

Revealed: top carbon offset projects may not cut planet-heating emissions

Majority of offset projects that have sold the most carbon credits are 'likely junk', according to analysis by Corporate Accountability and the Guardian

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- Teles Pires dam in Brazil. Experts say large renewable energy projects like dams should not count towards credits as they don't lead to additional emission cuts Composite: Reuters
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The vast majority of the environmental projects most frequently used to offset greenhouse gas emissions appear to have fundamental failings suggesting they cannot be relied upon to cut planet-heating emissions, according to a new analysis.

The global, multibillion-dollar voluntary carbon trading industry has been embraced by governments, organisations and corporations including oil and gas

companies, airlines, fast-food brands, fashion houses, tech firms, art galleries and universities as a way of claiming to reduce their greenhouse gas footprint.

It works by carbon offset credits being tradable “allowances” or certificates that allows the purchaser to compensate for 1 ton of carbon dioxide or the equivalent in greenhouse gases by investing in environmental projects that claim to reduce carbon emissions.

But there is mounting evidence suggesting that many of these offset schemes exaggerate climate benefits and underestimate potential harms.

In a new investigation, the Guardian and researchers from Corporate Accountability, a non-profit, transnational corporate watchdog, analysed the top 50 emission offset projects, those that have sold the most carbon credits in the global market.

According to our criteria and classification system:

- **A total of 39 of the top 50 emission offset projects, or 78% of them, were categorised as likely junk** or worthless due to one or more fundamental failing that undermines its promised emission cuts.
- **Eight others (16%) look problematic**, with evidence suggesting they may have at least one fundamental failing and are potentially junk, according to the classification system applied.
- **The efficacy of the remaining three projects (6%) could not be determined definitively** as there was insufficient public, independent information to adequately assess the quality of the credits and/or accuracy of their claimed climate benefits.
- **Overall, \$1.16bn (£937m) of carbon credits have been traded so far from the projects classified by the investigation as likely junk or worthless;** a further \$400m of credits bought and sold were potentially junk.

The 50 most popular global projects include forestry schemes, hydroelectric dams, solar and wind farms, waste disposal and greener household appliances schemes across 20 (mostly) developing countries, according to data from [AlliedOffsets](#), the most comprehensive emissions trading database which tracks projects from inception. They account for almost a third of the entire global voluntary carbon market (VCM), suggesting that junk or overvalued carbon credits which exaggerate emission reduction benefits could be the norm.

In our analysis, a project was classified as likely junk if there was compelling evidence, claims or high risk that it cannot guarantee additional, permanent greenhouse gas cuts among other criteria. In some cases, there was evidence suggesting the project could leak greenhouse gas emissions or shift emissions elsewhere. In other cases, the climate benefits appeared to be exaggerated or the project would have happened independently – with or without the voluntary carbon market.

The findings come on the eve of the UN climate ambition summit in New York amid mounting concerns that world leaders will make further climate pledges that rely on what non-industry experts increasingly refer to as flawed market driven solutions rather than justly and rapidly transitioning off fossil fuels.

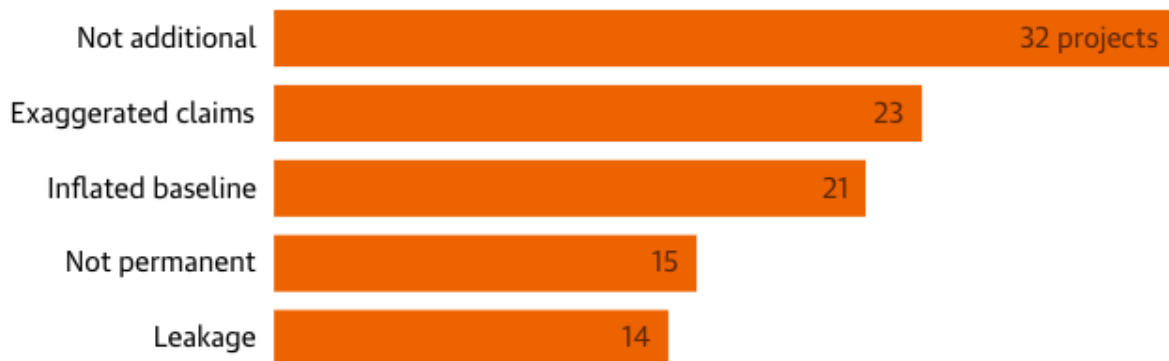
“The ramifications of this analysis are huge, as it points to systemic failings of the voluntary market, providing additional evidence that junk carbon credits pervade the market,” said Anuradha Mittal, director of the **Oakland Institute** thinktank. “We cannot afford to waste any more time on false solutions. The issues are far-reaching and pervasive, extending well beyond specific verifiers. The VCM is actively exacerbating the climate emergency.”

The certifiers/registries with most projects in the top 50 said the VCM was an important tool in fighting the climate crisis and that their methodologies and safeguards were continuously improving.

Independent experts say that to have any chance of being effective, carbon credits must be tied to new and permanent emissions reducing activities which lead to additional cuts that would not have happened otherwise – and should not lead to collateral damage to the environment or communities. Evidence of overestimation on how much carbon pollution a project is really saving, either intentionally or unintentionally, is also key to a project being able to guarantee promised benefits.

Why were projects classified as likely or potentially junk?

Projects were assessed on the fundamental criteria needed to guarantee the promised emission cuts. Projects could fail to meet multiple criteria.



Guardian graphic. Source: Guardian/Corporate Accountability analysis.

Our analysis builds on previous independent investigations and academic research into the efficacy and weaknesses of the VCM in mitigating global heating, as the climate breakdown intensifies. It draws on information from public and private sources including academic studies, civil society research, offset project certifiers/registries, private sector databases and ratings, and media investigations. In addition, we assessed the strength and rigorousness of the available evidence and took this into account for our grading of each project.

The Guardian/**Corporate Accountability** classification system assessed whether each offset project could be counted upon to lead to the promised additional, permanent emission cuts – or not. Assessing the health, social, economic or other local benefits – or harms – were beyond the scope of this investigation and did not influence the classification.

Strong evidence of at least one fundamental failing recorded means the promised emission reductions – which is the presumed primary objective of the VCM and every offsets project – can not be guaranteed and was therefore classified as likely junk or worthless.

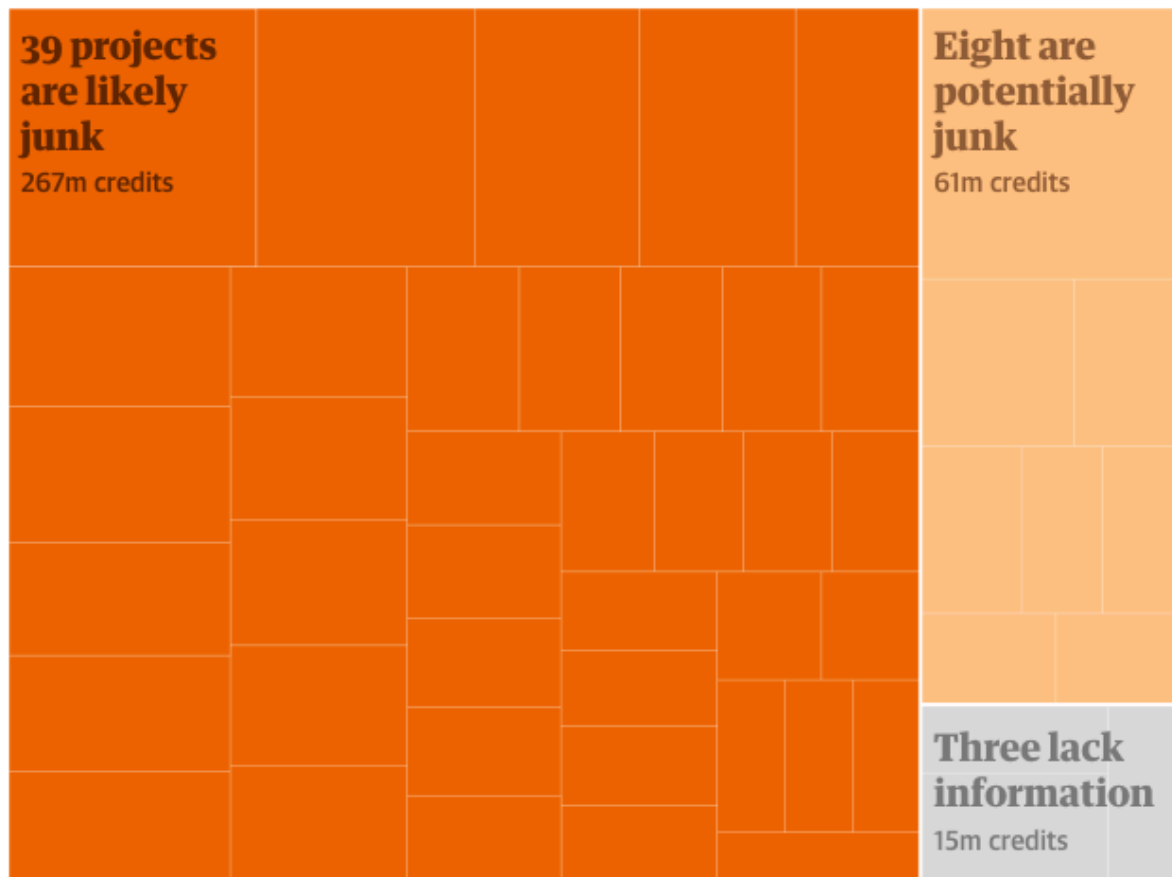
According to our research, more than a third of the top 50 projects had some evidence of three or more fundamental failings. In one case, a giant forest conservation project in Zimbabwe made was reported to have had so many exaggerated and inflated claims – and probably shifted emissions elsewhere – that it was described as “**having more financial holes than Swiss cheese**”. **Bloomberg reported rating experts** who said the project’s emissions cuts were overestimated by five to 30fold.



Technicians gather bio data for carbon sequestration at Kasigau wildlife corridor Redd+ project in Kenya. Photograph: Tony Karumba/AFP/Getty Images

In the US, the most problematic project is the world's largest carbon capture and storage plant in Wyoming, which **has benefited from generous taxpayer** subsidies, but where the vast majority of the captured CO₂ has been released into the atmosphere or sold to other fossil fuel companies to help extract hard-to-reach oil, according to **the Institute for Energy Economics and Financial Analysis**. It is certified by the American Carbon Registry (ACR), which said that new carbon credits have not been issued for 15 years – although corporations are still retiring or purchasing old ones to offset emissions.

Four carbon markets experts said the findings were based on solid methodology and shine a light on the pitfalls of market-driven climate solutions which can enable polluters to keep polluting instead of transitioning off fossil fuels.



Guardian graphic. Source: Guardian/Corporate Accountability analysis using raw data from AlliedOffsets database.

“At the heart of carbon markets is what is seen by many as the flawed notion that avoiding or reducing emissions in one place can make up for ongoing emissions elsewhere. Delaying the transition [away from fossil fuels] by purchasing pollution credits only serves to maintain business as usual and increase the likelihood of climate catastrophe,” said Erika Lennon, senior attorney at the Center for International Environmental Law (Ciel)’s climate and energy program.

Recent **investigations** have found fundamental failings in **forest offset projects** but the problems, according to our research, appear to be more widespread in the industry.

All 10 hydroelectric dams in the top 50 carbon offsets – including the **Teles Pires dam in Amazon, Brazil**, and the **Karcham Wangtoo plant** in the Himalayas, India, which have both faced opposition from tribal communities – were classified as likely junk in our analysis as the climate benefits would have happened anyway, regardless of carbon credits. A number of previous studies have shown that **although large dams cut national emissions**, they do not lead to

new or additional reductions needed for effective carbon credits. In some cases large dams have been associated with land disputes, displacement, increased poverty and environmental damage – including some greenhouse gas emissions emitted **from water reservoirs**.

In another example, a program in western Kenya provides water filters so households no longer need to boil water with firewood for filters. Though the potential health and sanitation benefits are not questioned, from an emissions perspective it was classified as likely junk in our analysis due to what appeared to be inflated baseline figures on how many households used firewood to heat water, and exaggerated claims in part due to evidence of low uptake of the filters.

Barbara Haya, director of the Berkeley Carbon Trading Project, which recently published a **study that concluded that Verra's Redd+ forest schemes** – like other major offset projects – exaggerate climate benefits, said: “The overall [new] findings align with the research on carbon credit quality which finds widespread over-crediting across many registries and offset project types including those with the most credits on the market – avoided deforestation and renewable energy.”

In response, Verra said many of the issues highlighted in the report would be addressed in its forthcoming new methodology for generating carbon credits.

Back in **2021, the International Energy Agency (IEA)** warned that there could be no further expansion of oil, gas and coal production if the world wanted to have any chance of avoiding catastrophic climate breakdown. The world failed to heed the warning, and emission cuts are wildly off track, according to the **recent UN global stocktake**, the most comprehensive analysis of global climate action produced to date.

“The climate breakdown has begun,” said the UN secretary general, António Guterres, after the hottest atmosphere and ocean temperatures were recorded this summer. “Our climate is imploding faster than we can cope with extreme weather events hitting every corner of the planet.”

Scientists have for decades been warning about the risks, yet instead of phasing out fossil fuels, vast amounts of time and resources have been invested into market-based carbon offset schemes and technologies that trade, cap and capture – rather than cut – greenhouse gas emissions.

Estimated to be **worth about \$2bn**, the voluntary carbon market (VCM) is vast, fragmented and opaque, which involves a complex network of developers, registries, traders, brokers and investors, making it difficult to track and evaluate the effectiveness – and potential harms – linked to offset projects.



Climate activists attend the march against fossil fuels in New York City on 17 September. Photograph: VIEW press/Corbis/Getty Images

Despite the complexity, there is a strong public interest in calculating the benefits of offset projects given the deepening climate emergency and lack of meaningful progress in reducing fossil fuel production and global emissions.

Researchers from Corporate Accountability created a classification system to analyse the effectiveness of the top 50 offset projects, using raw data from [AlliedOffsets](#).

Most of the top 50 were primarily promoted as emission avoidance or reduction projects but also included a handful of carbon removals schemes. Carbon credits for each project were certified and issued by one of seven registries; each project had been verified by a third party.

- The top 50 included three projects in the US, including a tree-planting project in the Mississippi Delta which a **2020 Bloomberg investigation** found took “credit for trees that were already planted, or would have been planted anyway”, and the oil company project in

Wyoming which stores only a fraction of the carbon captured. Both were classified as likely junk due to evidence of multiple fundamental failings. American Carbon Registry (ACR), which certified both projects, rejected the findings and sources relied upon for our analysis. ACR said the tree planting project had enabled hundreds of private landowners to reforest over 130,000 acres of marginal and degraded sites in the Mississippi Delta.

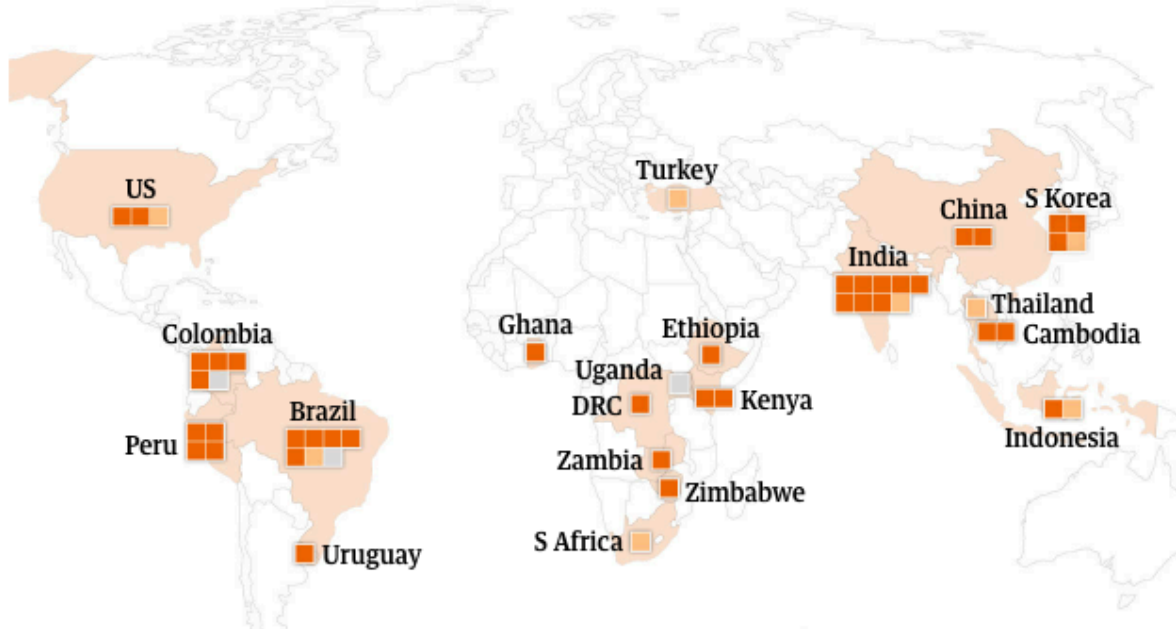
- Forty-seven of the top 50 projects are in Latin America, Africa and Asia, predominantly in countries which have contributed least to the climate crisis but are being battered by its effects. Five of the seven located in Brazil were classified by this investigation as fundamentally flawed and likely junk, while another is problematic and potentially junk. In neighbouring Peru, all four forestry projects in our top 50 have evidence of multiple failings making the carbon credits likely worthless, according to our analysis.
- The nine offset projects in India – five large hydroelectric dams, two solar plants and two wind farms – were all classified as likely or potentially junk, in part because none would lead to additional emission reductions.
- One or more fundamental flaws were found in 96% (22 out of 23) of the forest offset projects which are located in Brazil, Colombia, Uruguay, Indonesia, Ethiopia and Zimbabwe among other countries.
- Fifteen of the 16 renewable energy projects, which include dams, solar and wind, are likely junk – mostly because the project would have almost certainly happened anyway. While renewable energy is essential for the energy transition, these carbon credit projects do not appear to be leading to the claimed additional climate benefits and should not be used by polluters to offset emissions.

“These findings show that the VCM is flawed and basically a fraud, allowing the west to offset their emissions and continue business as usual at the expense of the global south,” said Souparna Lahiri, the New Delhi-based climate adviser for the Global Forest Coalition.

“The carbon market and the rich west, for the last 25 years has actually done nothing to mitigate the climate crisis, rather, protected their high-emitting industry, production, consumption and lifestyle. It’s a story of continuing and widening inequity and climate injustice,” said Lahiri.

Most of the top 50 carbon offsets projects are in global south countries already enduring climate impacts

■ Likely junk ■ Potentially junk ■ Lacks information



Forestry projects are the most common

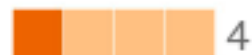
Forestry and land use



Renewable energy



Chemical processes/ Industrial manufacturing



Household devices



Other



Waste disposal



Almost two-thirds (32/50) of the most traded projects were certified by the US-based non-profit Verra, which operates the world's most prominent carbon standard or registry, and included 18 forest offsetting projects known as Redd+ schemes.

Twenty-eight of the 32 Verra projects the Guardian / Corporate Accountability analysed were classified as likely junk; the other four were problematic and potentially worthless. Verra has faced mounting criticism for its methodology and lax safeguards including a [Guardian investigation which found](#) that its forest carbon offsets are mostly junk and could make global heating worse.

Verra disputes the criticism of its forest projects. “There is compelling evidence proving the effectiveness of Redd+ projects,” said a Verra spokesperson who pointed to **recent research papers including a 2022 study** of 40 Redd+ projects that found deforestation and degradation declined in the first five years of implementation.



An environmentalist holds seedlings in Binga, Zimbabwe. The Kariba Redd+ project is one of the largest of its kind. Photograph: Zinyange Auntony/AFP/Getty Images

Verra did not comment on the specific findings of this investigation, but in a statement said: “Verra’s role is to ensure that projects satisfy its program rules, such that they can be registered and receive issuance of credits. Project proponents are free to hold, sell or retire those credits thereafter at their discretion ... Verra is happy to engage with data, reconsider assumptions and consider future improvements based on sound feedback and expert input.”

Our analysis found similar issues with offset projects from other certifiers.

From the clean development mechanism (CDM), a UN-led program and first international carbon trading scheme, five of the eight offset projects were classified as likely junk – including the **Teles Pires hydropower dam in Brazil** which has reportedly damaged Indigenous and traditional communities, harmed biodiversity and fisheries, and is also probably emitting significant carbon emissions.

The CDM was established as part of the Kyoto protocol that allows countries to support emissions-reductions projects in other nations while counting them toward their own international climate commitments, and follows a “comprehensive set of criteria for selecting its projects”, a UN framework convention on climate change (UNFCCC) spokesperson said. Despite its goals, the CDM has faced numerous criticisms for exaggerated claims, and lack of community safeguards. **One study found** that most of its certified renewable energy projects did not provide real, measurable and additional emission reductions.

The spokesperson added: “The supervisory body is currently working on the creation of a new mechanism [certifier], striving to make it being highest possible integrity to overcome any weaknesses pointed out in the past.”

The UNFCCC did not respond to growing concerns that the sustainable development mechanism (SDM), which is replacing the CDM, has already come **under fire by civil society groups** across the world for promoting activities that do not lead to emissions reductions and risking harm to local communities and ecosystems, among other things.



The Karcham Wangtoo hydroelectric plant in Himachal Pradesh, India. Experts say large dams do not lead to additional emission cuts. Photograph: Rupendra Rawat/Alamy

In another case, two out of four of the projects on the Swiss-based Gold Standard Registry (GSR) – a water filter program in Kenya, and a cooking stove initiative in Ghana which promises to cut emissions and deforestation – were also classified as likely junk or worthless from a carbon credits perspective. The additional emission cuts claimed are unlikely due to exaggerated claims and inflated baselines, the analysis found.

GSR vehemently rejected the findings and methodology of the research. “We pay close attention to new academic research and best practices and update our methodologies to ensure they take account of the leading science,” said Jamie Ballantyne from GSR. “Despite this, it is inevitable that mistakes will be made – which is why we have a market-leading grievance process that allows anyone to submit a grievance against any project. What we can’t do is demand changes to individual projects based upon inconsistent evidence every time any allegation is made.”

Mary Grady, executive director of ACR, said: “Findings of an ‘inflated baseline’, ‘exaggerated claims’, and ‘not additional’ should be reconsidered”. She said natural tree regeneration was accounted for and would not skew the baseline or benefit calculations; and that the project proponent was legally required to monitor the projects for at least 40 years.

In the past year, amid mounting critical evidence and bad publicity some corporations have said they are looking to create their own emission offset schemes – which experts warn could be even harder to track.

Carbon offsets continue to be promoted as a source of climate financing for the global south, and at the recent Africa Climate Summit, hundreds of millions of dollars were pledged to boost the continent’s carbon credit production.

Barbara Haya, director of the Berkeley Carbon Trading Project, said: “It is clear that the most important climate mitigation approach is direct emissions reductions. Beyond that, the offset market has not been a reliable way to support climate mitigation.”

- Corporate Accountability researchers: Rachel Rose Jackson and Adrien Tofighi-Niaki
- Guardian graphics: Andrew Witherspoon