How Can Effective Policies Close Loopholes in Carbon Markets?

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Abstract

Surprisingly, 90% of offsetting credits approved by the world's leading standard for the carbon offset market, Verra, do not genuinely represent carbon reductions (SourceMaterial et al., 2023). By buying carbon credits, companies can invest money into projects geared towards improving the future climate that would not have otherwise been funded. These carbon credits allow them to offset emissions. However, due to the unregulated nature of carbon markets worldwide, there are many loopholes and limitations. In addition, large corporations can exploit carbon markets for their personal interests or capital gain and not necessarily to reduce greenhouse gas emissions. By compiling information from various sources on carbon markets and their limitations, this paper analyzes how effective policies can be written to close existing loopholes. A summary will be presented to recommend how the carbon market could become a more reliable tool for curbing carbon emissions. In the conclusion of this paper, it is deduced that carbon market loopholes could be closed with better government regulation, increased development of clean technologies, and a more free market for carbon credit pricing.

Introduction

Forest fires blazing across North America, ocean levels rising worldwide, and record heat waves have one driving force in common: carbon. In 2021, carbon dioxide was responsible for two-thirds of the total heating influence of all greenhouse gases combined, drastically affecting global climate change events (Lindsay, 2023). Since carbon is not returned to the earth as fast as humans emit it, its atmospheric levels have skyrocketed to above 400 ppm (NOAA Global Monitoring Lab, 2023). Atmospheric carbon levels should not exceed 350 ppm, according to climate scientists (Hansen et al, 2008). When carbon levels are too high, heat gets trapped in the atmosphere and creates a chain reaction of global warming effects. This chain reaction disrupts the physical and biological systems of Earth on which humans depend.

This concentration of carbon in the air is not sustainable for future generations. This problem is recognized by The United Nations in their 17 Sustainable Development Goals, which are a blueprint for achieving a "more sustainable future for all" (United Nations, 2015). For the future prosperity of people and the planet, each of these goals must be worked on simultaneously to be successful by 2030 (United Nations, 2015). From climate change to economic development, each goal's successes cannot come at the cost of another goal. Thus, new strategies that combat multiple goals at the same time are necessary for a more sustainable future.

The United Nations' concern over carbon has set a precedent for consumers' concerns. In recent years, there has been an increase in carbon-conscious customers who care about the environmental practices of their favorite companies. They are willing to spend more money on companies that have made environmental, social, and governance (ESG) related claims (NielsenIQ & McKinsey, 2022). In the United States, products with ESG-related claims have achieved disproportionate growth compared to products that do not have these claims (NielsenIQ & McKinsey, 2022). Driven by these consumer demands, companies have begun to embrace ESG, which is a quantifiable measure of a company's effects on the environment.

To market their environmental social governance, companies publish ESG reports. Companies often greenwash their brand, falsely marketing themselves as environmentally

friendly. Quantifiable greenhouse gas emission reports can prevent greenwashing and empty environmental claims. In summary, ESG will grow in importance as companies use it to appeal to informed, eco-conscious customers and investors (Corporate Governance Institute, n.d.).

Societal pressures such as consumer demand impact decisions that companies make about their operations. However, the bottom line for all companies is to make a profit. Thus, strategies that stimulate economic growth while tackling climate change are crucial for a sustainable future. To do this, carbon reductions must fit within the current economic system.

As one attempt to reduce carbon emissions in a capitalistic society, carbon markets have raced to the forefront. Carbon markets are trading systems where “carbon credits" are bought and sold. Carbon credits help companies that are unable to eliminate emissions along their supply chains. Instead, carbon credits allow them to offset emissions. These credits are especially helpful for companies aiming for net-zero emissions, meaning that they remove the same amount of greenhouse gases (GHG) from the air as they produce (Blaufelder et al., 2021). Each carbon credit purchased by a company represents the equivalent of one ton of carbon. Then, the money spent on this credit is invested in a project that reduces carbon emissions. In theory, this process aligns with the sustainable development goals; it allows companies to grow while investing in sustainable solutions and meeting their climate goals. However, in practice, there is a multitude of issues with carbon markets including the validity and accountability of the emissions reductions. This article will define the loopholes present in current carbon markets and propose how effective policy can stop companies from exploiting those loopholes.

How Carbon Markets Operate

The carbon market system aims to reduce the amount of greenhouse gas emissions that industries release into the atmosphere. It works as a trading platform for "carbon credits." Each credit represents a certain amount of reduced emissions. Companies that produce fewer emissions can earn these credits, while those that emit more than their limit can buy credits from others to offset their excess emissions. Thus, the carbon market encourages businesses to be more environmentally friendly.

Carbon Market Basics

Carbon markets are places where carbon credits are bought and sold. It is a method used by businesses to reduce their carbon footprints. Each carbon credit is equal to one ton of carbon. This credit becomes a commodity that gets assigned a price. This price differs based on the market; overall, many argue that the price of emissions is too cheap to effectively reduce emissions (Black, Perry, & Zhunussova, 2022). Since carbon is relatively inexpensive, companies often choose to offset emissions rather than reduce their emissions. Carbon markets are similar to the stock market because their success or failure is reliant on the supply and demand of emissions. To explain, if the price of carbon credits is low, demand increases while supply decreases.

Furthermore, carbon markets were created to help companies meet emissions reduction goals. Companies that were unable to reduce their emissions can invest in projects that reduce carbon emissions. Thus, the carbon that is still being used by one company is “canceled out” by the reduction projects of the other entity.

Types of Markets

Compliance markets and voluntary markets are the two main types of carbon markets. In compliance markets, companies are forced to comply with regulatory acts by purchasing carbon credits. These compliance markets house “cap-and-trade” programs, which give carbon allowances to companies that can then purchase credits if they go over their budgeted amount of carbon (Carbon Offset Guide, n.d.). Then, companies with lower emissions can sell their extra allocation of carbon to the companies that need it. An example of a compliance market will be dissected in a later section of this paper.

On the other hand, businesses use voluntary markets by choice. By purchasing carbon offsets in voluntary markets, the business is investing in projects that can avoid or reduce GHG emissions (Carbon Offset Guide, n.d.). This system is different from compliance markets because voluntary markets can finance new projects. Carbon credits and offsets are slightly different due to their use in the two different markets but will be used interchangeably for this article (CarbonCredits.com, n.d.).

Moving on, international carbon markets became more commonplace after The Kyoto Protocol (1997) described international emissions trading to the United Nations Framework Convention on Climate Change (UNFCCC). However, regional and national markets have grown in popularity in recent years. For example, China started the world’s largest emissions trading system in 2021 which is estimated to cover 1/7 of global emissions from burning fossil fuels (International Energy Agency, 2021). The carbon market has also been a tool to fund environmental projects in underdeveloped communities in the global south. In Tanzania, more than 20 companies have committed to an investment of over $20 billion in carbon offset credits to fund carbon trading around the country (DGB Group, 2023). Investments in carbon trading can fund projects that protect biodiversity, prevent pollution, improve public health, and create jobs (Blaufelder et al., 2021). However, it should be immediately mentioned that these international projects provide an outlet for companies to send their emissions overseas, rather than dealing with it domestically.

In summary, carbon credits are permits to emit carbon that can be used by a company. They exist in carbon markets, which are either voluntary or compliance markets. Most carbon markets exist to help companies reach their environmental goals, reduce carbon emissions, and fund upcoming projects that will create a more sustainable future. However, carbon markets differ greatly based on the type of market and scope–an international voluntary market does not operate the same as a regional compliance market. Thus, regulating carbon markets is complicated (Kollmuss et al., 2008). Complex systems require policies to effectively manage them. Otherwise, exploitation of the system slips through the cracks and undermines the purpose of the carbon markets. In the next section of this article, various policies governing carbon markets around the world will be examined and compared.

Existing Policies that Regulate Carbon Markets

The Kyoto Protocol

The first carbon market was entered into full force in 2005 as a part of the Kyoto Protocol. This international climate treaty set the stage for future carbon market policy. It established the Clean Development Mechanism (CDM) and the Emissions Trading Scheme (ETS) as a market-based approach for reducing emissions (Kyoto Protocol to the UNFCCC, 1997). These mechanisms marked the beginning of carbon trading.

The central feature of this protocol required countries to limit or reduce their emissions to specified levels. In global politics, this is the first example of carbon reductions having value. It introduced the concept of *additionality*, which shows that the emissions reductions produced by the projects would not have happened without the investment into them (Kyoto Protocol to the UNFCCC, 1997). As an example, if a carbon credit is traded, the project it funds is reliant on that credit. This means the carbon-reducing project would not have happened without this carbon credit system, ensuring that the credit is valid. However, there was no internationally agreed definition for *additionality*, and assessments were left to justifications case-by-case (Gillenwater, 2012). This does not mean that there were no tools in place. For instance, Legal Tests, Technology Tests, and Common Practice Tests were circulated after the Kyoto Protocol as methods to assess additionality (Trexler, Broefhoff, Kosloff, 2006). Further, the United Nations Framework Convention on Climate Change developed a toolkit recommending scenario-based approaches (UNFCCC Clean Development Mechanism, 2006). However, the analysis is largely subjective. The major problem at hand is the lack of consistency in the assessments. There were no standards set to assess if emission reduction projects happened directly because of investment in carbon markets. Please see *Figure 1* to better understand the term *additionality*.

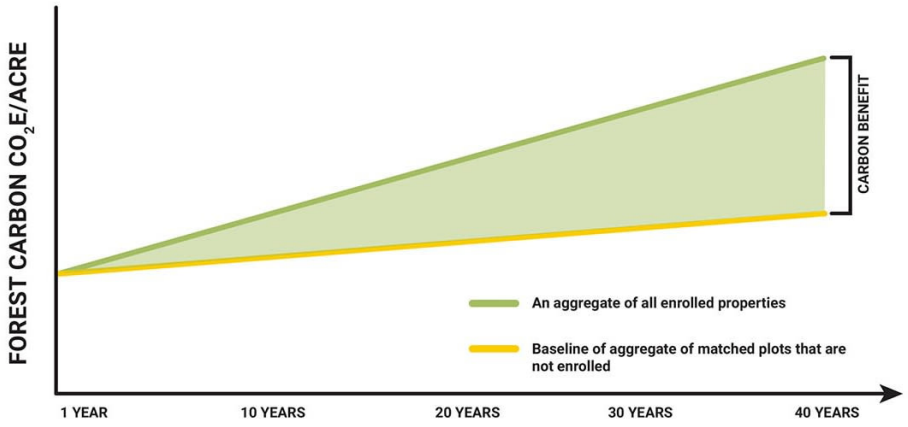

Figure 1: *Additionality* (American Forest Foundation, 2023). The baseline shows examples of plots that are not matched with the carbon project, and the aggregate shows the carbon reductions of the plots involved with carbon projects. “Carbon Benefit” shows the additionality of a carbon project by comparing the two. The graph shows that the carbon project showed carbon reductions in the long term that did not happen when no carbon project was introduced.

The Paris Agreement

Although the Kyoto Protocol technically remains in force, the Paris Agreement has effectively replaced the Kyoto Protocol after its adoption (Bodansky, 2021). It differs from the Kyoto Protocol because it calls on all countries to set emissions targets rather than just developed countries (Maizland, 2022). In terms of policy, the Paris Agreement is legally binding but calls on each country to make its own policies to meet its goals. It introduces new markets to replace the outdated ones from the Kyoto Protocol and encompasses a wider spectrum of countries to participate in carbon trading.

It is interesting to note that the Paris Agreement also suffers from problems with additionality, but has several tools in place to help mitigate its negative possibilities. The Paris Agreement introduces “Nationally Determined Contributions” which are a requirement for countries to describe their specific climate goals to join the Paris Agreement treaty (Article 4 of the Paris Agreement to the UNFCCC, 2015). Each country must update its post-2020 climate actions every five years to remain as part of the treaty (Article 4 of the Paris Agreement to the UNFCCC, 2015).

Also, the Paris Agreement specifies rules against double-counting of emissions when countries transfer carbon credits to one another (Article 6 of the Paris Agreement to the UNFCCC, 2015). As a review, double counting of emissions is when carbon credits are claimed by more than one entity even though only one carbon benefit is produced.

In conclusion, assessing additionality is becoming more quantifiable under the Paris Agreement, but there is still improvement that can be made to clarify the term in the future.

European Union

The European Union is a leader in the carbon market system. Their Emissions Trading System, a compliance market, has been in effect since 2005 (European Union Climate Action, 2005). It is in its fourth phase (2021-2030) and is constantly revised under its legislative framework (EU Legislative Train Schedule, 2023).

The European Union has many laws in place to ensure the integrity of its carbon markets. One major step they have taken is in applying regulations of financial markets to carbon markets. This puts clear, extensive regulations in place. For example, carbon emissions allowances are classified as financial instruments (Directive on Markets in Financial Instruments, 2014). Additionally, market abuse and misconduct are regulated (Market Abuse Regulation, 2014). Due to these classifications, high integrity standards are applied to all participants in the market. Manipulation, trading of insider information, money laundering, and other problems in financial systems are now prevented in the European Union’s carbon markets.

However, there is some debate about whether considering carbon credits as a financial instrument is ideal. This means that climate action and environmentalism are regulated by capitalism. Some argue that capitalism exacerbates, rather than reduces, environmental inequities due to the heart of the system (Bell, 2015). Additionally, aims to keep the price of carbon high will be discussed later on in the paper. Thus, some do not agree that the laws of supply and demand that dictate financial markets should also dictate the carbon market.

China

China holds the global lead in greenhouse gas emissions, and correspondingly, it also occupies a leading position in the scale of its carbon market. Since China emits a high amount of carbon in its industries, its Emissions Trading Scheme (ETS) aims to reduce the impact they have made on the planet in a cost-effective manner. They have the largest operational ETS in the world, which is potentially estimated to cover 1/7 of global fossil fuel emissions (Tiseo, 2023).

Contrary to the European Union, China’s policies have not focused on classifying carbon markets as financial systems. Although their most recent Five Year Plan (2021-2025) sets impressive goals for carbon emissions reductions, their policy pathway to deal with carbon finance is ambiguous and complicated (Chen & Wu, 2022). Without carbon markets being considered as financial systems, the mechanisms applied to their economy are not passed over.

Thus, the carbon market regulations are not sound and there is not sufficient legal support for carbon transactions (Zhou & Li, 2019). There was a project called “Procedures for the Operation and Management of Clean Development Mechanism Projects” (2005), but it failed to meet the requirements of the current market. Thus, the EU’s carbon markets have more thorough policies regulating their carbon markets than China does.

Still, the EU and China cooperate bilaterally on the carbon market (EU and China Partnership on Climate Change, 2005). Some objectives of this partnership are the development of new technologies for carbon capture and the promotion of clean energy sources. Therefore, due to their cooperation, there are similarities in the technical rules of their carbon markets.

America

Unlike China and the EU, there is no national compliance carbon market system in the United States. However, there is the Regional Greenhouse Gas Initiative (2005), which is a compliance market for participating states in the northeast. Only one state, California, has a formal “cap-and-trade” program (California Board of Regulations, 2012). These compliance markets are heavily regulated. Due to the lack of a national compliance market, policies regulating U.S. markets are mostly based on voluntary markets.

In contrast to the compliance markets in the U.S., voluntary markets do not involve any direct oversight by the government (International Swaps and Derivatives Association [ISDA], 2022). Instead, these carbon credits are issued by “carbon standards” which each have different rules that projects must follow to be certified; some examples of these “standards” are issuing bodies such as Verra, the Gold Standard, and the American Carbon Registry.

Although the government is not directly regulating voluntary markets, U.S. financial regulation considers carbon credits as a “commodity” (ISDA, 2022). Similar to the EU’s Emission Trading System, this means that financial rules are imposed on the carbon market in hopes of avoiding abuses of the system.

Inconsistencies

International frameworks exist to keep countries accountable for their carbon reduction claims. They have created international carbon markets–such as the Clean Development Mechanism–where countries can trade carbon credits (2005). However, individual nations are responsible for creating policies to regulate carbon trading. The inconsistency of the policies creates loopholes for exploitation and questions about the future of carbon markets.

How to fix existing loopholes

Due to the lack of consistent policy, various loopholes are exploited in carbon markets. Complex rules based on different countries and different types of markets make accountability and standard practices difficult to judge. This can result in greenwashing, financial exploitation, and false sustainability claims. To prevent these corrupt practices, new policies must be introduced to regulate carbon markets. In this section, each loophole will be followed by a possible solution.

Quality of Carbon Credits

The concept of additionality has been explored in the previous sections of this paper. This concept is one of many that take part in assessing the quality of a carbon credit. Leakage is also

considered when looking at the quality of a carbon credit. Leakage occurs when an emission reduction occurs in one place, but causes an increase of emissions in another (Filewod & McCarney, 2023). This is usually when a country with stricter regulations passes carbon production to a country with weaker regulations, resulting in increased emissions in the producing country. Another term used to assess the quality of carbon credits is permanence. This term states that emissions are prevented forever (Marland et al., 2001). Since carbon dioxide stays in the atmosphere for around 100 years, some have defined permanence as the carbon reduction staying intact for that long, such as in the California compliance market (Song & Moura, 2019). Still, accurately judging a carbon credit's ability to prevent emissions for 100 years is not possible. In reality, permanence is nearly impossible to guarantee. For example, in forest-based offset projects, factors such as land ownership, political turmoil, and fires can unexpectedly damage forests (Song & Moura, 2019). These factors ruin the permanence of carbon credits, but cannot be controlled or avoided.

Leakage and permanence are sufficiently defined, but their regulation is where the biggest loopholes lie. The protocols are not rigorous. The main standard setters have their own procedures and protocols to verify offsets and are not subject to government oversight or regulation (Fredman & Phillips, 2022). Thus, the quality of carbon credits is susceptible to change; credits initially judged to be sound may later be labeled as lower quality, and the system used to judge the credit can warrant different results. In fact, the CEO of Verra, a leading carbon market standard, acknowledges that a large number of once legitimate offsets are now known to be non-additional (Kouchakji, 2022).

Many proposed standards and policy recommendations have been made to remedy the insufficient regulation of carbon credits (Blaufelder et al., 2021). One loophole that needs regulation is leakage–or the distribution of carbon emissions to a country with weaker regulations. One proposed solution to limit leakage is extending carbon constraints to imported goods. This is important because carbon production shifts to the place with the lowest cost to produce. Emissions reductions from more progressive nations are worthless if emissions rise in the country that is producing the good. To account for this problem, imposing the emissions standards of the country importing the goods rather than the country that produced them will reduce leakage. This solution has already been adopted by the European Union in their Carbon Border Adjustment Mechanism (2023). This policy encourages cleaner industrial production in countries that trade with the European Union. If similar policies are implemented in other countries, it would benefit the goals of the importing country while encouraging other countries to reduce their emissions.

However, this only closes the loophole in the domestic market. Since this system depends on the policies of one country being transferred to the country they are importing from, it does not account for the bigger picture of global markets. As more progressive countries decrease their demand for fossil fuels, the price falls in the global market, stimulating the consumption of fossil fuels elsewhere (Mehling, 2021). This is still a form of leakage, since a reduction results in emissions elsewhere.

One way to effectively close this loophole is by decreasing the cost of clean technologies like solar, wind, and geothermal energy (Mehling, 2021). Instead of choosing fossil fuels, countries will choose clean technologies if the price is competitive. When these technologies can compete on their own, they will become more popular. This has already begun to happen (Nemet, 2019). In fact, solar power is the cheapest electricity in history (International Energy

Agency, 2020). Therefore, transitioning to clean energy would reduce leakage in the carbon market.

Altogether, many solutions are in the works to ensure the quality of credits in the carbon market. However, solutions must result in broad systematic changes if the carbon market is to be scaled for major carbon reductions.

The Price of Carbon

For each carbon credit purchased, the buyer is investing in one ton of carbon dioxide being avoided. Interestingly, this does not equate to the same price of one carbon credit. There is a wide range of pricing based on what project and where the carbon credit is bought from, even ranging from $5 to $500 or more (Whiting, 2022).

Why is there so much variety? This comes back to the quality of the carbon credit. Since the voluntary market is not effectively regulated, some projects aim to sell as many credits as possible. These low-quality projects lack permanence, additionality, and all factors that make the credit legitimate. These projects can afford to lower the price of their credits because they have lower running costs. The projects save money if they don't properly research and examine how a carbon reduction will be made with their credit (Whiting, 2022). Although these low-cost credits may be desirable for companies looking to offset, it has negative implications for the carbon project and the trustworthiness of the carbon market. High-quality projects cost more and are vital to an effective carbon market.

Along with low-cost credits usually being low-quality, they will also prevent the world from reaching climate goals. According to the Report of the High-Level Commission on Carbon Prices (2017), carbon credits must cost $40-$80 each to meet the Paris Agreement target of 2°C warming. To increase the price of carbon, the law of supply and demand can be part of the solution. If the average cost of carbon increases, companies will value carbon more, and may even choose to reduce emissions instead of offsetting. Right now, the demand for credits is increasing rapidly. McKinsey estimates that demand for credits could increase by a factor of 15 or more by 2030 (Blaufelder et al., 2021). If demand increases for carbon credits at this rate, the price of carbon credits will increase on its own.

Fraud

Exploitation of the market begins right from the purchase of credits. Fraud is a significant risk in carbon markets. One example of this is in New Hampshire; a timber company was paid millions of dollars to not cut down trees, even though they were not planning on cutting them down in the first place (Elgin, 2022). This is a case of a misleading claim in the benefit of an investment.

Other problems include manipulating measurements to claim more credits than were truly purchased, as well as selling credits that do not exist, and exploiting weak regulations to commit various financial crimes (Interpol, 2013).

It is relatively simple for companies to purchase carbon credits. After the purchase, however, it is not simple to keep track of the carbon projects that were funded. Throughout the course of the actual carbon project, there is also a lack of accountability. Buyers of carbon credits often "retire" their certificates shortly after purchasing them to remove them from the marketplace (Kaplan et al., 2023). Then, they claim the removal of carbon from the atmosphere for their own calculations even if the carbon project has not been completed. This is not a sufficient accounting system because the buyers are not incentivized to see if the project they

have funded follows through (Kaplan et al., 2023). Even though there are systems to file claims if carbon projects are not truthful about their reductions, the buyers of carbon credits may not have the desire or bandwidth to go through this process.

There are multiple solutions to hold buyers and project developers accountable for fraud in the carbon market. One of these is government oversight and higher standards. In the U.S., the Commodity Futures Trading Commission (CFTC) could play a significant role in overseeing the offsetting market (Fredman & Phillips, 2022). As was mentioned in previous sections, the U.S. carbon market considers carbon credits as “commodities” that follow the regulations of the financial market. Therefore, the CFTC could ensure the stability and efficiency of the carbon market. According to CFTC Commissioner Romero, the commission has antifraud authority over spot markets (2023). For these registries that are currently unregulated, CFTC oversight would be vital to keeping the integrity of the U.S. carbon market.

Expanding these standards beyond the U.S. would be much more difficult. Still, solutions to increase accountability are in the works. The Climate Action Data Trust (2023) was developed to connect and aggregate data about the carbon market. This system would enable the transparent accounting of carbon and put an end to various acts of carbon market fraud. It is important to note that the Climate Action Data Trust is not the only system being used to tabulate carbon purchased but is an example of a system that can be part of the solution.

The Real Goal: Carbon Reduction

The low cost of carbon credits raises questions about how much people value emissions reductions. If carbon credits are cheaper than reducing emissions for a company, they will likely opt for offsetting. The GHG Protocol, the dominant global standard for carbon accounting, does not differentiate between removal offsets and avoidance offsets (Kaplan et al., 2023). This means that in the world of carbon credits, avoiding carbon emissions is valued the same as removing carbon emissions. The bottom line is that emissions must be reduced, not just distributed elsewhere. This is widely recognized as the major problem with carbon markets. Thus, the major loophole in carbon markets is choosing to offset rather than reduce emissions.

Discussion of the Future

If carbon emissions reduction goals are not met, mass species extinction, extreme heat, and agriculture crises will make regions of the world uninhabitable (The Nature Conservancy, 2018). Thus, the race to expand carbon markets begins. By 2050, voluntary carbon markets alone are poised to surge to $250 billion (Morgan Stanley, 2023). As demand for more carbon credits increases, scaling the size of carbon markets to meet demand is the next challenge. There are many discussions about how to scale carbon markets, such as McKinsey's blueprint that prioritizes clear signs of demand (Blaufelder et al., 2021). Critical improvements to markets must be made if it is to be a prominent tool to fight the climate crisis.

Contrary to future catastrophes, positive motivators can also guide the growth of carbon markets. One of these motivators is happiness. There is a direct, significant correlation between a climate-friendly life and a happy life, and the happiest countries are the ones closest to meeting the United Nations’ 17 Sustainable Development Goals (Sameer et al., 2021). This means that the growth and improvements of more sustainable systems will not limit people’s happiness; having enjoyment and living sustainably are not mutually exclusive. In fact, it has been found that happiness levels plateau in wealthy countries such as the United States unless they become more sustainable (De Neve & Sachs, 2020). This counters the assumption that

countries that are attempting to be more sustainable have to give up on a fulfilling quality of life. Improving carbon markets both domestically and internationally can help countries be happier and avoid climate grief.

Even if carbon markets may help improve mental health in different countries, some have questioned if carbon markets are truly beneficial. Skeptics of scaling up carbon markets argue that it is not what the climate needs due to the loopholes mentioned earlier in this paper. The Green Finance Observatory expressed serious concerns about scaling up voluntary carbon markets, including human rights abuses (2020). Additionally, concerns over environmental injustice have been noticed, meaning that disadvantaged communities systematically experience higher pollution levels (Hernandez-Cortes & Meng, 2023). To explain, some believe that the issues within current carbon markets are too much to overcome while trying to remedy them.

With critics and supporters alike, carbon markets have received more attention in recent years. As they are scaled, their role in the future of sustainability will be uncovered.

Conclusion

The current state of carbon markets reveals critical flaws that must be urgently rectified. By implementing standardized evaluation processes, robust regulatory frameworks, and transparent oversight, the credibility of carbon credits can be enhanced. However, carbon markets alone are insufficient to combat climate change; a comprehensive approach involving innovation of clean technologies, supportive policies, and responsible consumption is essential. Governments, industries, and individuals must collectively drive systemic changes by prioritizing emissions reduction. By taking action now, the potential of carbon markets can be harvested to help mold a sustainable future.

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