



# **Commercial White Paper**

January 2023



# Abstract

Reneum is an ecosystem to fund the energy transition by targeting its biggest obstacle: the access to capital, at scale. According to the International Energy Agency, “annual capital spending on clean energy in many markets needs to expand by more than seven times, to above US \$4 trillion per year, in order to put the world on track to reach net-zero emissions by 2050”.

Reneum offers an engaging and rewarding platform to better mobilize this money, issuing companies and citizens a mechanism to participate in the energy transition, sometimes, for the first time. By issuing digital renewable energy certificates (dRECs) representing the environmental benefit of green megawatt-hours to producers of renewable energy that they can sell for profits, Reneum offers producers an additional revenue stream to boost profitability and incentivize new investment. dRECs are purchased and retired by companies and citizens desiring climate action in exchange for a Renew Record, a receipt to prove climate impact that automatically directs funding to renewable energy project deployment and supports existing operations around the world.

Buyers purchase dRECs to neutralize their fossil fuel-powered energy footprint, as companies, for part of their Environmental, Social, Governance (ESG) strategies, or as concerned citizens because they desire #DirectClimateAction. Representing transparent proof-of-contribution to the renewable energy transition, Renew Records enable customers to trust their companies, aligning the incentives of people, planet and profit.

By creating an instrument to drive capital into the renewable energy market, Reneum is the easiest way to participate in the energy transition and make a tangible difference.





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# 1.0 Our Why

## Climate Apathy

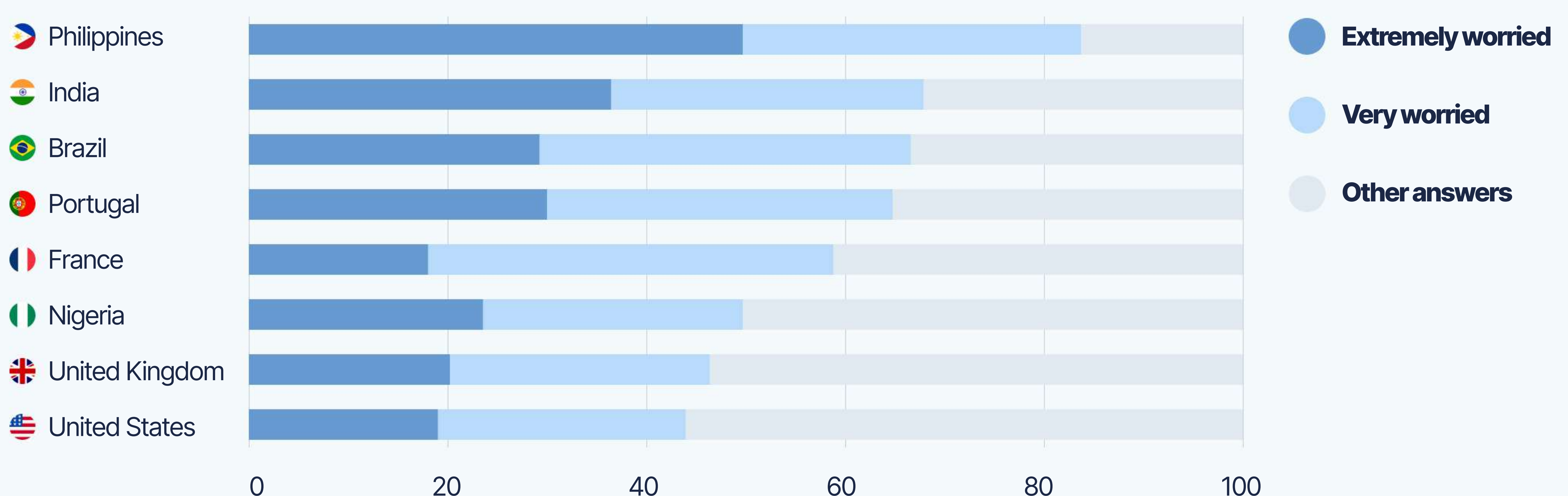
[Surveys](#) show that over 77% of young people think the future is “frightening” or are suffering from the newly identified clinical pathology diagnosed as Climate Anxiety. [A landmark study published in The Lancet](#) last year shows to what extent climate fear has taken hold in younger generations. Among the 10,000 16–25-year-olds surveyed in ten countries, almost 70 percent said they were either extremely worried or very worried about climate change. This number was even higher on average in developing countries in the global South that are expected to bear the brunt to climate change-related destruction. The emotional impact of our looming climate future is palpable, leaving nearly 40% of Gen Z’ers hesitant to have children. This climate-induced malaise stems from the observation that despite the scientific consensus on the need for massive transitions to heal our planet, climate action from governments has been largely insufficient.

The last 26 years of climate meetings have not depressed the emissions curve, at all. In fact, emissions are rising, and fossil fuel investments, thriving.

This disturbing reality manifests itself in the growing memberships of protest movements such as Extinction Rebellion, Just Stop Oil, and Fridays4Future around the world. Whilst they do offer citizens a voice, the action, is largely limited. Citizens worldwide have no tool to effect direct, tangible climate action themselves – they find themselves either attempting action through protest movements from the edge of an emotional precipice, or worse, in a state of hopeless apathy.

## The Extent of the Youth’s Climate Fear

Feelings about climate change among those aged 16-25 in selected countries in 2021 (in %)



10,000 respondents (16-25 y/o) in ten countries surveyed May 18 to June 7, 2021  
Source: The Lancet





1.0

# Our Why

## A Climate Emergency

The Intergovernmental Panel on Climate Change (IPCC) found that emissions from fossil fuels in some form, are the overwhelming cause of climate change, accounting for 89% of global CO<sub>2</sub>. Yet, according to the International Monetary Fund (IMF), we continue to subsidize the production and burning of coal, oil and gas to the extent of US \$5.9 trillion each year. That's 6.8% of global Gross Domestic Product (GDP). Or US \$11 million every minute making the climate emergency more acute. We are literally paying Big Oil to poison us. Worse still, subsidies are projected to rise to US \$6.4 trillion by 2025. The term 'subsidies' doesn't quite cut it when qualifying the harmful externalities; instead, they should be called out as an injunction to debase our lungs, our planet and our lives at the mercy of the oil, gas and coal industries.

What's worse, everyone is at it: not one of the 191 countries party to the 2015 Paris Agreement prices its fuels sufficiently, to reflect their true costs. Explicit subsidies make up US \$450 billion of the US \$5.9 trillion, with the balance being implicit subsidies like underpricing local air pollution and by-product downstream climate reparations. Cash subsidies however are projected by the IMF to increase and remain at US \$600 billion from 2022 through 2025. A bewildering reality in the midst of a climate emergency. Fossil fuel subsidies alone are four times the total annual investment into renewable energy.

Imagine what could be done if we reallocated those resources into clean technologies. Simply culling fossil fuel subsidies would singlehandedly cut global CO<sub>2</sub> emissions by 36% and prevent at least two million deaths a year from dirty air.

Furthermore, a report published by the International Energy Agency (IEA) found that "the world's energy and climate futures are increasingly hinged on whether emerging economies manage the energy transition successfully". Modeling for growth estimations in an unchanged energy landscape in these economies, most of which are located in Asia, Africa and Latin America, we will see a five billion-tonne increase in CO<sub>2</sub> released over the next two decades. In effect, our energy future hinges primarily on the decisions made in emerging market economies. That's a lot of pressure on countries who are already overwhelmed trying to navigate their own internal evolution and economic transformations.





1.0

# Our Why

## Climate Complexity

The silver lining of these menacing statistics on our energy realities, is that many of us are waking up to the realities of our climate futures, and are yearning for real climate impact. From student protests to visionary CEOs, much of the world is calculating how to avert a climate catastrophe. It turns out that fossil fuel use – one of the key drivers of climate change — is the most critical lever to switch.

So if we know all this already, how come we haven't already turned off the taps of fossil fuel reservoirs? Unfortunately, it's just not that simple.

You see, the economy and energy are tightly coupled. This means that we cannot disturb one without disturbing the other. And as developing countries become developed ones, their people are going to want to use more energy. And this is a right they deserve. But in this process, these country's leaders will face an opportunity cost between the high cost-base of renewables vs. their still cheaper hydrocarbon counterparts. Despite declining input costs, renewables are still a higher capital burden on developers, meaning there is a moral and practical tradeoff for these machines. Often the requisite green finance isn't available at scale to allow them to make the right choices, and incumbent fossil fuel lobbies make it very difficult for governments to roll-back subsidies.

As outlined in the IEA report, annual clean energy investment into emerging and developing economies must increase by more than seven times; an increase from less than US \$150 billion in 2020 to more than US \$1 trillion per year by 2030 in order to reach net-zero emissions by 2050.

These emerging markets need access to the financing and market knowhow to build their energy systems in a sustainable way. Keeping financing costs low is critical for cash-strapped countries so that they can make investments with long-term payoffs, and with upfront capital costs being up to 60% higher for renewables, the opportunity cost to invest in them over coal often favors the incumbents. The mobilization of capital markets to help emerging economies overcome the historically prohibitive financing hurdles they face, is mission critical.





1.0

# Our Why

## Bad Incentives

Even more concerning however, is the reality that developed economies are also not transitioning particularly effectively. Why? Because we aren't moving money fast enough. Why again? Because we don't have the right incentives.

In this profit-at-all-costs game of capitalism we are all playing, companies and governments are incentivized against making radical shifts in their business models and citizens are not incentivized to help. The dominant model of "move fast and break things" implicitly encourages companies to get to market fastest and dominate the most market share, irrespective of "externalities". This model actively disincentivizes a "move prudently and judiciously qualify second-and-third-order consequences", because companies who do, get eclipsed by those that don't. Being careful and conscientious is a terminal strategy in a capitalist game. Even the most benevolent businesses struggle to justify their impact initiatives when they threaten their bottom-line. At best, we see "opt-in" climate targets, which while noble and sincere, are ultimately relying on the good-will of their leaders to "do the right thing", but are often directly counter to their economic survival in an ever-increasingly competitive landscape. Doing the right thing in the short-term comes at a market disadvantage, meaning a steep opportunity cost that makes them lose out in the long-term. For companies to truly make good on their climate promises, they need Wall Street to embrace their idealism – until investors start measuring companies by their impact, we're all facing an uphill battle. This means that the common enemy of the climate is not bad business, it's bad incentives.

These bad incentives (also called "perverse incentives") lead to things like: the continued investment in the f-word (fossil fuels) by big banks, the reversal of the [UN's Race to Zero](#) commitments requiring financial firms to phase out fossil fuels at the risk of "antitrust" backlash, senator [pressure on law firms](#) to avoid advising clients on anything "ESG", and investors [withdrawing funds](#) from asset managers rejecting fossil fuels, over "fiduciary risk". Even the SEC is under fire for its "overly punitive" environmental disclosure requirements, with push-back from heavyweights across the nation.

But here's the thing: we actually have the money to make the transition. Solving climate change, permanently, is well within our economic reality. Requiring only [2% of global GDP](#), we have precedents for mobilizing far greater sums, far faster.

Nonetheless, moving trillions of dollars, about \$4 trillion per year, for the energy transition alone, is only possible with the support of big business. Responsible for about two-thirds of global emissions, companies need to be on board with this plan. Even if developed countries agreed to pay penance for their climate consequences via [reparations](#), we still won't make this bold move without big business. We need companies to coordinate for the climate, but we also need to make it make sense for them. Because right now, demanding climate action that directly interferes with their ability to survive (let alone thrive) in competitive markets, is inevitably a losing strategy. Appealing to climate justice doesn't move the needle, so we need to reframe the conversation around issues of self-interest: new incentives.





# 2.0

## The Zeitgeist

### The Green Generations

One of the challenges we face in the game of capitalism is that the pursuit of capital-at-all costs compels rational actors to do anything to keep their capital. This incentivizes bad policy and bad practices, as more is always more. A classic [coordination failure](#), if you don't play by these rules, you lose to someone who will. But since this game is all about maximizing the bottom line, appealing to (and keeping) customers is the most important strategy of all. Since companies are the biggest owners of capital and companies need customers to keep their capital, customers might be the very stakeholders we can leverage to shift these game dynamics. Offering new incentives to customers to choose their companies, we can potentially make a triple bottom line a rational decision, not just a moral one.

Our proposition at Reneum is that the future of company success is going to come down to customers. Customer preferences are changing in the same direction as the planet, and the companies that win in a changing climate game, will be those that pay attention to their customer's values. The [Doomer](#), the [Zoomer and Alpha](#) generations are the primary purchasers in the next decade, with all three having grown up in a world where climate change is not a distant threat, but a looming reality. These ascending leaders have environmental values so deeply embedded in the fabric of their DNA they even have their own clinical pathology of climate anxiety.

But don't take our word for it, canceling companies who don't care about the climate is very much en vogue. Pressure is mounting at the climate justice front-line. Boycotts and [buycotts](#) by environmental activists pressuring corporations and industries to change their policies are increasingly common. Public support for measures like a carbon tax or Green New Deal strike a shocking [66-90% approval rating](#). A world first this year at COP27, the youth constituency of the UNFCCC called YOUNGO, secured official recognition as stakeholders in designing and implementing climate policies. Even the beneficiaries of America's largest oil fortunes are changing lanes; the Getty's, the Kennedy's and the [Rockefeller's](#), are [going green](#). Citing a "moral obligation", they're activists against their own heritage, refusing to accept the excuses of the adults whose "lazy approach to climate is leading us off a cliff. The era of gradualism in [environmental activism](#) is over, says Climate Emergency Fund Co-Founder, Trevor Nielson. They're not going to sit around and wait for us Boomers to burn down their planet; they seek agency and action, right now, and they want their companies to reflect these values."





2.0

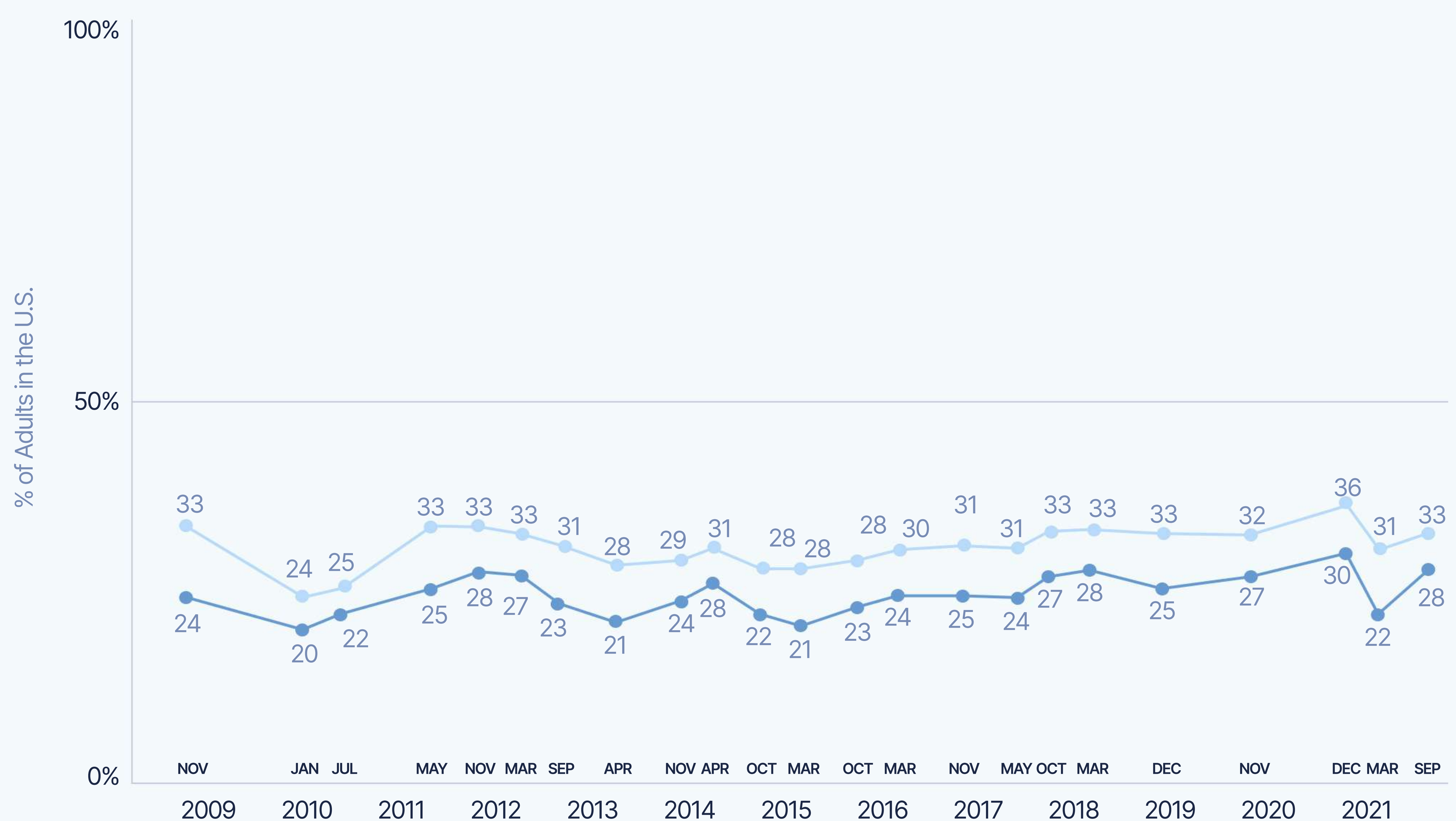
# The Zeitgeist

**One in three Americans say they have engaged in consumer activism on global warming**

**% one or more times**

● **Rewarded companies that are taking steps to reduce global warming by buying their products**

● **Punished companies that are opposing steps to reduce global warming by NOT buying their products**



**Over the past 12 months, how many times have you done the following?**

September 2021





# 2.0

## The Zeitgeist

### Ethical Consumerism

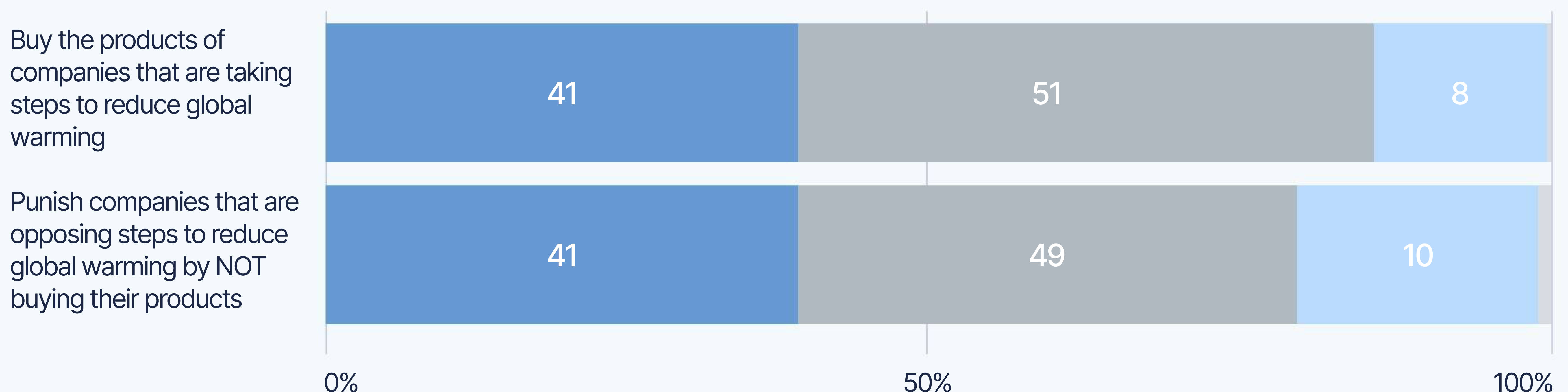
With climate in the zeitgeist, formerly fringe activist sentiments are becoming mainstream. Consumers and employees are pressuring for higher ethical standards, as big brands increasingly are forced to defend their positions. Largely values-driven generations, empty promises or virtue-signaling are no longer tolerated. People want proof that their leaders are behind them, meaning companies are going to be expected to demonstrate real proof-of-impact. Consider the success of the Buycott movement that helped customers ascertain whether a product aligns to their values.

Proving that customers really do want to “vote with their wallet”, ethical shopping and proof-of-provenance are going hand-in-hand.

By 2030, the Zoomer, Doomer and Alpha generations will comprise two-thirds of the world’s adults, meaning that smart businesses need to think smart about their what their customers care about. Showing customers who care that you care, keeps customers coming. Which means that finally the incentives of people, planet and profit might finally be aligned. When engaging in environmental ethics actually grows market share rather than threatens it, even CFOs get on board.

### About four in ten Americans intend to engage in consumer activism on global warming more frequently in the next year

- More frequently than you are now
- Less frequently than you are now
- About the same as you are now
- No response



**Over the next 12 months, would you like to punish companies that are opposing steps to reduce global warming by NOT buying their products?**

**Over the next 12 months, do you intend to buy the products of companies that are taking steps to reduce global warming?**

September 2021





2.0

# The Zeitgeist

## Climate Action = Company Loyalty

Many companies struggle with customer connection and long-term sentiment in a way that triggers salient emotive experiences. Replacements and substitutes leave brands in a constant competition for attention and loyalty, and push-marketing forms only weak bonds. Brands are better off investing in the values of their customers, signaling a synergistic alignment that establishes true loyalty legacy. After all, the biggest existential challenge both companies and customers face, is climate change. So the leading brands in this next generation will be the ones that prove their concern for the climate, organically amplifying brand equity and benefitting from halo exposure to all things clean.

Obviously this perspective is not new news, considering the hundreds of Fortune 500s that have announced [Net Zero](#) and [clean energy](#) targets since the Paris Accord. So why have companies failed to reap the social benefits of these climate actions? We believe it is because they have left their key target audience, their consumer, stranded from the conversation. Much of this well-intended corporate climate action is delivered unidirectionally, and measured, unilaterally. Customers are not included in the process, nor do they have any means to verify or validate the claims.

A [Deloitte survey](#) found that customers overwhelmingly disregard or even outright denounce companies' climate announcements, because they: 1) were not aware of their commitments to begin with; or 2) have been excluded from defining the commitments; or 3) felt they had no way to vote on climate action; or 4) did not trust the impact of the commitments; or 5) weren't rewarded for choosing companies with net zero commitments.

The reality is that customers have no measurable and consistent tool to know what businesses are doing or whether their impact is real, so they can't possibly believe the promises. With no accessible, trusted, or recognizable symbol of proof of climate impact, customers lack a mechanism to rate their companies. Existing tools for companies to show their impact are either unsexy or unusable. And existing tools for citizens are unreliable or untrusted. While apps like Buycott are noteworthy, their clunky interfaces and gaps in data prevent their ubiquity. There is no globally-recognizable label for the green economy, one that proves green values and green growth. Nothing that aligns companies and customers in the race against the big F! As long as there is no incentive to create a movement towards a unified green outcome, there won't be a movement towards a united green outcome. What we need is a permanent and provable social signal of "proof-of-impact" to evidence contribution and assure claims.

### Climate anxiety is also changing consumer behavior

Source: IBM Research Insights - Meet the 2020 Consumers Driving Change

77%

"Sustainable products and environmentally responsible brands are important to me"

70%

"I'm willing to pay a premium price for sustainable brands"

57%

"I'm willing to change my purchasing habits to reduce environmental impact"





# 2.0

## The Zeitgeist

### Social Proof-of-Impact

We have been participating in various forms of social proof for hominoid history. Consider the merit badges donned proudly by groups ranging from Boy Scouts to decorated Generals. Anthropologically significant as social signals, merit badges confer a sense of status, leadership, importance, or trust. Proving special knowledge or extraordinary contribution, merit badges come in many forms, but are highly sought when they demonstrate something a community values. Proof-of-service, contribution, achievement, or award, they are reinforcers of, and rewards for, socially valuable behavior. Symbolic of status that must be earned, these covetable collectibles carry a weight of cultural capital.

Cultural capital has arguably never been more relevant as this past decade. Codifying a new form capital – “status capital” – social media fomented the first uniform quantification of personal market caps. Denominated in the currency of followers, hearts and check marks, the blue-chip entities on this exchange became credentialized and hence, valued, for nothing more than their ability to accrue virtual “likes”. Similarly purposeless in their core nature, memetic trends like the utility-less social flexes of virtual goods (a \$54 billion per year industry), are purely status for status-sake. Personal collections displayed on public profiles become the ultimate manifestation of cultural values-as-goods, irrespective of true utility or real-world use.

The hype-train takes off, FOMO kicks in, and everyone wants the next Bored Ape Yacht Club to display on their Twitter feed or Supreme sneaker to show they’re part of the club. It’s dopamine supreme as our limbic brains are hacked, compelling us to accumulate a war-chest of anything that makes us “matter”. Devoid of any official designation or reputable coordination mechanism, we default to these low-fidelity proxies for true social (and market) value. Our herd instincts hijacked to optimize for the status machine, we are trapped on the cultural merry-go-round of a more-of-more-is-more world.

But what if more actually meant better? In many social circles, green consumption is viewed as morally correct, thereby providing both social rewards, in terms of community and sense of belonging, and personal identity rewards, in terms of status and prestige. So what if we could program status into something more useful than stars and likes, and instead, into positive climate action? How can we leverage the mechanism of the badge economy and cultural capital to empower changemakers, distributing value and creating impact along the way? Can we create a positive feedback loop that interrupts the transactional nature of our business bucks, using badges to establish loyalty, commitment, and impact?





# 3.0

## The Opportunity

### Perverse Incentives to Positive Incentives

How can we rewrite the game of capitalism such that the rules benefited all of people, planet and profit? What if we could program our economic game for a regenerative outcome rather than an exploitive or an extractive one? What if we could optimize incentives to reward planetary protection rather than its extraction? This is where [token economies](#) come in. A trojan horse to shift the power dynamics within this game of capitalism.

Following the dictum of token economies (or Tokenomics in the Web3 universe), a game (or company or collective or community – any organized group of people) can predefine rules of engagement and establish incentives to encourage or discourage various player actions. Leveraging the mechanics of the blockchain, token economies can be applied to any form of organization, whether formal or informal, but are effectively the pre-emptive writing of rules and correlating rewards or punishments for following the rules. Unlike the pre-Web3 world, blockchain can facilitate games, companies, countries and collectives in implementing rules through code, programmatically encoding explicit, predictable and immutable outcomes. Akin to building micro-economic systems from scratch, token economies create transparent mechanisms to distribute value and control to players (users, customers, citizens – anyone playing the game) who want to participate and can prove they've contributed.

Finally with token economies, we can design incentives that align the interests of commerce and the communities being coordinated, building in rules that reflect player values, whatever they may be. With these technologies, it wouldn't be so complicated to design a programmatically-encoded [stakeholder capitalist](#) model, rather than a de facto shareholder capitalist one. Token economies give us the opportunity to design a “can't be evil” company or community, not just a “don't be evil” one.

Tokens can be issued in many forms, both economic – as proxies for money – or non-economic – as proxies for some other desirable, non-monetary reward. We've seen the economic model play out in various notable cryptocurrency projects, but we are just in the nascent stage of using token rewards more akin to traditional commercial and social mechanics – the potential of tokens as status symbols, to compel community cohesion, as individual identity, for social reputation and for special privileges. To us, the most exciting use case for token economies is the opportunity to incentivize long-term thinking. The opportunity of token economies that we see at Reneum, is to build in incentives that compel us towards collective solutions. Shifting away from the singular incentive of profit that portends a race-to-the-bottom, and instead, towards a regenerative one, that results in collective restoration. We can literally program digital tokens to reward ecological protection and disincentivize extraction. We can invert the incentives to make climate care a reward rather than climate change a reckoning.





# 3.0

## The Opportunity

### Climate Finance Markets

We referred previously to the missing capital in the energy transition movement; the money that has not made its way to the markets in need. The cause is a smorgasbord of the complex challenges elucidated above, but a potential solution is slightly less daunting. Considering the convergence of the social trend towards climate care, the increasing demand for status-orientation, and the mechanical opportunities like Tokenomics presented by blockchain technologies, we see a striking opportunity to reshape an old model onto a new frame. Enter: environmental markets.

Environmental instruments like carbon offsets and Renewable Energy Certificates (RECs) have been around for decades, aiming at reappropriating capital to worthy climate causes via market mechanisms. Their goal is to circumvent the crawling pace at which government finance and Development Finance Institutions (DFIs) tend to maneuver in, and move money faster. You're probably familiar with carbon offsets as they've landed center stage in some major climate negotiations, but RECs are the lesser known (yet more appropriate) instrument for the energy transition. Conceptually similar, they act like subsidies to renewable energy producers issued by private companies rather than governments, and entitle companies purchasing them to contribute to their climate commitments.

We've seen the benefit to renewable energy reaching up to a 20% subsidy, which brings renewables in line with existing fossil fuel subsidies. This is significant because of the competitive nature of energy retail; the cheaper the energy producer can sell their KWhs to the grid, the more likely they are to be selected.

Unlike their cousin the carbon offset, RECs provide a direct source of revenue to an easily quantifiable, immediately available, renewable energy project. RECs represent (mostly) solar and wind power generated and sold, greening the grid and ultimately supporting the displacement of oil, gas and coal. Compared to offsets – which refer to the abatement of one tonne of CO<sub>2</sub> from the atmosphere and may represent many types of carbon 'drawdown' initiatives which can make their impact scientifically complex to calculate – RECs are publicly measurable and straightforward to assure environmental integrity. The broad application and abstruse nature of carbon offsets has branded them agents of greenwashing and enabled severe market manipulation, but being publicly-monitored, predictably quantifiable, physical assets, RECs are largely inoculated from these risks.





# 3.0

## The Opportunity

### Supporting the Energy Transition

Renewable energy uptake is often hamstrung by the inability of developers to secure financing from capital markets, particularly in many of the markets that most need and want it. They also suffer from the asymmetries of subsidies in a highly competitive energy landscape – the reality is that fossil fuels still receive the bulk of subsidies globally, around 10:1 that of their clean energy counterparts. These subsidies allow for the cheapening of energy output – the retail price of the power – below what would otherwise be economically-viable, establishing an unnaturally-competitive price for fossil fuel incumbents that renewable developers often cannot meet. And since renewables still carry a high upfront cost of development, the economic profile favors new investment in fossil fuels in many markets. This means that the energy transition still faces very real economic barriers to scale.

RECs can bridge the financing gap and play a crucial role in driving necessary investment. Acting like a subsidy from private enterprise rather than public funding, a buoyant RECs market materially influences the economics of renewable development. With proceeds set directly to the renewable energy project owners—solar and wind farms, geothermal and run-of-the-river hydro plants globally—RECs support developers with operating resources, provide a secure revenue stream that improves their financial risk profile to investors, help them to become cost-competitive with their fossil fuel counterparts, or help secure additional capital pre-construction. They equally accelerate new deployment of renewables by boosting profitability of renewables, sending a price signal to new entrants and overseas investors that there's renewable energy demand in the market.





# 3.0

## The Opportunity

### Thinking from First Principles

Clearly-defined, public and transparent environmental instruments like RECs have the potential to truly stimulate and accelerate the need for clean energy capital. As John Kerry, the U.S. Special Presidential Envoy for Climate stated at COP27, the:

“environmental markets can play a significant role in catalyzing sustainable energy deployment by directing private capital into climate action, improving global energy security, providing diversified incentive structures, especially in developing countries, and providing an impetus for clean energy markets when the price economics looks less compelling – as is the case today.”

While theoretically viable however, traditional RECs, traded over-the-counter (OTC) across multiple layers of intermediaries, have sadly failed in their purpose. Similar to offsets, traditional RECs continue to rely on anachronistic models: analogue, centralized and no longer fit-for-purpose. Structural limitations like arbitrary geographic restrictions, opaque trading registries, fragmented and bureaucratic issuance, and a lack of standards interoperability, have together prevented ubiquitous adoption.

Instead, we need a global mechanism with integrity to democratize access, accelerate renewable energy deployment and redistribute finance to finally align incentives with objectives. Furthering impact, we see an opportunity to unleash the potential of emerging markets, prioritizing inclusion of renewable energy projects in under-served markets, sometimes for the first time.

In auditing potential solutions to drive a wall of money to the renewable energy developers on the ground, Reneum concluded that a buoyant and trusted REC market was the most efficient option. Designed with integrity, a reputable, effective and trusted REC market can unleash the energy transition potential, particularly in emerging markets, where capital is skittish and producers are struggling.

So when we decided to reinvent a REC market, we decided to go back to first principles, hypothesizing on the most critical components of a successful market, and designed a new model based around those targets. Based on the concepts of traditional environmental markets, Reneum maintains the core ethos of efficiently distributing capital to renewable energy producers worldwide. It also follows all the industry standards for verifying climate impact, outlined in its Certification Methodology, and to ensure the highest environmental integrity. But it differs in a few key ways as well. Utilizing decentralized ledger (blockchain) technologies, Reneum can transcend the limitations of legacy market RECs.

Reneum is a marketplace ecosystem that opens up access to all renewable energy via Digital RECs, purchased in order to accelerate the energy transition. Unlike other environmental instruments on the blockchain which operate from a skeuomorphic vision (simply layering analogue products on top of digital infrastructure), Reneum is the first digitally native, vertically-integrated marketplace that enables unrestricted access to renewable energy.





# 4.0

## Our What

### From Financial Instruments to Financially-Instrumental

Environmental markets have been around for decades but they're still not working. Centralized databases, infused with their related bureaucratic processes and non-interoperable nature, have stifled adoption and led to bottlenecks at scale.

From a user perspective, there are minimal differences between using a traditional centralized registry and a blockchain-based platform, but the data management and reporting potential with blockchain opens up a world of benefits previously unimaginable via centralized registries.

Utilizing blockchain technology to transcend the limitations of the REC market, Reneum allows for:

- Being the first marketplace to reach all corners of the world, unrestricted by geographical boundaries.
- By aggregating RECs on a single public marketplace, Reneum allows unrestricted purchasing, meaning there is no geographical matching required, establishing a more liquid market for project developers operating in countries with historically limited demand.
- Performing the role of both Certifier and Marketplace, Reneum's vertically-integrated model reduces intermediary costs and time delays for projects in monetizing these instruments.

- Full proof-of-provenance, allowing all parties including project owners, buyers, and third-party registries to investigate the source of the Environmental Attribute (EA), effectively providing them with the opportunity to conduct their own diligence of Reneum's verification and certification.
- Open-source software to enable automated certification of these credits, ultimately replacing the certifiers in order to reach mass adoption.
- Allowing real price discovery based on true market value rather than artificial OTC constraints or predatory broker pricing.
- Transparency of funding flows with transactions managed on-chain, meaning projects automatically receive 90% of gross transaction value.
- Programmatic Payments mean that project owners need not wait for their funds based on either bank wire delays nor human error. Payments for transactions are made automatically and immediately to project owners upon sale based on a verifiable algorithmic process.





4.0

# Our What

## From Financial Instruments to Financially-Instrumental

	Traditional RECs	Reneum dRECs
Transaction Process	Purchased OTC via brokers requiring complex and lengthy contract negotiations via multiple intermediaries.	dRECs can be purchased on the Reneum marketplace, but also are enabled for off market and bespoke solutions.
User-Experience	RECs are only available via analogue UX systems that are opaque, cumbersome, and outdated for digital natives (more like Web1 than Web3).	Reneum was designed following dozens of market interviews to understand the true needs of the market. It is entirely digitally-native.
REC Issuance	Layers of centralized bureaucracy, regional restrictions and compliance processes lead to long delays and bottlenecks at scale.	dRECs are issued automatically once certification takes place, based on algorithmically-programmed smart contracts.
Transparency	RECs are transacted on private registries with no interoperability or public ledger access, meaning the risk of double counting (or double dipping) via other registries is high.	All dREC transactions are listed on our public marketplace ledger for complete transparency and all Renew Records include access to full proof-of-provenance data including due diligence.
Project Certification	Verification and certification are cost prohibitive and geographically limited, prohibiting suppliers in emerging markets from participation in many cases.	Verification is done via a Supervisory Control and Data Acquisition (SCADA) system and satellite imagery combined with un-falsifiable documentation, expediting certification.





4.0

# Our What

## Reneum for Proof-of-Impact – The Renew Record

So now that we have discussed the demand for action and the mechanism with which we can prove action, we bring you Reneum’s Renew Record. A type of Impact Certificate, Renew Records are a green label representing proof-of-contribution to the energy transition, the Fair Trade label of the green economy. A new green standard that proves climate impact.

The Renew Record is issued by Reneum as a Soulbound Token, earned by anyone funding a green energy project. These non-transferrable and collectible labels are like climate trophies, visually representing the attributes of specific renewable energy projects funded, including provenance tagged to the metadata so the buyer can transparently demonstrate their true climate impact. Green energy projects to fund are audited by Reneum, aggregated on the Reneum Marketplace, and offered to companies and citizens seeking to demonstrate their commitment to the green movement. Projects available for funding are located in emerging markets around the world where the energy transition has been slow or faces obstacles from fossil fuel incumbents. An evolution from what is formerly known as a Renewable Energy Certificate (REC), quantifying the “environmental benefit” of producing green energy over fossil fuels, Reneum’s Green Proof is a token that symbolizes a company or citizen has elected to fund green energy, helping to accelerate the deployment of renewable energy projects in markets.

A positively-reinforcing connector, the Reneum ecosystem is a digital platform building trust between project developers who need funding, companies who can provide the funding in exchange for their verified green proof, and customers who recognize the green label as indicative of a company’s values that they also share. It provides end-to-end support to everyone who desires climate impact but wants clear proof of impact. The goal is to mobilize the \$1.7 trillion per year required to fund the energy transition, incentivize long-term action, establish a true price for green energy that is reflective of its future role in climate adaptation, and to help companies signal to their customers that they are committed to this cause. With Reneum, companies and citizens join forces in the green movement, mutually benefitting from the contribution to the energy transition. Helping everyone participate in the climate solution, in a new green economy, Reneum is creating a movement of climate superheroes, making climate impact not just admirable, but aspirational and actionable.





4.0

# Our What

## Reneum for Proof-of-Impact – The Renew Record

### For renewables:

Acting like a subsidy for renewable energy producers to support profitability and signal demand, Renew Records assign economic value to the environmental benefit of producing renewable energy over fossil fuels. By establishing market value for this benefit, Reneum harnesses dormant capital from companies and citizens to fund renewable projects, mobilizing a wall of money towards the energy transition. Funding both existing renewable projects and supporting the development of new ones, Reneum is a tool to accelerate the global energy transition.

### For companies:

Reneum provides industry expertise & buttoned-up, revolutionary, capital allocation mechanism, to bridge the gap between people, planet and profit. Providing the first on-chain green impact score, Renew Records establish “proof-of-impact”, signalling a publicly verifiable commitment to the energy transition. Companies will proudly bear the logo of the verified green proof on their website, digital assets and products. Since we know that your well-intended Net Zero or impact commitments often go unnoticed or are under-appreciated by your customers, with [1 in 2 customers](#) either unaware or untrusting of impact commitments, Reneum’s Renew Record logo offers you a new way to display and defend your commitments. The label becomes the movement. The Renew Record logo will be connected to your company’s interactive dashboard with Reneum, allowing any customer or partner to click into your Reneum account and verify your renewable energy contribution, in real-time. Customers won’t need to “take your word for it”, rather can look under the hood and see the true environmental impact for themselves.





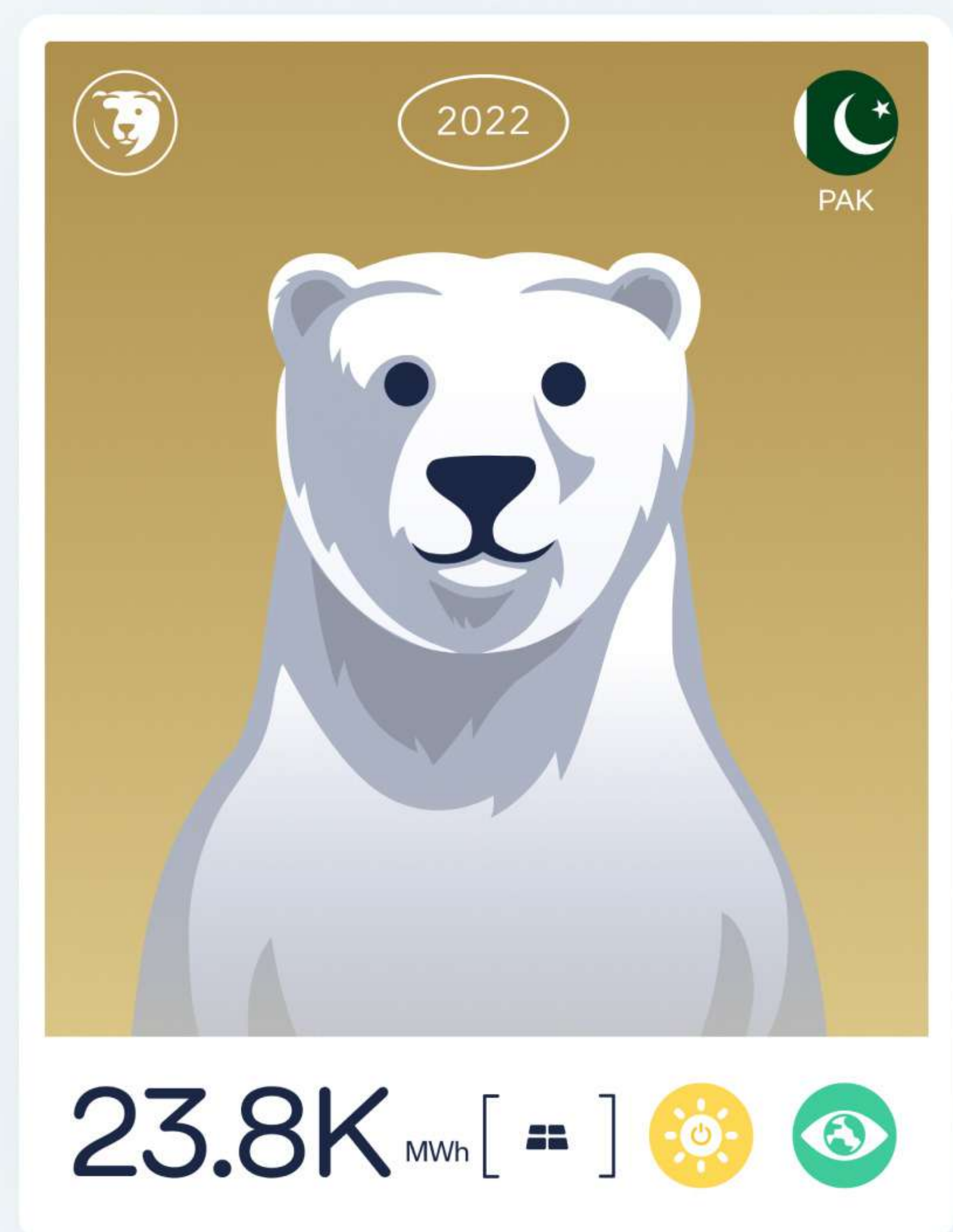
4.0

# Our What

## Reneum for Proof-of-Impact – The Renew Record

### For citizens

We see you demanding change, but protests and legal action are slow and indirect. Reneum is a trusted and easy mechanism to direct climate action, either by directly buying Renew Records to receive your own SBT, or by participating in the network of brands who already own Renew Records. You can finally meaningfully “vote with your wallet”, opting for products that align to your values as companies and brands you care about are participating in the Reneum ecosystem to demonstrate their values. Since we know [labeling is confusing](#), Reneum is making validating and understanding green, very clear. Reneum’s Renew Record leverages new technology to verify every clean megawatt-hour produced and trace the journey of every single dollar spent.





4.0

## Our What

### Reneum 2050

As we look forward to 2050 we see an opportunity to mobilize individual action at scale in the climate crisis. Reneum's mission is ultimately to accelerate the energy transition. Blockchain offers the most promising mechanism for capital reallocation and that can be optimized far beyond the offsetting of environmental debt. Renewable energy is just one climate instrument, one lever we can pull to influence the climate crisis. Reneum sees an opportunity to parlay its technology platform and utilize the token mechanics to create additional environmental instruments and climate verticals. We see Reneum's long-term potential as a fundraising tool for environmental impact—ocean footprint, air pollution, efficiency projects, soil sequestration projects—that can be scaled up much in the way Amazon transitioned from books to an everything marketplace. Once the renewable problem is solved, we move on to other climate causes.





# 5.0 Projects

## Qualified Projects

Projects may apply to be certified on the [Reneum.com/producers](https://reneum.com/producers) website and initially will be prioritized according to the market demand and regional support for renewable energy. This means that projects in markets with no government subsidies or where fossil fuels are explicitly supported, will be considered top priority. Projects in markets with no existing REC framework will also be prioritized, to help them access environmental markets for the first time.

Reneum does not expressly disqualify any projects unless they operate in countries with a government-mandated REC market or have renewable portfolio standards, to avoid double-counting.





# 5.0

## Projects

### Measurement, Reporting and Verification (MRV)

Reneum's certification standard, verification and approval procedures are published on our website, but it's worth noting that Reneum abides by industry best practices regarding certification requirements. Reneum validates project legitimacy via satellite imagery, publicly available meter readings, power-purchase agreements (PPAs) and assessment of historical crediting via other standards. Once approved, Reneum does spot audits of generation data by reconciling meter readings with our accrued inventory to ensure projects are credited for the precise MWh generated. The audit trail is stored in a unique memo in the metadata of the underlying blockchain ledger using an instrument called a Soulbound Token (SBT). This allows Reneum's dRECs to be monitored and recorded in the public ledger with unparalleled data integrity.

Reneum's certification methodology is audited and qualified as an internationally-recognized certification process. The certification process validates all of the following criteria:

1. The project is currently generating clean energy as per the eligibility requirements.
2. Satellite imagery validates project location and estimates potential output.
3. Energy produced is verified via six-monthly historical meter readings.
4. End consumer of power is not relevant for Reneum but the project must produce its Power Purchase Agreement (PPA) or offtake agreement to evidence attribute ownership.
5. All projects must contractually commit to no future double counting.
6. All projects must produce any historical carbon or REC certification and transaction history.
7. All projects must share plant schematics and monitoring system for online integration.
8. API SCADA connection to transmit live generation data, preventing any meter tampering or data adjustment, is best practice, though Reneum is exploring IOT integration devices for projects unable to provide API access.
9. In countries where generation data is publicly available, a project's existence and history will be confirmed through the local regulator's website.

For more on the certification methodology, see the [reneum.com](https://reneum.com) website for a downloadable manual.





# 5.0

## Projects

### Certification Process

Distinct from legacy markets which intermediate the verification, issuance and transaction of RECs by discrete stakeholders, Reneum provides a streamlined service for project owners as a vertically-integrated solution, meaning Reneum offers a one-stop-shop for project developers to be verified and to monetize their dRECs, for an improved user-experience. The suite of services Reneum provides includes the following:

#### Registration Services:

- Independent Power Producers or renewable asset owners submit to register a discrete project via Reneum's online web portal
- Reneum's key account manager will initiate an interview with the company or the project manager to understand the scope of the project applying for certification
- The project will be evaluated to ensure the following:
  - The project currently generates renewable energy from an eligible technology source (solar PV, on-and-offshore wind, run-of-the-river hydro, geothermal, solar thermal, clean hydrogen and tidal)

- The project demonstrates ownership of the Renewable Energy Certificates (also called Environmental Attributes) or provides an agreement of profit-sharing with co-beneficiaries (ie, in the case of government entitlement or co-project ownership)
- Demonstrates that they are not currently earning another form of REC or carbon offset for the period of registration under evaluation

- Unlike legacy markets, there are no fees for application or registration. This process is intended to be a frictionless user experience for project owners
- Project review and assessment for registration occurs within 2 business days of application. Subject to review and initial approval, an account profile will be created by the Reneum account manager and projects will be requested to complete additional document submissions.

The Reneum Platform allows registration of services under the (RENU) Reneum dREC standard free of charge, with no penalty for cancellation. For more details regarding the onboarding process please see [here](#).





# 5.0

## Projects

### Certification Process

#### Reneum dREC Issuance Services:

- Following the initial introduction meeting and subject to initial assessment of project eligibility, Reneum will undertake a robust verification process, auditing project documentation and site assessment
  - Project owner or local site manager will provide Reneum with meter readings, historical invoices, offtake agreement and any previous REC or carbon documentation via their account profile on Reneum's online web portal
  - A professional environmental engineer will assess these documents and may request additional information qualifying the project, or may immediately approve the certification in the online web portal
  - Within 15 days of successfully registering the project under Reneum's digital REC Standard, a letter notifying approval of certification will be issued, along with an evaluation of the monetary value of the RECs generated in the first year, and for all prior years entitled. This may occur from COD, or as early as 2018, whichever is later.
  - Upon approval of certification, a project owner will be requested to update their Reneum web profile with payment details for automatic deposits upon dREC transaction (typically projects include bank deposit details but may also integrate a cryptocurrency wallet if preferred)
  - Unlike legacy markets, will be no additional costs for the process of audit and certification
- The Reneum Platform allows Issuance services under the dREC standard free of charge.





# 5.0

## Projects

### Certification Process

#### Reneum's transaction services:

- Following certification, the project's profile in the Reneum web portal will be activated. Project owners may designate any number of internal team members to manage the profile, which will host all existing documentation per the registration process, and will reflect the ongoing monitoring of dRECs available for transaction.
- This dashboard will show all of the following:
  - The accrued dRECs (through to present day) from date of registration
  - RECs sold via the marketplace updated in real-time
  - Any future RECs that might be on hold in the event of a forward contract negotiated bilaterally
  - The current price dRECs are being traded at on the Reneum marketplace
- The online profile will also allow for projects to pause marketplace transactions in the event they wish to sell RECs via other channels or wait for a different price.
- Upon transaction, a platform fee of 10% of the gross Reneum's dREC value will be automatically deducted as the only platform fee. The fee is a flat rate across all Users, regardless of technology, service and geography of the User's Facilities.





# 5.0 Projects

## Project Onboarding Flow

### Days 1-15: Registration, Assessment and Certification

1. Project applies online via registration form and submits site data and contracts
2. Reneum undertakes audit / due diligence processes according to best practices in REC certification to ensure authenticity and environmental impact
2. Provenance package created and attached to project profile for proof-of-impact

### Days 15-30: Onboarding

1. Once approved, project's monitoring system is connected via API to Reneum web app
2. Create project profile with Reneum and select payment methods
3. Generation data published to site and monitored
4. dRECs issued monthly retroactively based on accrued MWh and monitored in account

### Monthly Thereafter

1. dRECs are sold directly on the Reneum marketplace and available for any buyer or individual to purchase
2. Upon purchase, payment is remitted to project directly. Project receives 90% of gross transaction price directly into payment method selected
3. Transaction history fully available in account and on public ledger

Note: Timelines are estimated for a project onboarded directly by the producer to the platform and might incur in changes depending on resource availability on the producer's side to provide the right documentation and apply the required configuration according to timeline.





# 6.0 Compliance

## Project Onboarding Flow

### Double Counting

Projects are contractually obliged to notify Reneum in advance of registration of any credit registration or sales via third-party registries from any form of environmental credits, including carbon offsets. Reneum will only issue tokens to projects for periods that have not already been certified by other registries or standards.

Reneum also conducts a robust initial project inspection to verify its data and environmental integrity and all provided documentation aligns to their registration data. Once approved, the project's monitoring system will be linked to the Reneum platform directly, enabling Reneum to monitor the MWhs generated in real-time. All project inspection data will be included in the project's online dashboard, similar to a data room, and available for buyers to download to conduct their own due diligence.

As an added layer of security, projects are monitored retroactively on an annual basis through spot audits conducted by certified engineers.

Lastly, the Reneum Marketplace publishes the transaction history of the complete registry, along with detailed project data is on its public dashboard, allowing anyone to cross-reference Reneum's transaction feed. This is an industry-first, and is what we believe to be best practice in the prevention of double counting.

Any double dippers will be disqualified and immediately terminated from Reneum, their present and past tokens will be cancelled, and a public statement will be made so other organizations may take appropriate action.





# 6.0

## Compliance

### Project Onboarding Flow

#### Additionality

Reneum supports IRENA's recommendations for RECs backed by the non-power attributes of renewable energy. Reneum is designed to encourage the development of new renewable energy projects, particularly in countries and regions that have no support mechanisms in place for them, that do not reward the climate benefits of renewable electricity and/or actively support fossil fuel-generated power over clean alternatives.

Reneum therefore exists to support the accelerated deployment of additional renewable energy projects that would not otherwise happen.

At the project level, however, there is no requirement for projects looking to receive dRECs to demonstrate additionality explicitly. This is because:

- Renewable energy consumption is currently at 18%, versus the 70-85% required by 2050.
- Renewable energy projects are still disadvantaged with respect to fossil fuel alternatives in many countries with fossil fuel subsidies deeply embedded in public spending budgets.
- As countries introduce renewable energy obligations, dRECs will either be replaced by national RECs or adopted by said countries as part of their mechanisms for demonstrating compliance.

- The renewable energy community in many countries still has no other means to bring their environmental attributes to market.

Though 'additionality' is not technically required for dRECs, Reneum undertakes the following best practices to ensure it presents the most material impact to renewable energy deployment:

1. Recommending buyers to purchase dRECs from new projects
2. Prioritizing project registration in under-developed or less structured markets
3. Working with utilities to create green tariff options that bundle energy with the associated dRECs
4. Work with buyers and financial intermediaries to improve project bankability by accepting Reneum cashflows
5. Issuing dRECs only to projects that do not receive other certificates or tokens that embody their environmental attributes
6. Closely following accounting requirements as are emerging under the Paris Agreement to prevent double counting of results in more than one country





# 6.0

## Compliance

### Project Onboarding Flow

#### Regulatory Environment

Considering that buyers purchase dRECs in order to green their energy footprint, they are intrinsically designed to be burned, representing retirement of the dRECs. Therefore, they do not fall under the scope of securities regulations and are not subject to standard financial instrument regulations.

For project owners in countries where cryptocurrency is either illegal or regulation is undetermined, project owners can select a fiat currency payment integration. This limits any liability on the part of the project. Operationally, this means that Reneum will manage all transactions on the project's behalf, resulting in no cryptocurrency exposure whatsoever. All that said, Reneum advises all buyers to seek compliance and legal support in their local jurisdiction to understand the risks of interacting with cryptocurrencies before engaging with the platform.





# 7.0

## The Team

### The People Behind Us



#### **Brianna Welsh**

Co-Founder and Chief Executive Officer

Brianna has been at the helm of Reneum since project inception, having worked with Assaad since early 2018. She also managed Sindicatum Renewable Energy's carbon and REC portfolios while trading as a broker for third-parties. Brianna formerly worked in emerging markets infrastructure in M&A in various capacities and has been actively involved in crypto since 2016.

She has worked and invested in blockchain since 2016, driven by the commitment to building a sustainable and climate-positive economy. She manages all things Reneum and is passionate about using tech for good. She is an ambassador for the UNDP's think-thank on deep tech's applications in emerging markets and sits in the Clinton Global Initiative's young leader committee. Having worked and lived on six continents, she is an avid explorer, surfer and skier.



#### **Assaad Razzouk**

Founder, Non-Executive Director

A climate activist, renewable energy investor and a climate podcaster, Reneum was Assaad's inception after witnessing the supreme dysfunction of the carbon markets during the crash in 2010 and the subsequent challenges in the REC markets.

He is also a Board member of [ClientEarth](#), an environmental charity that uses the rule of law to protect people and planet; a Board member of [EB Impact](#), the Singaporean non-profit organization focused on delivering training and programs to Asia Pacific's underserved communities to generate positive sustainable development; and a member of the International Council of the National University of Singapore Yong Loo Lin School of Medicine. Assaad has a large fan base on [Twitter](#), [LinkedIn](#) and [Facebook](#) and his podcast, the Angry Clean Energy Guy, is ranked in the top 2% of most downloaded podcasts.





7.0

# The Team

## The People Behind Us



### Harib Bakhshi

Vice President of Engineering

A seasoned technology leader and web3 subject matter expert, Harib has led technical initiatives and driven digital transformation in over 100 of the world's largest organisations, from start-ups to industry giants. Responsible for ensuring that Reneum is built to the highest standard from a technology perspective, creating a best-in-class blockchain platform to bring transparency to the renewable energy space, Harib has been deeply involved in the blockchain industry since 2016 as an investor, founder and developer of several decentralised and fully on-chain DApps.



### Antonio Lopez

Head of Commercial

Always focused on bringing together renewable energy, technology and business strategy for its customers all around the world, Antonio has over 10 years of experience leading the business development efforts for some of the world's leading technology providers, helping businesses to make the most comprehensible and profitable transition to sustainable energy and digital transformation using IT/OT technologies such as SCADA/DMS, ERP, Cloud and Blockchain. Antonio also holds an International Business master's degree from the Seville Chamber of Commerce and a degree in Electronic Engineering, Computers and Renewable Energy Markets and Policies from the Danish Technical University. He is also highly qualified in Business Strategy, Blockchain technologies, Analytics and IoT, has vast experience in the energy sector in developing countries and has worked with other non-profit organizations such as Engineers Sans Frontiers. Prior to Reneum he worked at Telvent, Schneider Electric, SAP and TD Synnex.

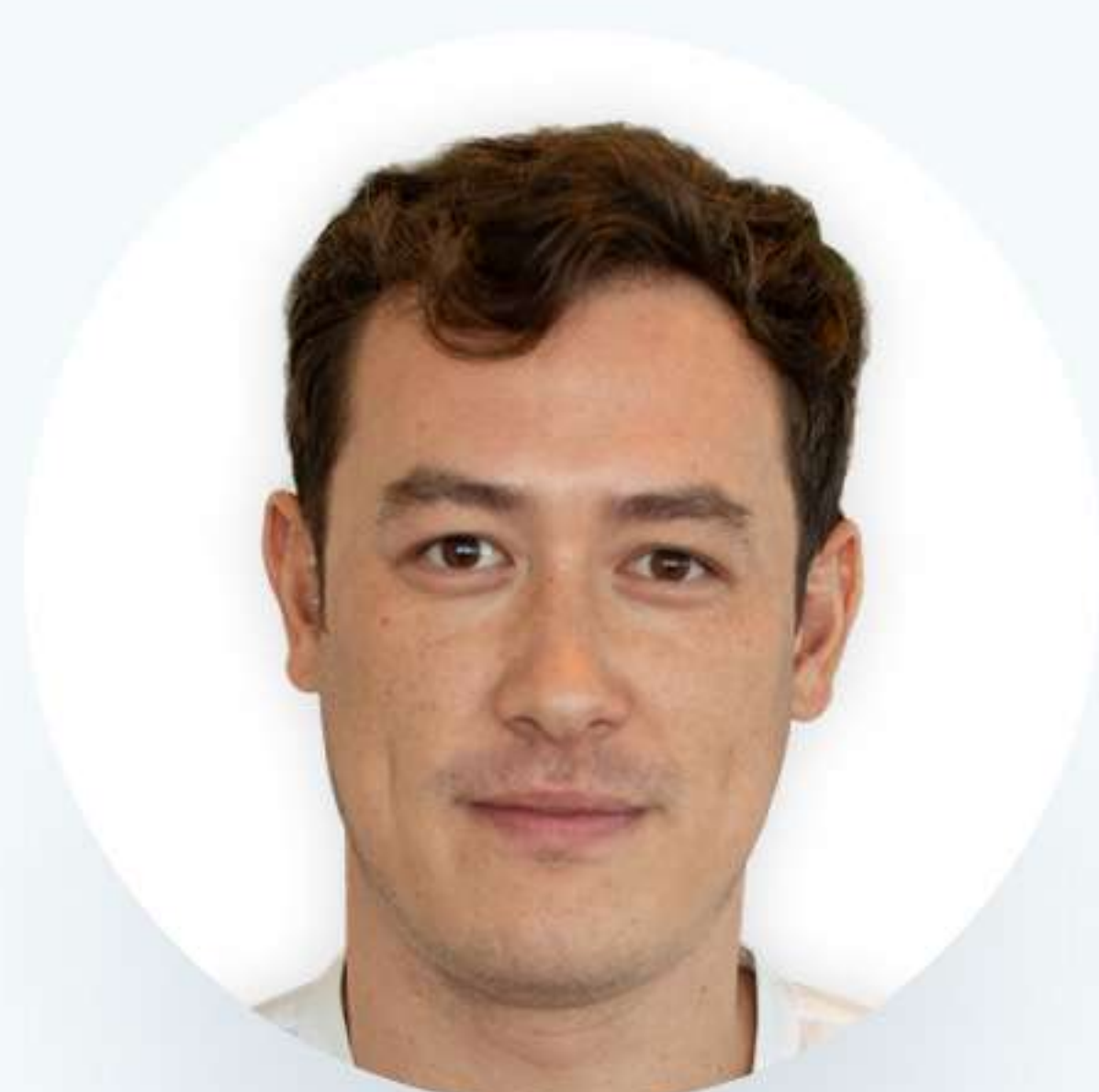




7.0

# The Team

## The People Behind Us



### Mikhail Schemm

Head of Marketing

Mikhail has 10+ years in digital and experience marketing between Asia and Europe, having built his own companies, worked in-house on the brand side, and has agency experience servicing start-ups and top global brands. He co-founded UNKNWN music and arts experiential events, Third Culture Agency marketing consultancy and CC:Concepts entertainment experiences, all in APAC. Prior to this, Mikhail was marketing director for SAB Miller in the Philippines and strategy consultant for Havas Media owned agency SCB Partners in London.



### Jessica Cheam

Non-Executive Director

Jessica is the Founder and Managing Director of Eco-Business, Asia Pacific's leading independent media and business intelligence organization dedicated to sustainable development. She is widely regarded as a sustainability pioneer with two decades of experience in media, sustainable development and ESG issues globally. She is also the General Partner of the Sustainable Future Fund, which funds sustainability-focused ventures in Southeast Asia, and a member of the Singapore Institute of Directors (SID), including serving as its ESG committee member. She is also a member of the International Women's Forum Singapore and is founding Director of EB Impact, a non-profit dedicated to positive sustainable development impact in Asia. She has been recognized in many regional and international journalism and sustainability awards, including Women of the Future Southeast Asia Awards and LinkedIn's Power Profiles and is frequently invited to speak at and host discussions across the globe in her areas of expertise.





# 7.0

# The Team

## Partners

Reneum has been backed by and is a graduate of the [Outlier Ventures accelerator program](#), backed by Polygon. Reneum is also a grant recipient from [Filecoin Green](#), a member of the Energy Tag initiative, the UN Climate Compact, the Global Wind Energy Council, the International Solar Alliance, a signatory to the Crypto Climate Accord, a member of Climate Chain Coalition, Energy Web Foundation, and the Blockchain for Climate Foundation.

