMKR helps solve

Onboarding users from other blockchains is always a challenge, especially when people are heavily invested in one cryptocurrency and are set on their blockchain. We are working closely with projects like Crossmint to bridge this gap.

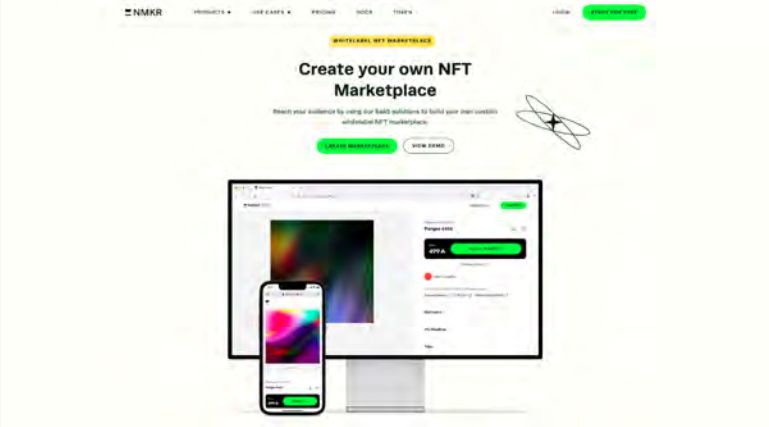


Biggest challenges NMKR sees in the crypto sphere

The biggest challenge in the crypto and NFT industry is creating a seamless experience for users without anyone needing to know what an NFT is or how the blockchain works. It should look and feel like Web 2, but be Web 3 under the hood.

Create your own NFT marketplace

NMKR has created the capability to create your own NFT marketplace. It is a straightforward process that empowers individuals and businesses to showcase and sell their products or services to a wide range of potential customers. By having the ability to leverage NMKR's built-in marketing tools and audience reach, you can attract potential buyers and grow your business's customer base. With dedication and innovation, NMKR's new marketplace feature offers individuals and businesses a powerful platform to establish and flourish in the blockchain space.



Why Cardano?

NMKR is building on Cardano due to its low carbon footprint, superior technological capabilities, and development approach to ensure a secure and sustainable ecosystem.

"For example: on Cardano, NFTs can be created without requiring smart contracts as all tokens are considered "native" & treated no different than the base currency, ADA. This greatly decreases the potential for NFT minting errors and bugs." - ***NMKR***

Connection to the SDGs

"NMKR has likely impacted or touched nearly every SDG in some way whether it's through one of our humanitarian partnerships like Empowa, which aims to serve the under-served African mortgage market and unlock affordable and greener homes for more Africans. The Royal Dreads, a social impact NFT project that is focused on promoting diversity, social justice and helping creatives achieve their artistic goals. Or Wizkid, which uses our platform to provide educational NFT courses to children. Our tools enable anyone to achieve their goals, whatever they may be." - ***NMKR***

NMKR is also making strides towards sustainability through their new partnership with the Cardano Foundation and UNHCR. Together they are selling hundreds of NFTs on the Cardano Blockchain. This gives the UN Refugee Agency the ability to access capital in an innovative and unique way that allows for full transparency over where it goes. The funds from the sale of NFTs are allocated to a Cardano stake pool. Which is establishing a long-lasting and sustainable source of income that enables UNHCR to provide critical support to Refugees and individuals impacted by emergencies (NMKR, 2023).

7.5 - Books on the Blockchain: Book.io

Book.io is building the Book Ecosystem of the Future.

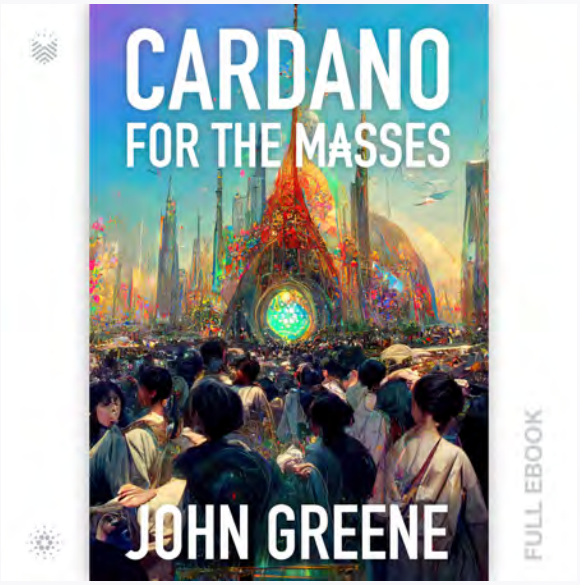
Book.io offers authors and bookworms an opportunity to redefine the way they value books. Book.io has created a Web 3 marketplace for buying, reading, and selling eBooks and Audiobooks.

The Problem Book.io Solves

Currently when you buy an eBook or Audiobook, you do not own it. The buyer actually only has bought a license to view it. A problem with this is it's always stuck on that retailer's platform, taking away the ability to give it away or sell it.

Book.io believes “readers deserve to truly own the digital goods they purchase”.

Book.io is harnessing the power of Web 3 technology and the Cardano blockchain to make this possible.



Forever changing the way books are valued, and revamping the E-reading space. The NFTs are “not public NFT images of book covers”. They represent Decentralized Encrypted Assets (DEAs). They are the entire book, fully decentralized and living on-chain forever.

This is the first time in history readers are able to buy and truly own their eBooks and Audiobooks. Giving them the capability to send to friends or resell on secondary marketplaces. Book.io is empowering authors and publishers by providing the ability to earn royalties on the secondary sales of their books. Helping reward creators for their hard work.

Readers

If you own a book and don't want to hold onto it when you're done, you can sell the eBooks & Audiobooks back to an open marketplace right when finished. You also can earn Book.io’s token $BOOK for every page you read.

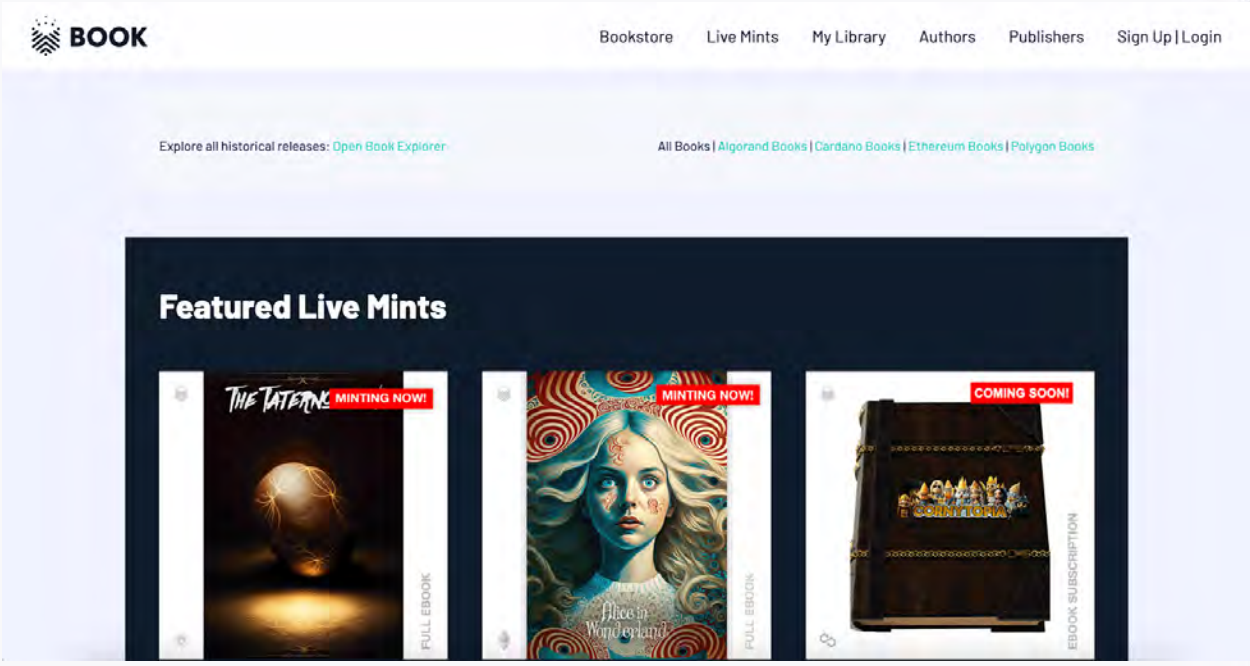
Authors & Publishers

Book.io believes authors and publishers should receive more and get the true value out of their hard work. Book.io offers the ability to generate

more money, more data, and more tools with the service they are providing.

Decentralized

Book.io is blockchain agnostic, meaning they are a cross-chain project. This allows creators to choose the chain that works best for their needs, and the opportunity to sell their books to a larger market size.



Powering a True Creator Economy

Book.io is leveraging blockchain to inspire and enhance the creator's economy. Book.io works directly with major publishing houses to indie authors and helps them create all different kinds of books. From mass trade editions to ultra-rare collectibles, they enable creators with a vast array of options. Creating a revolutionary opportunity to uplift authors.

Mobile Platform

Book.io has created a mobile reading platform. This enables book owners to create an account and link the books they own, so they are able to read on the go or on a smaller device at work or in the park. They also plan to release a marketplace & book exchange to complement the platform.

Benefits of NFT Books

Authors who can publish their work through Book.io are in control. Others can expect.

- 70% of all revenue on the initial sale of your books.
- You'll set the Royalty % that you'll receive on all secondary sales.
- You don't have to be exclusive with Book.io.
- The price of your book, Book.io handles the conversions from crypto to fiat.
- Access to accurate sale reports pulled directly from the selected immutable blockchain.
- Soon Book.io is launching the capability to Print the NFTs you own through Mint & Print®.

In conclusion, Book.io is revolutionizing the book industry by building the Book Ecosystem of the Future. They have created a Web 3 marketplace that allows authors and book enthusiasts to redefine the value of books. By leveraging Web 3 technology and the Cardano blockchain, Book.io solves the problem of limited ownership in the digital reading space.

Through the use of Decentralized Encrypted Assets (DEAs), which represent the entire book, live on-chain forever. Readers can truly own their eBooks and Audiobooks for the first time in history.

The ownership empowers readers to freely share or resell their books on secondary marketplaces, while also providing authors and publishers the opportunity to earn royalties on secondary sales. Book.io's blockchain-agnostic approach allows creators to choose the best blockchain for their needs, expanding their reach to a larger market.

By harnessing the power of blockchain, Book.io is transforming the creator economy. With Book.io, authors have more control and opportunities to generate revenue and uplift their work. To join this groundbreaking platform, authors can simply fill out a form and connect with a Book.io representative.

Book.io is driving the future of reading by combining technology, ownership, and the true value of books (Book.io, 2023).

7.6 - NFT 4 Good Project Highlights

NFTs are driving a lot of adoption in the blockchain space as they are a unique use case for ownership a lot of people can connect with quickly, and have largely been driven with visual art by veteran artists native to the digital medium and as well as artists new to the world of digital art, and art in general, but were interested in entering the digital economy having seen the headlines of how art jpg files were selling in the millions! However, as is often the case, there is more than meets the eye. This is very true when we talk about and look at NFTs, as they are about much more than just owning pictures of apes!

The Cardano NFT 4 Good community unveils a collection of remarkable NFT projects that not only showcase artistic creativity but also make a profound connection to sustainable development, serving positive social and environmental impact within the Cardano ecosystem, and beyond.

We explore the projects Earth Natives, Streets of ADA, Royal Dreads, Empowa, Firefly Shire, Serenity Pictures, nucast, and Enter The Mandala. Their unique approaches to using NFTs help promote the potential directions NFTs could move towards as they continue to evolve.

By leveraging the capabilities of Cardano, these initiatives align with the principles of sustainable development and contribute to building a more inclusive and environmentally conscious blockchain ecosystem and society.

7.6.3 - Streets of ADA

Razali and Affendi, co-founders of Streets of ADA - A Samsudin Brothers Projek, an “art as activism” project.

A multimedia entertainment initiative.

A universe that draws inspiration from martial arts, beat 'em up gaming, world cinema, 80s era action movies, anime, and southeast Asian cultural heritage.

Streets of ADA in partnership with Palawan NGO Network Inc., a group of 39 NGOs and associations, is working to urgently support activist actions and environmental law enforcement in Palawan, the ‘last ecological frontier’ of the Philippines.

Vision

A world where people and communities live in peace and come together to build a sustainable and equitable world for all.

Mission

- Challenging corruption
- Protecting activists
- Protecting the planet

Using Cardano's revolutionary open source technology for good, to support grassroots actions in tackling climate change, challenging corruption, illegal logging, mining, fishing and poaching.

Through the power of blockchain and NFTs, Streets of ADA NFTs shall offer transparency to donors and insight into impact, via the impact metadata of the NFT. Impact data, testimonies from the local community of beneficiaries, are to be recorded and uploaded locally with the help of partners at Talk to Loop.

Influences on Streets of ADA's art and story

Setting the Scene - What's going on in the Philippines?

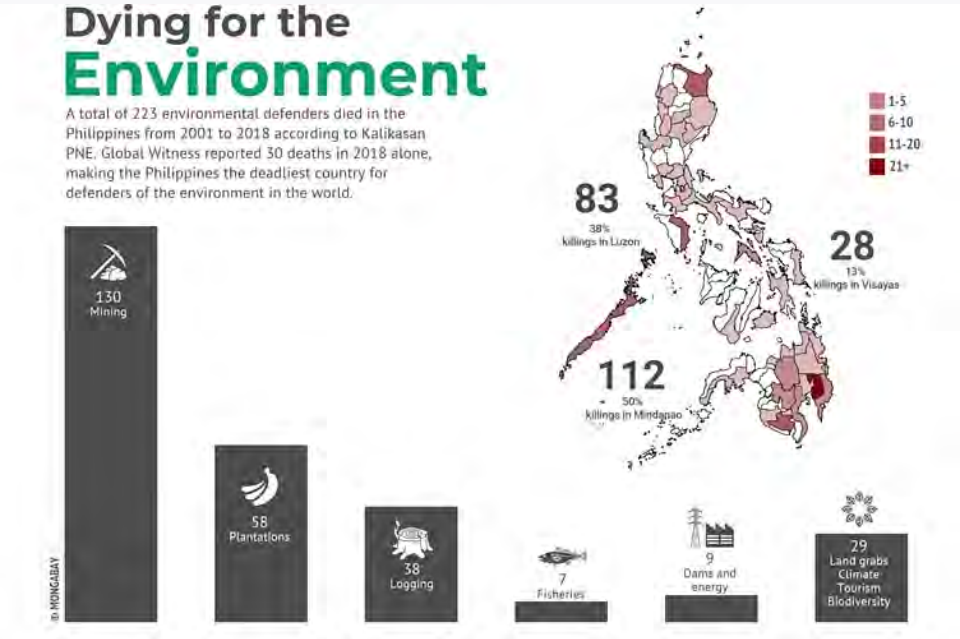
The Philippines is home to the island of Palawan, the largest island province of the

Philippines. A UNESCO World Heritage site with one of the oldest, largest and most diverse rainforests in the world. The province of Palawan is known as the Philippine's "last ecological frontier".

The Philippines is one of the deadliest countries in the world for defenders of the environment. It is also #2 in the world for crypto adoption. Can Cardano be leveraged to help protect the environment and its defenders? Source

In 2020, 29 recorded murders of environmental activists made the Philippines the third deadliest in the world, behind Mexico and Columbia.

"On average, our data shows that four defenders have been killed every week since the signing of the Paris Climate agreement – but this shocking figure is almost certainly an underestimate, with growing restrictions on journalism and other civic freedoms meaning cases are likely being unreported." – Global Witness



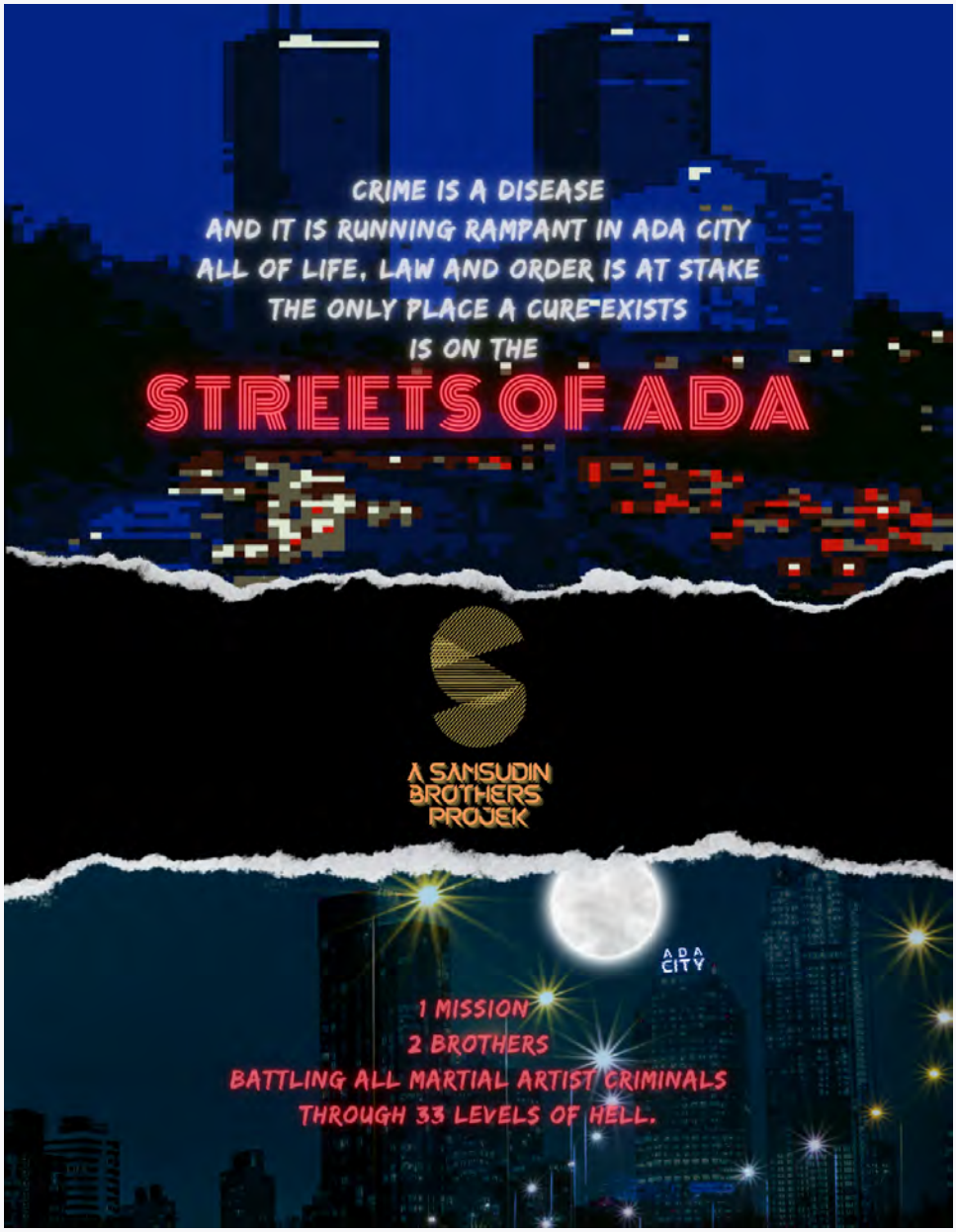
Environmental defender killings in the Philippines by the sector from 2001 - 2018. (Source)

"Influenced by fictional and real-life stories, armed with our creative energy driving the Streets of ADA project, we are striving to use Cardano's technology to help solve real issues for a real positive social and environmental impact.

They say a picture can speak a 1000 words, but a video, a million pictures. So, for a better idea of what PNNI are doing and what they are up against, here is a trailer from the award-winning documentary Delikado, that blows the lid on what is going on in Palawan, why the world should be concerned and how they can help." – ***Razali***

Delikado (which means dangerous in Tagalog) is currently picking up awards around the world and is being screened in film festivals globally. Screenings can be found here.

"Palawan appears to be an idyllic tropical island but... To save the island paradise, three environmental crusaders confront murder, betrayal and their own demons. Through dynamic documentary storytelling, we follow Bobby, a charismatic lawyer who leads good men to their deaths, Tata an ex-illegal logger who seeks redemption, and Nieves a fearless grandmother politician who defies assassination threats. They are working with indigenous communities trying to save their increasingly valuable natural resources from being plundered." – (Source)



Promotional poster of Streets of ADA

Image credit: https://www.pnni.org/about

In a survey conducted by Travel+Leisure, Palawan was recognized as the "best island in the world" by the New York-based travel magazine, topping its Top 25 Islands in the World list in 2020, 2017, 2016 and 2013.

So for many, it may come as a shock that Palawan island, home to the Philippines' last great rainforests, with tropical waters that are among the most biodiverse in the world, with natural wonders that make it one of the most popular tourist destinations in the world, is also a country that is one of the most dangerous countries in the world due to illegal logging, fishing and mining, all of which are destroying Palawan.

Image credit: Eibner Saliba on Unsplash

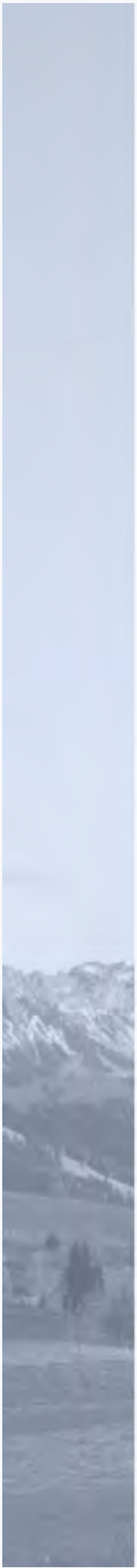
As the climate crisis intensifies, violence against defenders of the Earth is escalating. – Global Witness

"A land defender is killed every two days around the world as they strive to protect their local environments from being destroyed by politicians and powerful business figures" – Karl Malakunas, Director of Delikado

Onboarding and bridging PNNI's 39 NGOs into the Cardano impact ecosystem via Streets of ADA

Streets of ADA are working with PNNI to support them on their journey to understand and build bridges to the Cardano Blockchain ecosystem, and navigate the world of blockchain, Cardano, cryptocurrency and NFTs to support their activities and impact.

Image credit: https://www.pnni.org/



Bobby Chan, in prayer outside the PNNI HQ, sitting beside the towering collection of 700+ chainsaws that have been seized from illegal loggers as a result of courageous operations.

"All donations that we receive will go into food and fuel to allow our para-enforcers to do forest patrols and seaborne operations. It will also go to training the next generation of para-enforcers. We hope that you can help us and support us in this endeavour. This will give us a chance to save the last frontier and it will also give our children a chance to have old-growth forest still."

"We have a unique para-enforcement programme in which we use the nation's citizens arrest law to confiscate chainsaws, boats, jeepneys or any other equipment being used to illegally plunder Palawan's natural wonders. Our team, and its network of community volunteers, will step in to save Palawan because no one else will."

"We do not have much money, but we are rich in commitment, determination and bravery. Your funding will help us to continue and expand our work. Any size of donation is welcome, and we will use 100% of what we receive to continue our mission."

– ***Bobby Chan, Executive Director of PNNI***

'It has never been a deadlier time to defend one's community, way of life or environment... the Philippines is the most dangerous country in Asia to be a land defender.' These are chilling findings by Global Witness, one of the world's leading human rights and environment campaigners...They are being killed for trying to stop mining, agribusiness and logging. Many of the deaths occur in remote villages or rainforests. The victims are often from indigenous communities. The killers are rarely caught. All these factors are in play in Palawan." – (Documentary Australia, 2020)

(Source)

Headed by Attorney Bobby Chan known as 'the chainsaw man of Palawan', alongside his tireless team, PNNI's heroic on-the-ground action and commitment to the cause of combating climate change, illegal logging, mining, and fishing in the Philippines, and uplifting their community out of poverty, is an ongoing, uphill struggle.

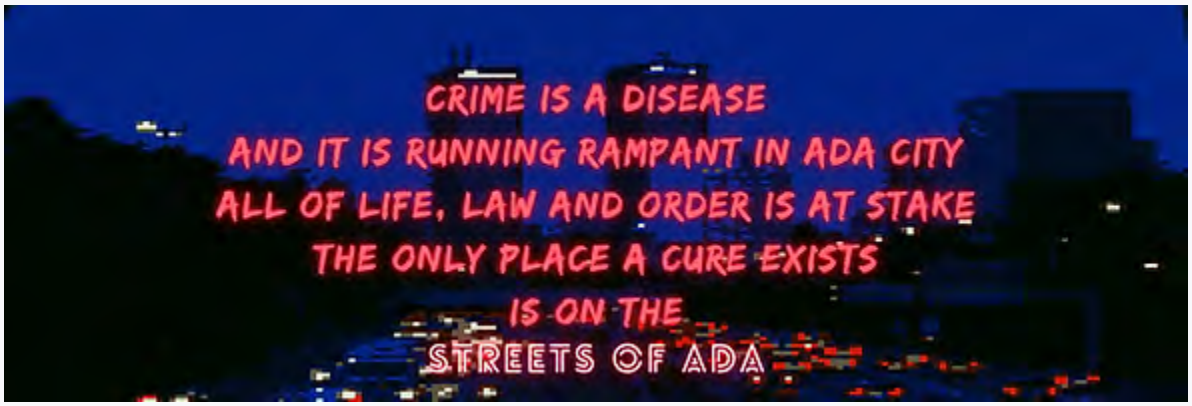
They have already lost 13 friends who have died under questionable circumstances whilst serving as para-enforcers for PNNI.

Why is A Samsudin Brothers Projek – Streets of ADA important to us?

"Streets of Ada is a story that starts as fiction but transforms into actuality. It represents those that have a fighting spirit

and the will to do something no matter how big of a challenge it may be or how immense the odds will be. Heroes are not born, but are made. They are forged out of circumstances and rise to the occasion when their spirit can no longer coexist with the hypocrisy and injustice to others.” – ***Affendi***

“My kuya and I have roots in the Philippines on our Mum’s side, and Malaysia on our Dad’s side. We were both born and raised in East London. We had the good fortune of being brought ‘back home’ frequently while growing up. This helped us develop a strong connection and understanding of life there, and enriched us spiritually, emotionally, and culturally. We had a larger sense of home to tap into when we were made to feel like outsiders growing up in London. Now that we are older, we hear the call that we can’t ignore, to do what we can do to help those who are fighting to protect their homes and our planet from destruction.” – ***Razali***



Streets of ADA’s connection to the UN SDGs

Blockchain technology is a key technology for the SDGs because it enables stakeholders globally to have the ability to track, record, and share data that is immutable, timestamped, and verifiable.

Streets of ADA has a connection to several of the Sustainable Development Goals (SDGs) as it supports the impactful work of Palawan NGO Network Inc. :

1. **SDG 13** Climate Action – Challenging illegal logging and protecting old growth forests as a store of carbon
2. **SDG 14** Life Below Water – Challenging illegal fishing and protecting marine ecosystems
3. **SDG 15** Life on Land – Challenging illegal logging and land seizures to ensure habitats are protected and that indigenous tribes can continue their traditional way of life
4. **SDG 16** Peace, Justice and Strong Institutions – Challenging corruption to ensure that environmental and human rights law is enforced
5. **SDG 17** Partnerships for the Goals – Collaborating with journalists, filmmakers, international NGOs, civil society and governmental agencies

And indirect connections to:

1. **SDG 1** No Poverty – Providing capacity building and employment opportunities for locals
2. **SDG 4** Quality Education – Workshops and programs that seek to develop the skills and knowledge of the local community, youth and para-enforcers in order to develop a sustainable legacy of environmental protection and equitable sustainable development
3. **SDG 9** Industry, Innovation and Infrastructure – Powered by Cardano's blockchain technologies, using NFTs and helping with capacity building for the 39 NGOs that make up Palawan NGO Network Inc.
4. **SDG 10** Reduced Inequalities – Education for the NGOs in the advantages of the use of Cardano's blockchain and cryptocurrency, namely in avoiding exorbitant remittance costs and maximising the potential donation funds available for impactful work on the ground.

5. **SDG 11** Sustainable Cities and Communities – Strengthening efforts to protect and safeguard the world's cultural and natural heritage in Palawan, the Philippines

A Samsudin Brothers Projek – Streets of ADA

"We want to help bring awareness of the critical work being carried out by the courageous heroes and para-enforcer eco-warriors in Palawan, the Philippines. They are fighting and putting their lives on the line in one of the world's most dangerous places to be an environmental activist, to protect their homes, their land and humanity's heritage from being exploited by greedy and corrupt politicians, business people and officials.

The Palawan NGO Network (PNNI) need more support if they are to be able to continue defending the environment and pristine ecosystem. Every effort counts. Our old growth forests, coral reefs and sustainable ways of life are under threat due to the short-sightedness and greed of profit-seeking big timber and so-called public servants.

If we are to avert the catastrophic effects of climate change, if we are to ensure that nobody has to risk their lives anymore to live in a safe and healthy environment, then we will surely need all hands

on deck. My kuya Affendi and I have developed Streets of ADA as a means for us to pay it forward, and help out 'back home' by giving something back to our communities and fellow Filipino brothers and sisters.

We hope our children can grow up to see and feel awestruck by the natural beauty of Palawan before it is too late." – ***Razali***

A percentage of the revenue made from sales of the first 'Tiger Unit' collection, due to be released in 2023, are going to support the efforts of the Palawan NGO Network team of land defenders and eco-warriors on the ground in defending the last ecological frontier and combating climate change, illegal logging, mining and fishing.

- Buying Streets of ADA art connects you to the evidence of impact by PNNI (e.g. a video/audio interview with a local leader) through digital data on the blockchain. This acts like a certificate, known as an NFT.
- Thanks to Cardano's blockchain technology, you are able to directly see how your funds are supporting the NGO and their missions.
- The Cardano blockchain is an environmentally friendly, open source, transparent database. This means anyone may verify, track and trace the data, e.g. movement of funds, certificated evidence of impact, all time stamped and tamper resistant, without the need to rely on a centralized entity or one person.

Benefits:

- Owning a Streets of ADA NFT represents your support of:
  - Independent artists
  - Protecting our forests, land and ocean by investing in courageous heroes, para-enforcers, and activists
  - Proof of Impact via our independent partners who enable and empower the local community of beneficiaries to share their testimonies safely, of how missions are positively impacting them
  - Perks via our network of partners (eg martial arts coaching, entrepreneurship and digital skills upskilling, access to exclusive community events in real life and online, exclusive music and fashion)

The PNNI team in the Streets of ADA universe, by Affendi Samsudin.

(Art by [Brenna Quinlan](#) - illustrator and educator specializing in climate justice, sustainability and permaculture.)

Chapter 7 Conclusion

The NFT4Good chapter highlights a vibrant community of blockchain projects that are actively making a positive influence on the world in various ways.

These NFT projects, including NMKR, JPG Store, Earth Natives, Streets of ADA, Royal Dreads, Empowa NFT, Firefly Shire, Serenity Pictures, nucast, and Mandala are driving social and environmental impact. The projects also promote positive change across different communities worldwide.

They are actively promoting social and environmental impact by addressing critical issues and fostering Sustainable Development Goals through the use of NFTs.

Exploring some technical aspects of NFTs and how the Cardano NFT ecosystem is promoting inclusion from a low barrier to enter the NFT space on Cardano. We also share insight into royalties for creators and how this helps sustainably support artists when people use their content.

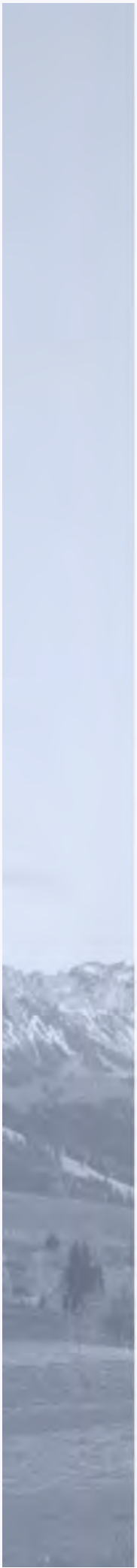
By showcasing these projects, we witness how grassroots initiatives are utilizing blockchain technology in creating a tangible and positive impact. While encouraging community-led efforts and promoting social and environmental responsibility.

Through these NFT4Good initiatives, Cardano demonstrates its unwavering commitment to creating a socially responsible and sustainable future. These projects foster a culture of inclusion and empowerment, enabling communities to thrive and make a significant positive impact on the world around them.

Conclusion

8

SUSTAINABLE ADA



Conclusion

The Impact Report brings you on a journey into the significance Cardano is having on its community and how it was built from the ground up to drive positive Social, Environmental, and Economic change.

Values, Blockchain, and Positive Impact: We explored how blockchain is changing the ways we understand and define value, and how identity is validated, secured and stored. How blockchain technology can create positive change and have a positive impact on the UN Sustainable Development Goals.

Cardano & Sustainability: We dived into how Cardano is a leading blockchain of impact, and how the Cardano community and different founding entities are tackling sustainability. Here we delve into the different projects that have a direct connection to specific areas of sustainable development that are more prominently connected to blockchain technology.

Environmental Impact: Exploring what environmental impact is and how blockchain can be a dependent technology when it comes to tracking and tracing environmental systems. We also share a comparison of Cardano's blockchain to other blockchains and illustrate how Cardano is a leader in energy consumption. Including highlighting the environmental impact project with boots on the ground using Cardano's technology to address the climate emergency.

Social Impact: Focuses on what Social Impact is and how it can connect to blockchain technology in its ability to empower people's lives and create more equity. We jump into a wide variety of projects building on Cardano to create a positive Social Impact and address problems negatively affecting our global society.

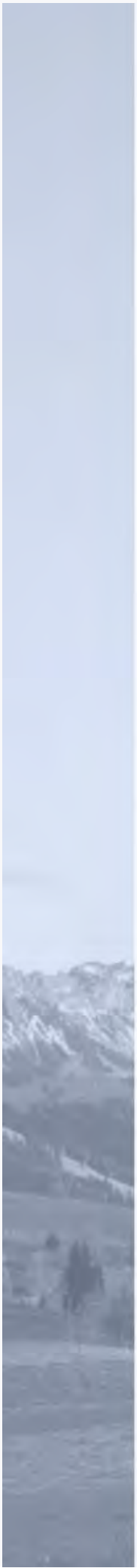
Cardano Trailblazing New Models of Governance: Looks at the different forms of governance in the Cardano ecosystem, and explores how this is

helping create a more dedicated and driven community. Discover Project Catalyst, Cardano's decentralized innovation engine and the different projects that were created from Catalyst, including the impacts they have on the community. Finally, we look at how DAOs are helping drive Cardano's adoption, and how they are defining a new form of governance. A key aspect to Cardano's governance is that community members have the ability to make changes to the different structures and processes of Cardano. Through the Cardano Improvement Proposal (CIP) process.

Impactful Stake Pools & Alliances: The Impactful Stake Pools & Alliances section underscores the crucial role that stake pools and alliances play in driving positive change within the Cardano ecosystem. These community pools and alliances have become instrumental in shaping the space by fostering collaboration, promoting sustainability, and making a tangible impact on both the environment and in their local communities. The Climate Neutral Cardano initiative highlights the commitment to offsetting and reducing carbon emissions and building a sustainable blockchain network.

Environmentally friendly stake pools like the CNC Pools exemplify the dedication to eco-friendly practices, and reducing the environmental footprint of Cardano's operations.

We also dive into a green powered stake pool. The Goma Stake Pool in Africa demonstrates the potential for stake pools to empower underrepresented regions, providing opportunities for economic growth, and demonstrate to the ecosystem that in challenging geographies, there are ways to use clean energy to run a pool, and that with education, dedication and empowerment, individuals are able to work to uplift themselves and their communities. Through these impactful stake pools and alliances collective efforts, they are not only contributing to the success of Cardano but also leading by example, creating positive ripple effects in the local environment, and outwards across the wider blockchain industry.

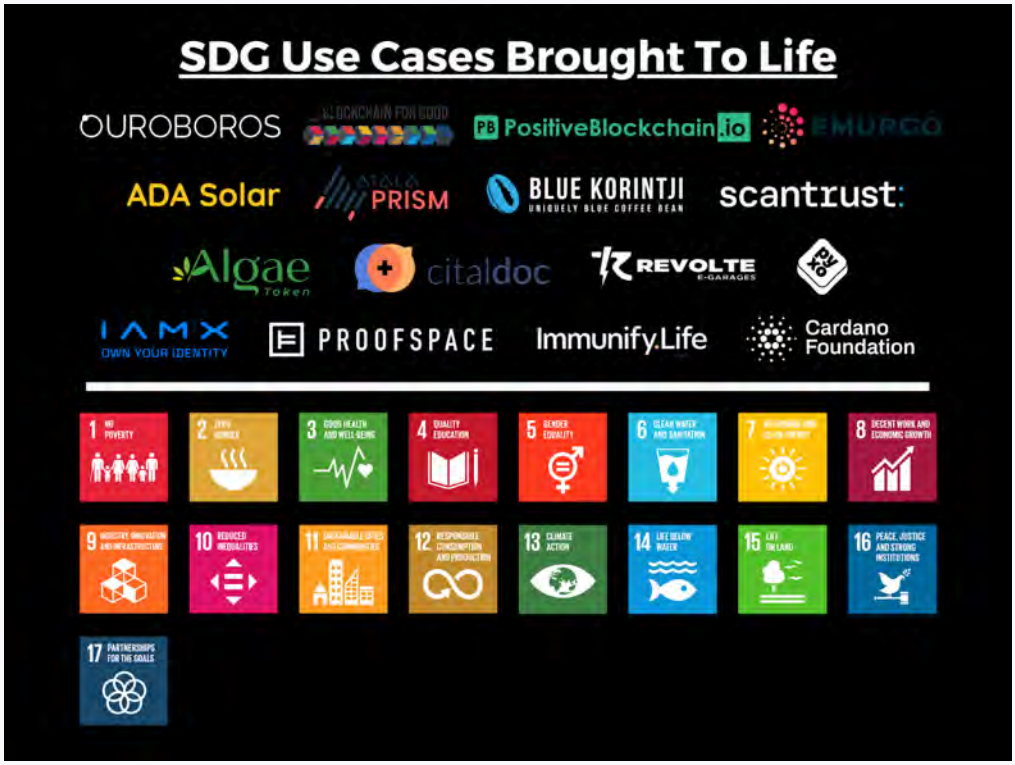


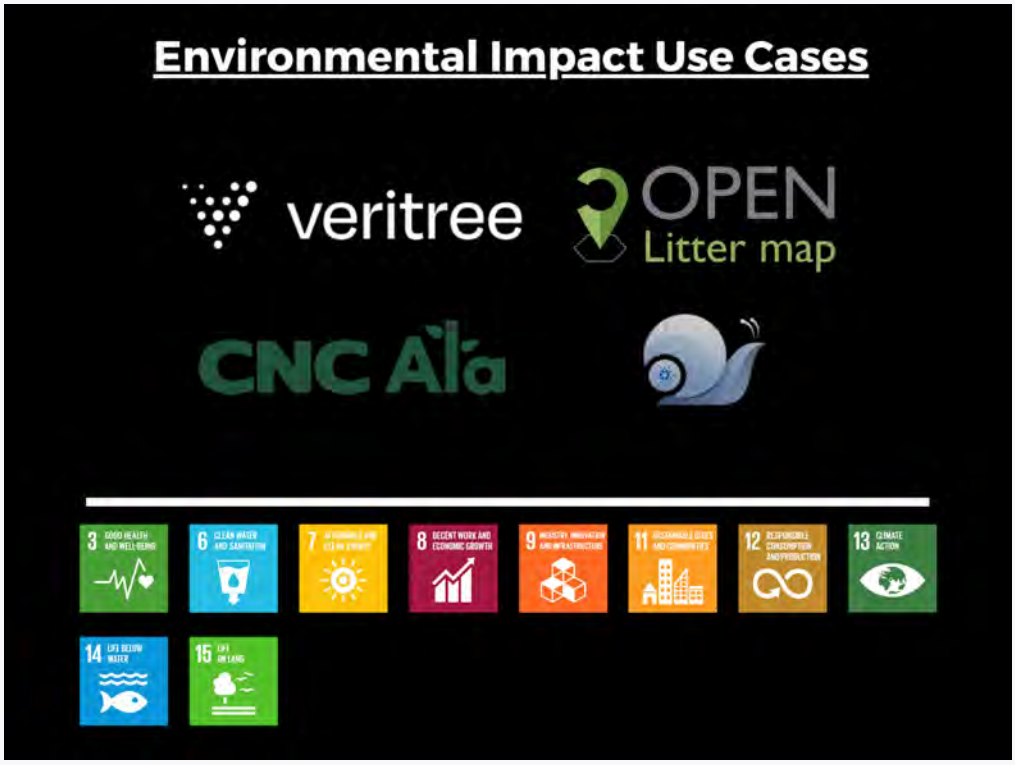
NFT 4 Good: The NFT 4 Good section showcases the transformative potential of Non-Fungible Tokens (NFTs) in driving positive impact and innovation. The NFT 4 Good ecosystem in Cardano is a vibrant space where various projects and initiatives are leveraging their power for environmental and social good.

The NMKR NFT tooling provides an accessible and user-friendly platform for artists and creators to mint and manage their NFTs with ease. Verified NFTs (VNFTs) offer increased transparency and authenticity, enhancing trust within the NFT market through Decentralized Identifiers (DIDs). The JPG Store serves as a dedicated marketplace for NFTs, providing a platform for artists and collectors to showcase and monetize their NFTs. Initiatives like Book.io are revolutionizing the publishing industry, enabling books to be securely stored and accessed on the blockchain. NFTs are being utilized as a medium for creative expression, community building, and raising funds for charitable causes.

Thanks to smart contracts, automated royalties for creators help ensure artists receive ongoing recognition and financial support for their contributions. By utilizing the power of NFTs the Cardano ecosystem is reshaping the digital landscape, empowering creators, and driving positive social impact in innovative and exciting ways.

Overview of Cardano for Good Projects




Environmental Impact Use Cases
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OPEN
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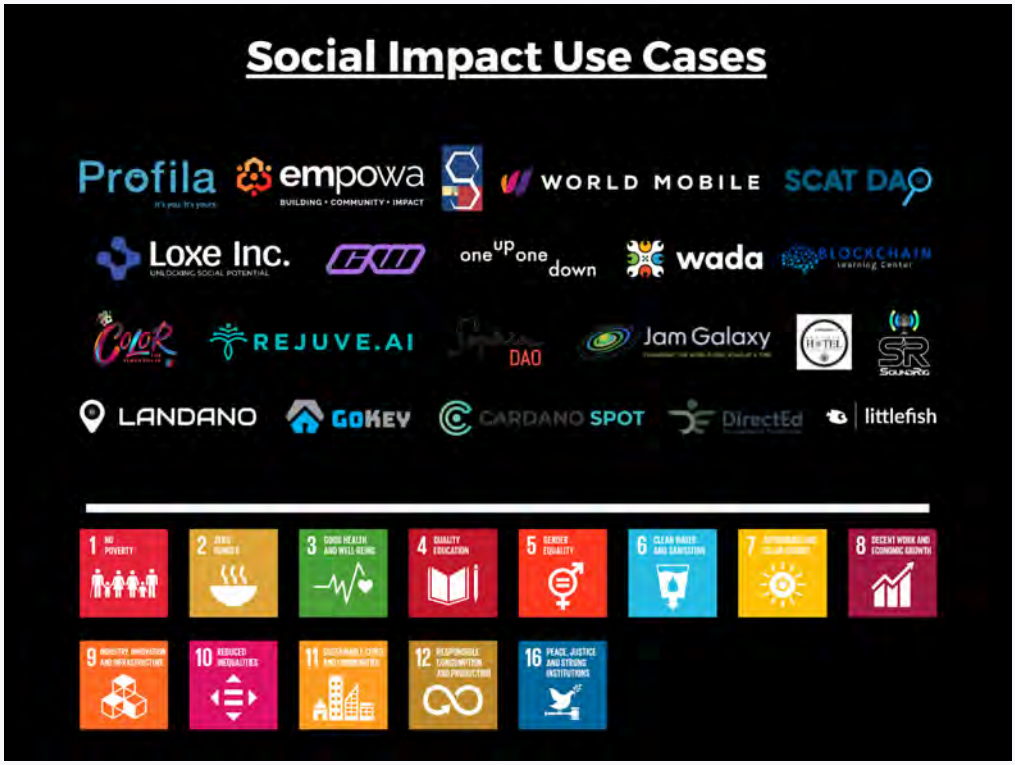
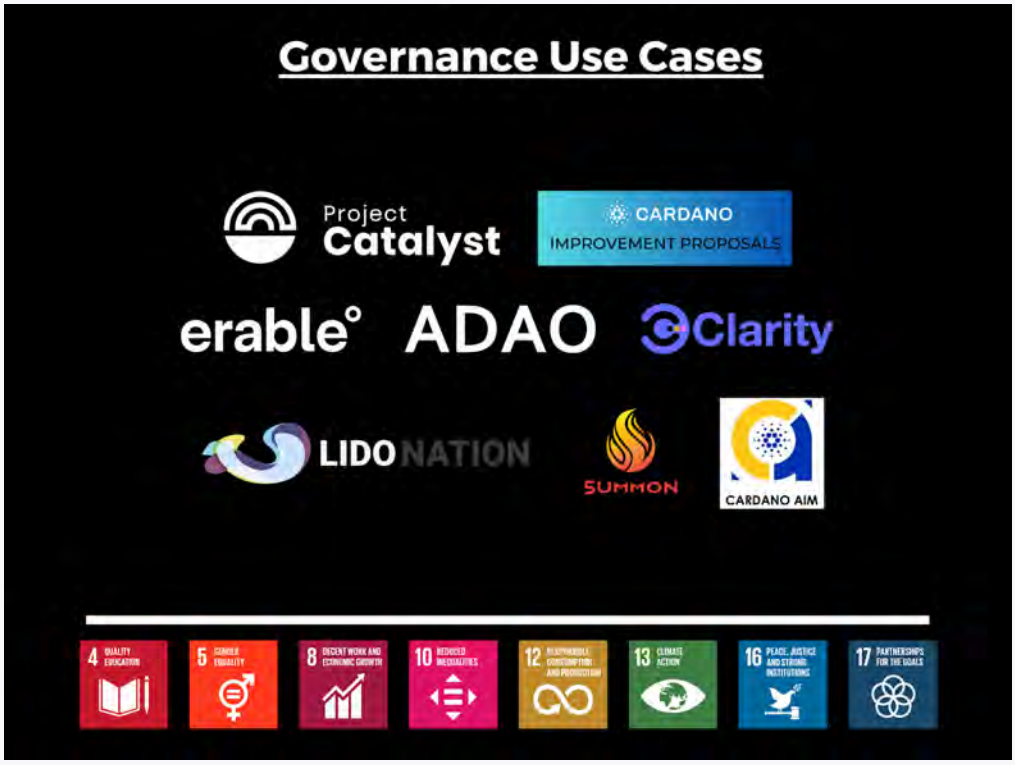

Social Impact Use Cases
Profila
empowa
BUILDING • COMMUNITY • IMPACT
WORLD MOBILE
SCAT DAO
Loxe Inc.
UNLOCKING SOCIAL POTENTIAL
one up one down
wada
BLOCKCHAIN
learning Center
REJUVE.AI
DAO
Jam Galaxy
LANDANO
GOKEY
CARDANO SPOT
DirectEd
littlefish


Governance Use Cases
Project Catalyst
CARDANO IMPROVEMENT PROPOSALS
erable°
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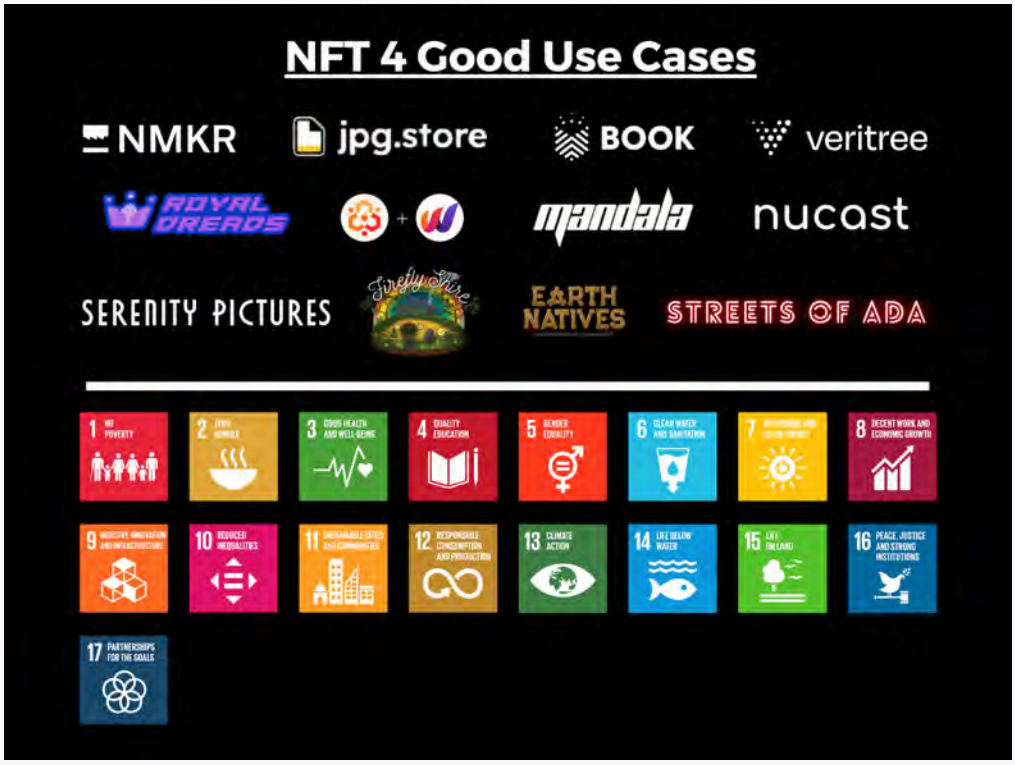
SUMMON
CARDANO AIM


Stakepools & Alliances
Climate Neutral Cardano
STAKEPOOL GOMA

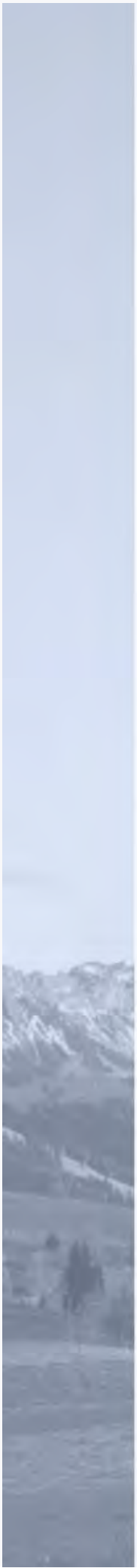


Cardano's Overall Impact Evaluated

While assessing the Impact ecosystem on the Cardano blockchain we looked at a variety of projects impacting the sustainability areas of **Social**, **Environmental**, and **Economic** Impact. The results reveal a significant and positive outcome. Cardano has demonstrated a strong commitment to **Social Impact** by fostering inclusivity, accessibility, and empowerment within its ecosystem. Through its focus on decentralized governance and stakeholder participation. Cardano has fostered a sense of community and collaboration, enabling individuals from diverse backgrounds to actively contribute and benefit from the platform.

From an **Environmental Impact** perspective, Cardano's implementation of a proof-of-stake consensus mechanism has proven to be highly energy-efficient and sustainable.

By minimizing energy consumption and the carbon footprint of the underlying protocol, Cardano sets a commendable example for the



blockchain industry. Cardano demonstrates that innovative technologies can be developed while minimizing adverse environmental effects.

Cardano's **Economic Impact** is undeniable, as it has provided opportunities for economic growth and financial inclusion, particularly in underserved regions. By facilitating secure and transparent transactions, Cardano empowers individuals and businesses, fostering economic stability and prosperity.

Cardano's holistic or interconnected approach to Social, Environmental, and Economic impact showcases its commitment to creating a sustainable and equitable ecosystem. By prioritizing social inclusion, environmental sustainability, and economic empowerment. Cardano has set a remarkable precedent for blockchain platforms. Underlining itself as a third generation layer 1 blockchain protocol, inspiring positive change and leaving a lasting impact on the communities it serves.

Score of Cardano's for overall impact?

Cardano has a strong focus on the Social, Environmental, and Economic aspects of sustainability. Overall there are projects in the ecosystem that together support all the Sustainable Development Goals (SDGs). With our analysis, we realize it's almost impossible to capture all the projects in Cardano that connect with Social, Environment, and Economic impact with how fast the industry is moving and changing each and every day.

With our research and analysis of the Cardano Impact Use cases, we found that overall Social Impact projects are the main force of good on the Cardano blockchain when it comes to projects creating real positive change. We analyzed a total of 65 different projects within the Cardano ecosystem. We discovered there were 10 projects that had a direct connection to Environmental Impact, 46 projects directly connected to Social Impact, and 9 directly connected to Governance.

Final Thoughts:

Blockchain technology is not just about creating new forms of currency or disrupting traditional financial systems. It has the potential to transform the way we interact with each other and the world around us, creating a more just and sustainable future. As we continue to navigate the complex challenges of the 21st century, the potential of blockchain technology to help us redefine value and empower communities cannot be overstated.

The Web 3.0 movement, with its myriad of tools, offers humanity the opportunity to become agents of change. Cardano's blockchain technology is helping people worldwide on their journey towards financial inclusion, digital economic livelihoods, and identity, for many people this is happening for the first time in their lives.

This Web 3.0 era and Cardano offering is giving people a chance to recalibrate their values, helping transform decision making. In turn, enabling a fairer and more trustworthy global society through a paradigm shift from extractive to generative finance. Creating a world where trust is the foundation of every transaction and interaction, and trust is facilitated by technology, and collaboration across centralized, distributed, and decentralized communities. By working together we come to know one another, and ourselves, and trust may be built, and values transformed.

This is how a shift towards programmable money, stores, and exchanges of value is made possible.

Enabling the embedding of "good" in the financial system, and through the use of smart contracts that enforce rules and prevent misuse.

Cardano's network is committed to sustainability which aligns with the United Nations' Sustainable Development Goals (SDGs), which provide a roadmap for achieving an equitable and sustainable world by 2030.

The Cardano Impact Report 2022/23 serves as a testament to the transformative power of blockchain technology when placed in the hands of those who act with values that are in accordance with the sustainability sector and our increasingly globalized and digitalized world.

It is our hope that this report will increase awareness amongst readers and those who are open to learning the potential of blockchain technology to drive positive social and environmental change. Inspiring others to explore all the ways in which they too can use this technology to improve their lives, uplift their community, and create a better world for all.

May this report help you explore, interrogate, and evaluate your own values to create your very own 'values compass'. Helping you forge a path ahead as the architects of the future, building a sustainable world. Using the best tools at hand, armed with the knowledge and power to effect change at the local and global level.

Sustainable ADA was honored to share this with you and encourages you to take the next steps in your blockchain 4 Good journey.

We plan to continue our work in making the Cardano Impact Report an annual release, on all the good happening in the Cardano ecosystem.

We are currently looking for experts, advisors, and stakeholders that can support our work and development going forward. Sustainable ADA is focused on many initiatives that are evolving and progressing.

As we mentioned in the report we are building a Proof of Impact Platform (PIP) and Domino DAO, as we seek to help connect impact organizations and NGOs to the capital and finance they need, using Web 3.0 digital tools that help them scale their impact sustainably. We have already begun this proof of concept impact work with the NFT4Good project Streets of ADA - A Samsudin Brothers Projek, and partnering with the Palawan NGO Network, made up of 39 NGOs and associations in Palawan, the Philippines.

If you are interested in collaborating or finding ways we can support one another please fill out a form on our website (www.SustainableADA.com).

"To be able to look back upon one's life in satisfaction, is to live twice." - ***Khalil Gibran***

"You are not a drop in the ocean. You are the entire ocean in a drop." - ***Rumi***

Sustainable ADA
Razali Samsudin & **Cole Bartlett**

(Art by Brenna Quinlan - illustrator and educator specializing in climate justice, sustainability and permaculture.)

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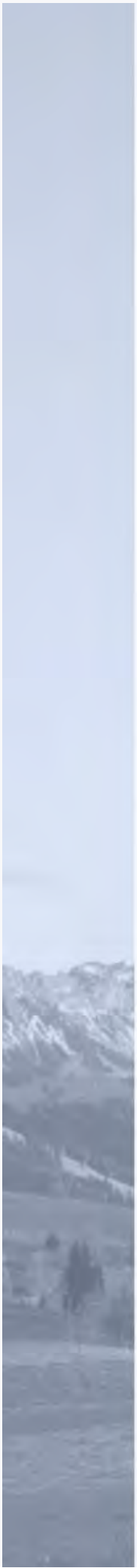

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