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Annual Report 2024

Topics

Paris agreement: New rules for carbon offsetting
Bricks against deforestation | Compost from waste
Green energy from residual biomass

Tanzania: Biochar as a permanent carbon storage

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Contents

Editorial

Dietrich Brockhagen meets with the Emir of Gumel (right) and Al Isa, Council Member for Trade (left). Together with these partners, atmosfair is expanding production and distribution of Save 80 stoves in Nigeria.

Dear Readers,

Climate action is entering its next phase: By February 10, 2025, all 195 signatories to the Paris Agreement were supposed to publish their climate targets. But only 13 countries delivered on time — not a single European Union member state submitted its Nationally Determined Contribution, or NDC, by the deadline. Countries face no consequences for this, even though the global community is falling behind on climate action: 2024 was the warmest year since 1850, and global CO_2 emissions rose yet again last year.

Unfortunately, we are currently witnessing major setbacks in climate action. In 2019, the issue was still a top priority, at least in Europe, but the EU Commission has progressively weakened its "Green Deal" since then. Now only the largest companies must report transparently on their emissions — most companies are exempt from this requirement. Additionally, automakers are getting more time to reduce their vehicles' CO_2 output. On the other side of the Atlantic, the situation looks even bleaker: President Donald Trump is withdrawing from the Paris Agreement, rendering U.S. climate targets obsolete. America's retreat from climate action doesn't just slow down the energy transition in the United States but it also has severe consequences for the Global South. In 2023, the U.S. development agency USAID was able to mobilize a total of $15 billion for investments in wind, hydro, and solar energy. This support is now disappearing — making independent private climate projects even more important.

Voluntary carbon offsetting has, quite rightly, often faced criticism. But now there are new rules that can lead to better climate projects. In our feature section, we discuss the direction voluntary offsetting will take.

atmosfair is well prepared for the new rules: As a pioneer, we already operate several projects today that comply with the new UN standards for carbon offsetting, which Stiftung Warentest also confirmed in February 2025. These include our efficient Save 80 stoves in Nigeria. While the COP29 climate conference was taking place in Baku, I visited politicians in Nigeria to scale up production and distribution to one million stoves annually.

In Malawi, we built an efficient stove of a completely different kind in 2024: a large, industrial brick kiln. It fires bricks using half as much energy as traditionally used kilns. Thereby, we're extending our climate action efforts to the construction sector. Meanwhile, our solar installations achieved growth of more than four megawatts, with new facilities primarily in Africa. And our biochar projects experienced the greatest growth: We're now creating negative emissions in Ghana and Namibia as well.

We would like to extend our heartfelt thanks to all supporters who make climate action in the Global South possible!

Warm regards,

Dr. Dietrich Brockhagen
Managing Director, atmosfair gGmbH

Sun and Water

Solar energy and water provide climate-friendly electricity. Together with our partners, we construct new facilities in rural areas to supply local populations with energy and clean drinking water. Our irrigation systems for agriculture also run on renewable energy.

Efficient Stoves

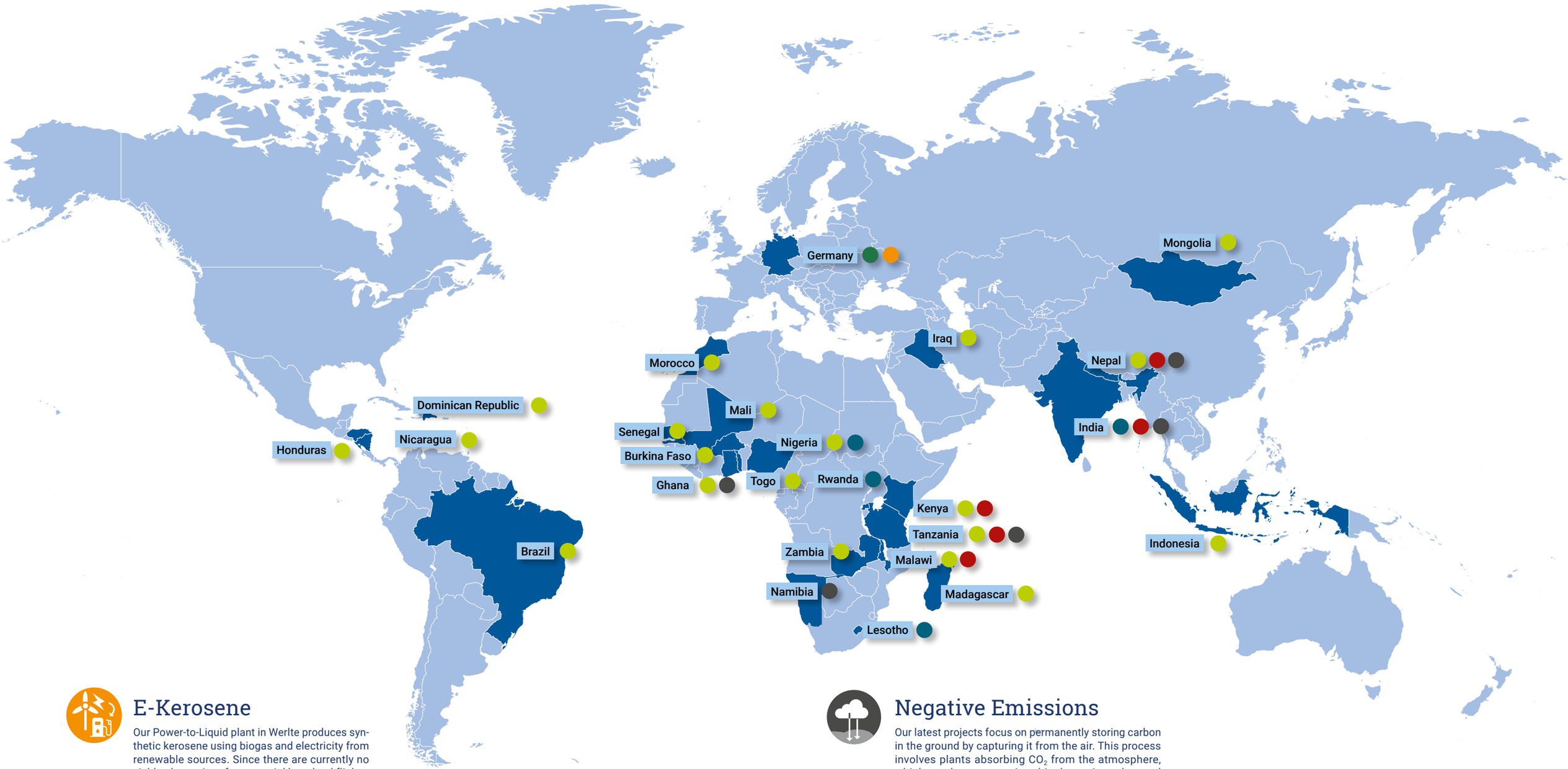
In Africa and Asia, atmosfair produces energy-efficient stoves at material cost. These stoves are made from stainless steel and create jobs in local communities. Families using these stoves require 90% less wood for cooking, protecting forests and saving money.

Biogas & Biomass

atmosfair's partners install small biogas systems for farms, transforming cow dung or pig manure into biogas for cooking, lighting, and fertilizer. Additionally, we support electricity generation from agricultural residues in dedicated facilities and repurpose organic waste.

Environmental Education

Climate protection begins at home. That's why atmosfair supports educational projects for students in schools across Germany to foster awareness of active climate protection. However, we do not count these initiatives toward CO_2 offsetting.



E-Kerosene

Our Power-to-Liquid plant in Werlte produces synthetic kerosene using biogas and electricity from renewable sources. Since there are currently no viable alternatives for essential long-haul flights, synthetic kerosene remains the only solution to avoid emissions from fossil kerosene.

Negative Emissions

Our latest projects focus on permanently storing carbon in the ground by capturing it from the air. This process involves plants absorbing CO_2 from the atmosphere, which we then convert into biochar using advanced technologies. The biochar enhances soil quality in agriculture, benefiting both people and the environment.

After COP29

Where Does Voluntary Carbon Offsetting Stand?

There's a lot happening in the market for certified carbon reductions: New regulations aim to improve the quality of climate projects. This is policymakers' response to recent criticism. But will all carbon offset providers, and their customers get on board? Or will some look for loopholes, as has often been the case? Here's what we expect.

The first day hadn't even passed – and the gavel came down in Baku: On November 11, signatories to the Paris Agreement voted for new rules on carbon offsetting. This is unusual, given that climate conferences aren't exactly known for quick decisions. Although the Paris Agreement entered into force in 2020, concrete rules for the Article 6 mechanism are only now being established. They stipulate how governments and private organisations in the Global North can support the Global South in climate action. The new rules under the Paris Agreement are necessary because countries in the Global South are now subject to climate targets, known as Nationally Determined Contributions (NDCs). These carry more weight than the previous reporting obligations under the Kyoto Protocol. All climate measures within a country are first recorded in that state's emissions inventory. If a foreign-funded climate project claims these CO_2 reductions for itself, double counting can occur. Therefore, a climate organization from abroad should ensure that the host country of the climate project does not credit the savings toward its own NDCs.

More Climate Action Through Corresponding Adjustments

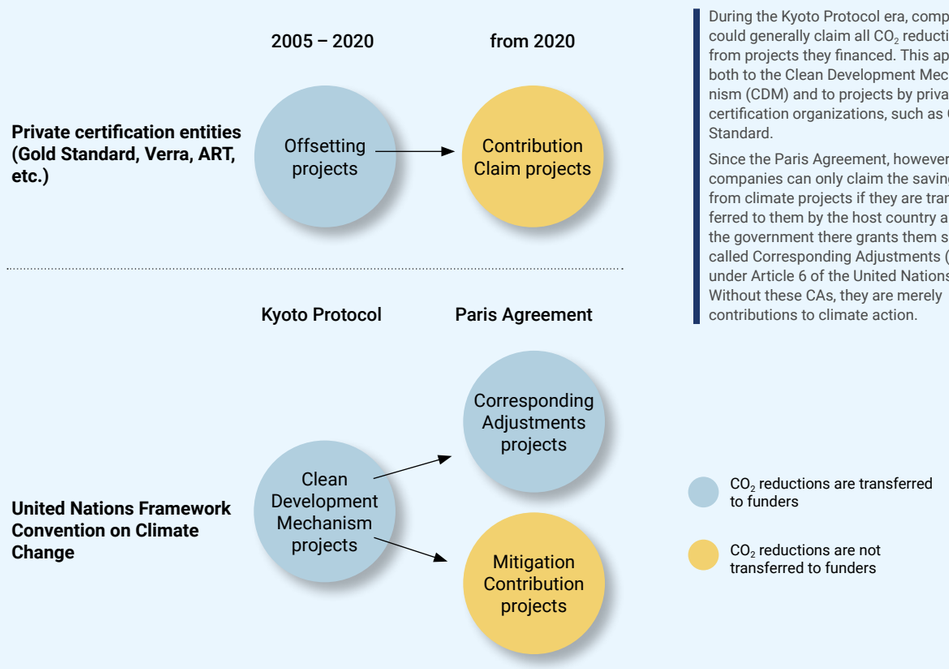
These adjustments in carbon accounting are called "Corresponding Adjustments" (CAs). Here, states where climate projects take place remove the CO_2 savings from their own greenhouse gas balance sheet. This allows funders to claim them for themselves. However, host countries don't give up their CO_2 savings easily – after all, they could use them for their own climate targets. They have good reason to demand investments in technology and knowledge transfer from climate organisations in return. This is also an opportunity for climate projects to achieve higher quality. The CA negotiations between atmosfair and the Nigerian government illustrate this: We receive credits for the CO_2 savings from our efficient stoves only because we do more than just build factories with high-tech machinery. For example, we finance public wells in the Sahel region where the population can access water. We also support Nigeria in building a hydrogen industry. Thus, our Nigerian project is a win-win situation for both sides.

Such offsetting projects offer additional benefits beyond fair partnership between the Global North and South. They can expand climate action, since the savings are not credited to the respective state's NDCs but occur in addition to government programs. While there's no guarantee that a project with CAs will actually expand climate action, CA projects offer the best conditions for this and the greatest possible regulatory certainty. Therefore, offsetting with CAs is the ideal form of climate action when it's not possible to avoid or reduce emissions. If companies are already willing to pay for climate action, the projects they support should bring real added value. The German Environment Ministry publicly took exactly this position at COP26 in Glasgow.

Foto: Yobe drilling process

In Gumel, Nigeria, we're financing the construction of a well where people can collect drinking water. Through new regulations on carbon offsetting, governments of host countries are able to demand additional engagement that goes beyond climate action.

The end of double counting



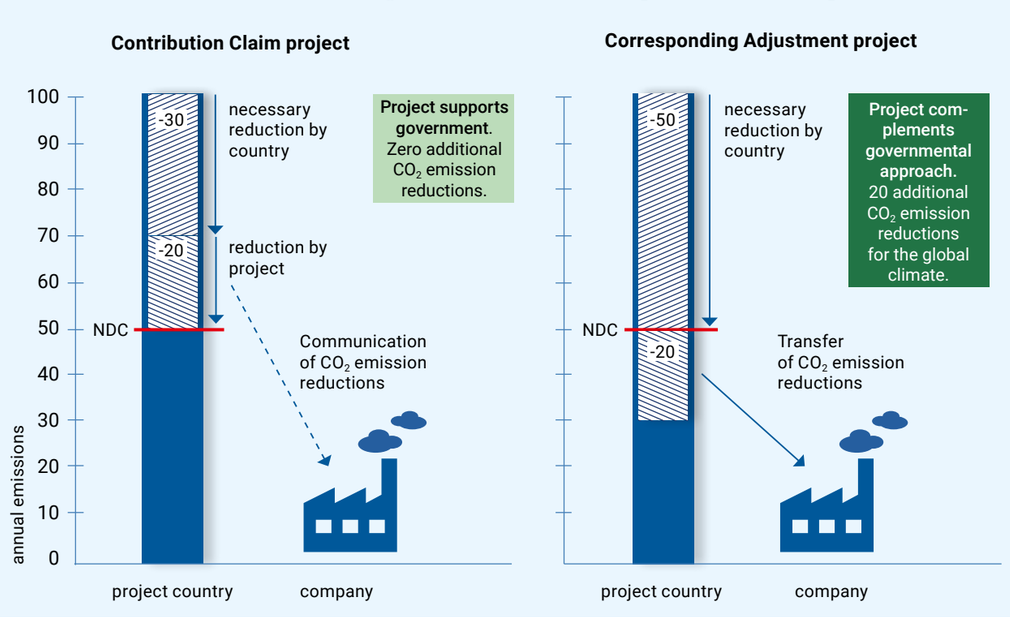
During the Kyoto Protocol era, companies could generally claim all CO_2 reductions from projects they financed. This applied both to the Clean Development Mechanism (CDM) and to projects by private certification organizations, such as Gold Standard.

Since the Paris Agreement, however, companies can only claim the savings from climate projects if they are transferred to them by the host country and the government there grants them so-called Corresponding Adjustments (CAs) under Article 6 of the United Nations. Without these CAs, they are merely contributions to climate action.

Project Comparison: Contribution Claims and Corresponding Adjustments

	Contribution Claim project	Corresponding Adjustment project
Who finances the climate project?	A climate organization or company from abroad	A climate organization or company from abroad
Who can claim the CO_2 reductions?	The host country	The project funder
What must the host country do to achieve its climate targets (NDC)?	It can use the project's reductions to meet its NDC	It must achieve the NDC entirely on its own; the project's reductions occur in addition to the government program
What can the project funder claim?	It has made a "contribution to climate action" (hopefully, though it could also be replacing government efforts)	It has offset its own unavoidable residual emissions
What do the projects bring to people in the host country?	The projects can, but don't have to, contribute to the United Nations Sustainable Development Goals	The projects must contribute to the United Nations Sustainable Development Goals

New carbon offsets according to Paris rules: A real plus for climate protection



Comparison of CO_2 reductions achieved by a project with a Contribution Claim (CC) and a project with Corresponding Adjustments (CA). A project with CC supports the host country in meeting its NDC. In the case shown, climate action does not go beyond the NDC. When the host country transfers the CO_2 reductions from the project to a foreign company, it must achieve its NDC entirely through its own measures. The climate action of the CA project thus goes beyond the host country's climate target.

atmosfair is the only provider in Germany offering offsetting under Article 6.4, as determined by Stiftung Warentest (see Finanztest, February 19, 2025: "Fliegen, spenden und dem Klima helfen"). Without CA agreements, carbon credits merely represent contributions to climate protection, so-called Contribution Claims (CCs). Unfortunately, we are already seeing other organisations attempting to create the impression of full-fledged offsetting even without CAs. These providers exploit the fact that many people are unfamiliar with the new fundamental principles of carbon offsetting. For example, they speak of "contributions to carbon balancing," which falsely creates the impression of genuine offsetting. This calls not only for increased consumer education efforts but also for legal regulations governing what claims companies may make in their marketing. Even the term "offsetting" is now being used by companies despite their projects only qualifying as CCs.

European Union tightens controls

To prevent misleading communication, the European Commission adopted the Green Claims Directive (GCD), which entered into force in 2024. It aims to protect consumers from misleading claims, which are particularly common in climate protection. Companies are no longer permitted to describe themselves as "climate neutral," for example, after merely offsetting their climate-relevant emissions.

The Commission also sought to expand corporate sustainability reporting through the Corporate Sustainability Reporting Directive (CSRD). It requires companies to report extensively on their emissions and have these reports externally verified, similar to what is mandated for financial accounting. This is intended to make corporate climate action more transparent and encourage the selection of higher-impact measures. Originally, these regulations were intended to apply to approximately 50,000 large and medium-sized companies across the EU. In February 2025, however, the EU Commission significantly weakened the scope of the CSRD through the Omnibus Regulation to spare smaller companies from bureaucracy. Now only companies with more than 1,000 employees must report extensively on their emissions and offsetting, which applies to just 6,000 firms across the entire European Union.

Private watchdogs step in

It's not only the United Nations and the European Union currently working to improve carbon offsetting. Two independent, private institutions have also become active in this area in recent years: the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Carbon Credit Quality Initiative (CCQI). These are smaller non-governmental organisations staffed by a number of experts who critically examine both the CDM and the methods of private certification organisations like Gold Standard. At the same time, they develop more precise methods for climate protection projects to quantify their carbon reductions and certify carbon credits that meet these principles. ICVCM and CCQI continuously refine their principles based on new scientific findings and practical experience. Their progress is now feeding into the implementation of Article 6.4.

Even before COP29 in Baku, private initiatives improved methods to calculate carbon reductions more realistically. After numerous cookstove projects came under justified criticism (see Süddeutsche Zeitung, November 14, 2024: "Warum die meisten CO_2-Sparprojekte Luftnummern sind"), the Clean Cooking Alliance responded by developing the new CLEAR standard. This addresses weaknesses in the previous CDM methodology and determines the actual impact of efficient stoves based on a region's non-renewable biomass. The greater the share of non-renewable biomass, the more forest is protected by cooking devices that require less firewood. However, if sustainable forestry prevails in a region and tree populations are fundamentally less threatened, the impact of efficient stoves is correspondingly lower.

The private initiatives themselves repeatedly face criticism. In November 2024, ICVCM certified three standards for forest protection projects despite criticism that they overestimate the effect of forest protection in most countries. For this reason, the representative from Öko-Institut withdrew from ICVCM.

The carbon market between decline and boom forecasts

The new political framework has the potential to significantly improve the quality of private climate action. If the voluntary carbon market regains a better reputation, demand for certified carbon reductions could rise. Companies would primarily seek climate protection projects with CAs if these are the only ones they are allowed to communicate as offsetting. However, since the price of such projects is higher, it's also conceivable that some companies will turn away from carbon offsetting altogether.

Currently, there is no sign of a resurgence in the voluntary carbon market. In 2023, companies spent 700 million euros on carbon offsetting, significantly

less than in the previous two years. In 2021 and 2022, the volume of the global carbon market (also known as the Voluntary Carbon Market, VCM) approached the two-billion-euro mark. The decline may be attributed to negative media coverage in 2023. The volume of CO_2 reductions that were certified (though not necessarily sold) in recent years also decreased over the past three years. This could be a consequence of reduced demand, but it occurred much more slowly than the decline in the volume of credits sold. A different trend emerges when looking at certified reductions that companies applied to their emissions in 2022 through 2024, meaning they "retired." The volume of these remained nearly constant over the past three years at 180 million metric tons of CO_2 per year (MSCI Carbon Markets 2025). This suggests that companies had already stockpiled sufficient credits in previous years. Consequently, they see no need to purchase new ones (yet). This could be another reason for the decline in market volume.

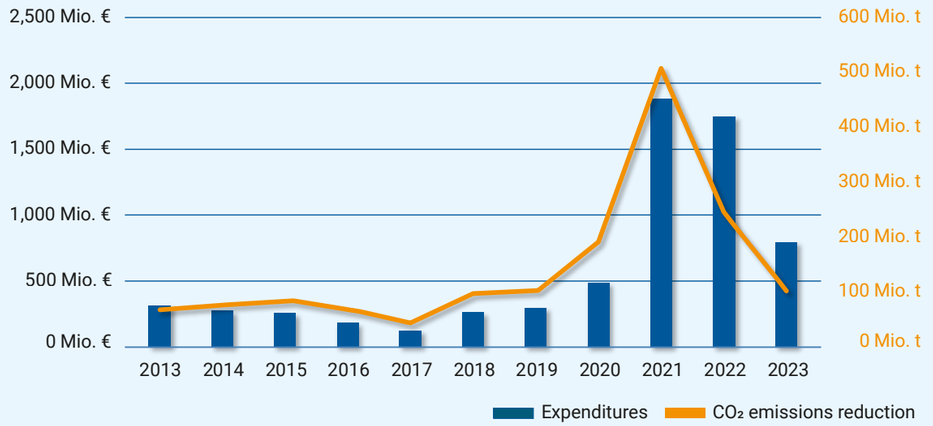
How will the market develop in the future? Despite the recent downturn, Morgan Stanley Capital International (MSCI) ventures an optimistic forecast. For 2030, it expects strong growth from the current 500 million to 7–35 billion U.S. dollars, taking companies' current claims at face value. The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) of the International Civil Aviation Organization (ICAO) will further boost demand for carbon offset certificates. It mandates that airlines offset a fraction of emissions from international flights. According to estimates, this could increase the volume of certified reductions by one-third (Abatable 2025). In fact, it is necessary for climate action to be increasingly financed by the private sector. Countries in the Global North are currently cutting rather than expanding their spending on development cooperation and energy transition. Moreover, climate spending in public budgets should not compete with other departments.

Climate Projects of the Future: More Removals, Less Forest Protection

Not much time has passed since the new offsetting rules were agreed on in November 2024. Worldwide, there are only 22 CA agreements between climate organisations and countries, four of which atmosfair has concluded (as of 12/2024). Certified CO_2 reductions from atmosfair projects with CA agreements accounted for 58% of our total CO_2 savings in 2024. This means we are well prepared for the new UN rules.

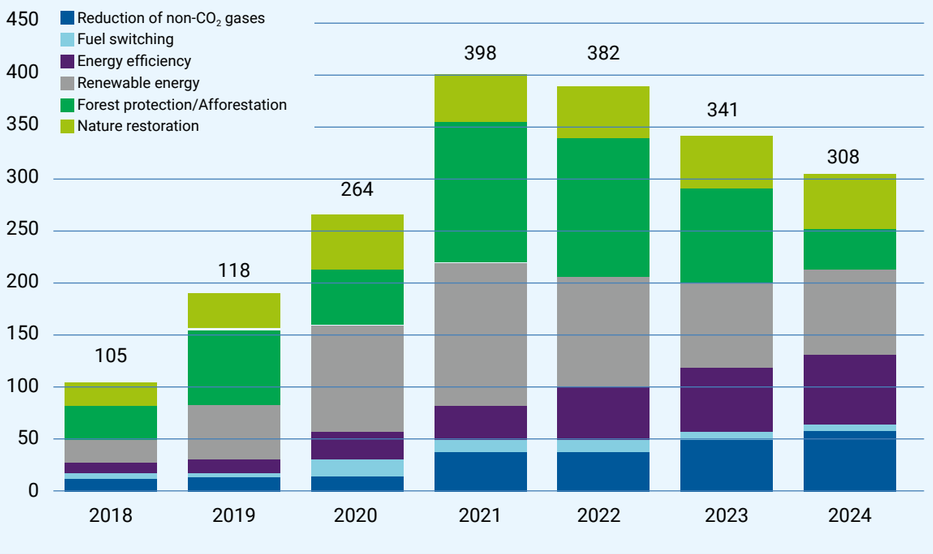
As for the project types themselves, a shift is clearly observable. From 2023 to 2024, the share of projects aimed at protecting or reforesting forests (REDD+) declined by more than 50%. A number of media outlets criticized these project types most severely, which is reflected in lower demand and, with some time lag, in reduced supply. During the same period, the volume of certified CO_2 reductions from projects that protect the climate through higher energy efficiency steadily increased. These include, among others, stoves that use less firewood – like our Save 80, which we manufacture in Nigeria and Rwanda. Removal projects, which extract carbon from the atmosphere and permanently sequester it in the ground, have so far played a relatively minor role. On one hand, this can be accomplished using human-made technology, known as Direct Air Capture (DAC). On the other hand, plants can be used to draw CO_2 from the atmosphere, which occurs in our biochar projects. In 2024, we received removal credits for nearly 9,000 metric tons of CO_2 from our biochar projects. In 2025, we aim to permanently sequester 30,000 metric tons underground this way. Current developments in the voluntary carbon market give reason to hope that the quality of climate projects is fundamentally improving: away from forest protection programs and toward negative emissions. However, there is no guarantee that carbon offset providers will implement these projects effectively. CA agreements can, but do not automatically, lead to better projects. As is often the case, it depends on the specific design.

Development of the Voluntary Carbon Offsetting Market Worldwide



Payments and savings in million metric tons of CO_2. Since the boom in 2021, payments for climate action have been declining, as have the CO_2 reductions achieved (Ecosystem Marketplace 2024)

Certified Emission Reductions by Project Type



Volume of certified emission reductions in megatons of CO_2. In the voluntary carbon market, the volume of certified reductions has gradually declined since its provisional peak in 2021. Additionally, the volume of CO_2 reductions from forest protection and afforestation projects dropped sharply in 2024, while energy efficiency projects have steadily gained importance (MSCI Carbon Markets 2025).

Our Standard

Established in 2004 as part of a research project by the German Federal Ministry for the Environment, atmosfair has developed stringent standards for voluntary carbon offsetting. These standards serve as benchmarks for the evolving carbon offsetting market. atmosfair has been recognized in numerous international benchmark studies for its leadership in this field.

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

Approach

Standards

- Carbon offsetting is a secondary choice; avoiding CO_2 emissions is always preferable
- Climate protection takes priority over maximizing donations
- Raising awareness is a key component, as it leads to long-term CO_2 avoidance
- We collaborate with business travel specialists to optimize travel and promote alternatives like video conferencing

Implementation

- We do not partner with organisations that fail to meet atmosfair standards, such as proper CO_2 emission calculations, even if it could bring financial benefits
- We do not offer carbon offsets for activities that have simpler, more effective alternatives for reducing CO_2 emissions, such as private car use or power consumption
- We conduct independent calculations to accurately represent climate impact

Climate protection projects

Standards

- Permanent CO_2 reduction
- Additionality
- Support for technology transfer between the Global North and South
- Direct assistance to local communities
- Contribution to local environmental protection
- Involvement of project communities in technology selection
- Alignment with development policy goals

Implementation

- All projects must meet two key standards: CDM (UN) and the 'Gold Standard' (environmental NGOs), with up to 10% savings through Gold Standard Microscale
- CDM + Gold Standard + X: Compliance with additional atmosfair criteria, such as the carbon quota (minimum share of atmosfair funding in project costs) to ensure additionality, and exclusion of non-beneficial or high-risk projects like forest projects
- CO_2 reduction calculations and monitoring are conducted according to UN standards
- Qualified, UN-approved auditors (e.g., TÜV) are responsible for oversight and held accountable for errors.
- All test reports are published on the UN Climate Secretariat's website
- Project planning and development are managed by atmosfair, in collaboration with experienced partners in developing countries

TÜV SÜD · Gold Standard – Climate Security & Sustainable Development · United Nations Framework Convention on Climate Change

CO_2 calculation

Standards

- Comprehensive
- Scientifically rigorous
- Well-documented
- Certified

Implementation

- We account for all climate effects of air travel, including condensation trails and ozone formation, following IPCC guidelines, which significantly increase the calculated climate impact compared to CO_2 alone
- Our emissions calculator is custom-built and certified by the Federal Environmental Protection Agency (Umweltbundesamt)
- All data sources and methodologies are documented and made available on the atmosfair website

ipcc – Intergovernmental Panel on climate change · Umwelt Bundesamt

Organisation and finance

Standards

- Non-profit
- Independent
- Efficient
- Transparent
- Responsible

Implementation

- Administrative costs are kept low, with over 90% of all donations directed towards climate protection projects in the Global South, including planning, construction, and operation
- Donations are tax-deductible and regulated by the tax office
- We maintain a demanding legal status as a non-profit (gGmbH), with full disclosure in the trade register
- Our advisory board includes high-ranking patrons and environmental experts from the Federal Ministry for Economic Affairs and Climate Protection, non-governmental organizations, and the scientific community

Solarbelt Team Leader Dr. Stefan Günthner after the gasification campaign at the BEST synthesis plant in Vienna. He is showing cashew shells as well as crude oil and wax produced from the shells using Fischer-Tropsch synthesis.

What Potential Lies in Waste?

Energy from Residual Biomass

Wooden shells, grain straw, or sewage sludge: What appears to be worthless waste can be used as an inexpensive and, above all, climate-friendly energy source. But what quantities of such residues exist in the Global South? And how much of it is truly environmentally and socially compatible? A comprehensive study by atmosfair provides answers.

A three-dimensional labyrinth of pipes wrapped in silver foil winds through the interior of the synthesis plant in Vienna. Nothing indicates that novel jet fuel is being produced inside the opaque apparatus. Everything seems to be going according to plan: The employees of Bioenergy and Sustainable Technologies GmbH (BEST) look contentedly at eight screens full of technical displays in the control room. At the end of the process, a crystal-clear liquid flows into the prepared bottles. It is pure crude oil that atmosfair operator company Solarbelt is producing experimentally in Vienna. What's remarkable: The crude oil doesn't come from the depths of the earth, but from cashew shells that accumulate as residual material in Côte d'Ivoire.

Such residual biomasses are extremely valuable. They contain bound carbon that can be released as carbon monoxide in a technical process at high temperatures. With the addition of water vapor, hydrogen is also created. After this gasification, a Fischer-Tropsch plant combines carbon monoxide and hydrogen into longer hydrocarbon chains, which form the basis for fuels like kerosene. The process is called "Biomass-to-Liquid" (BtL) and is one of several ways to produce climate-friendly aviation fuels.

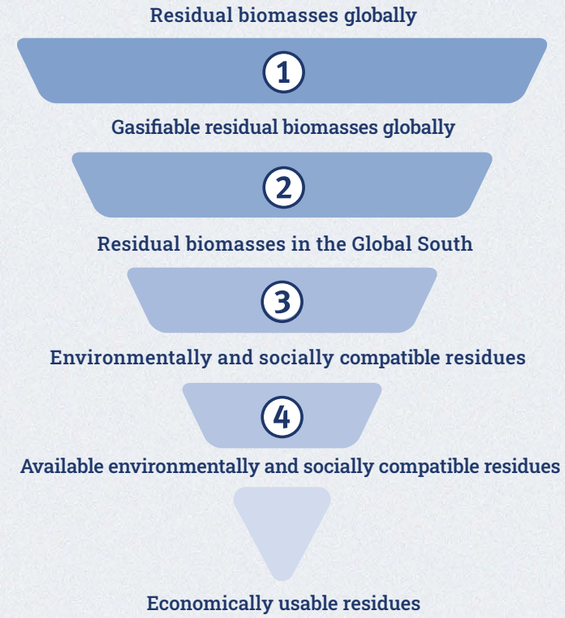
But how much BtL kerosene could actually be produced worldwide with this? How much residual biomass is available for this purpose? atmosfair is particularly interested in this question because we are developing production plants for CO_2-neutral kerosene together with Solarbelt. That's why we created a study on the volume potential of residual biomasses in cooperation with the ifeu Institute. It's important to note that residual biomasses are suitable not only for kerosene production but also for producing electricity or biogas.

Criteria for Environmentally and Socially Compatible, True Residues

From an environmental perspective, the use of biomass must be evaluated in a differentiated manner in most cases. In particular, the competition between energy and food production is rightly criticized as the food-versus-fuel conflict. That's why we focus on residual biomasses that were not grown for energy production.

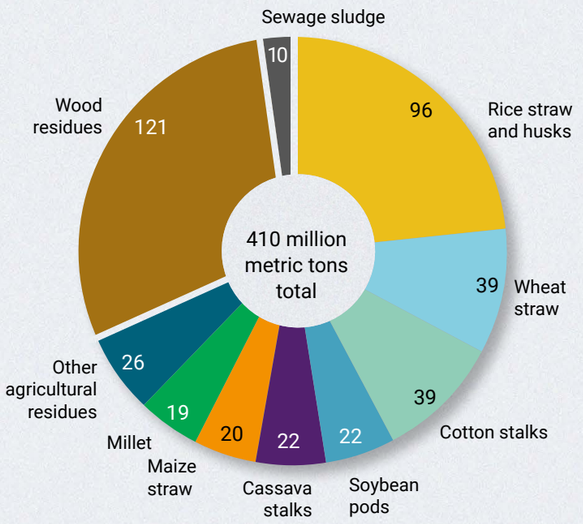
We select residual biomasses in the following steps:

1. We focus on residual biomasses that can be gasified in our volume estimation, because BtL production is the reason for the study. These are primarily woody residues, but to a lesser extent also straw. Other residual materials like household waste or animal manure also contain energy but cannot be gasified or can only be gasified with difficulty. Therefore, we exclude these from consideration.
2. We only consider waste from the Global South because atmosfair's goal is to support these countries. Agriculture and forestry there benefit from purchasing unused residues. And with the Fischer-Tropsch plants of BtL production, e-kerosene can later also be produced using a different process, once sufficient renewable energy capacities are available. Moreover, there are presumably more unused residual biomasses and thus "true residues" in the Global South than in the Global North, where many residual materials are already recycled.



The atmosfair study proceeds in four steps to determine the amount of residual biomasses that are actually available without competing uses and are environmentally and socially sustainable. We only make considerations about the amount of economically usable residues without calculating them.

Agricultural Residues Dominate Residual Biomasses in the Global South



Total volumes of available, environmentally and socially sustainable residual biomasses in the Global South by type of residue, in million metric tons per year (Data basis: FAO 2024).

Horst Fehrenbach
Department Head Resources,
ifeu Institute

"The atmosfair study applies extremely restrictive criteria. It determines potentials for advanced biokerosene that can be reliably assessed as sustainable and harmless. With this foundation, Global South countries can themselves build value chains for a world market."

3. Based on the United Nations Sustainable Development Goals (SDGs), we establish a series of criteria for environmentally and socially compatible residual biomasses. We only consider residues from plants suitable whose cultivation harms neither people nor nature. For example, we exclude residual materials from plantations where toxic pesticides are used or labor standards are inadequate. We also exclude residues from plants that are used solely for producing energy or animal feed. Both are neither environmentally nor socially compatible. Valuable farmland should be used exclusively to provide for people. This way we avoid additional incentives for the targeted cultivation of feed or energy crops that could arise from purchasing residual biomasses.
4. If people locally already use residual materials as animal feed, mulch, or building materials, we also exclude these. It's better than energetic use if the residues replace specially grown feed crops or mineral fertilizer, or bind carbon long-term.

These principles progressively reduce the available quantity of residual biomasses. Only when we consider all criteria can we be certain that using residual biomasses has no negative impacts on people or the environment.

To apply these principles, we use data on environmental and social sustainability or availability from our own surveys and external studies. As a data basis, we used the worldwide production volumes of various crops from the Food and Agriculture Organization of the United Nations (FAO).

Throughout the entire Global South, crop residues from various field crops make up the largest portion of all residual biomasses, followed by wood residues that primarily accumulate in sawmills and wood factories. Dried sewage sludge, on the other hand, can only contribute a small part to BtL production.

Among crop residues, straw and husks from rice production dominate with a total of 96 million metric tons per year, most of it from populous Asia. In our calculation, soybean pods and corn straw account for only 10% because we only consider residues that arise from producing human food and exclude waste from feed or energy production.

Of a total of seven billion metric tons of residual biomasses that accumulate worldwide each year, after applying our criteria only 420 million metric tons remain. From these, approximately 40 million metric tons of kerosene could be produced using gasification and subsequent Fischer-Tropsch synthesis. That corresponds to one-fifth of global kerosene demand in 2022 – far from enough to operate all aviation CO_2-neutrally. Since our approach is very restrictive, it can be assumed that actually more residual biomasses meet our principles.

Fuel, Electricity, Cooking Gas: How atmosfair Uses Residual Biomasses

Whether using residual biomasses is economically viable depends on where these residues are found. Cashew shells that accumulate at a processing facility are easier and cheaper to transport than rice straw that is spread out over large areas of fields. Shells are particularly well suited for BtL production since they usually accumulate at central locations and because wood-like residues gasify well – as the experiment in Vienna showed. After the successful experiment with cashew shells, Solarbelt went into a second round and gasified coconut shells from Indonesia in November 2024 – also successfully. atmosfair is now working together with Solarbelt to build a small BtL plant in the Global South to produce climate-friendly kerosene from unused waste.

However, CO_2-neutral aviation fuels are not the only application for which atmosfair uses or will use biogenic residual materials.

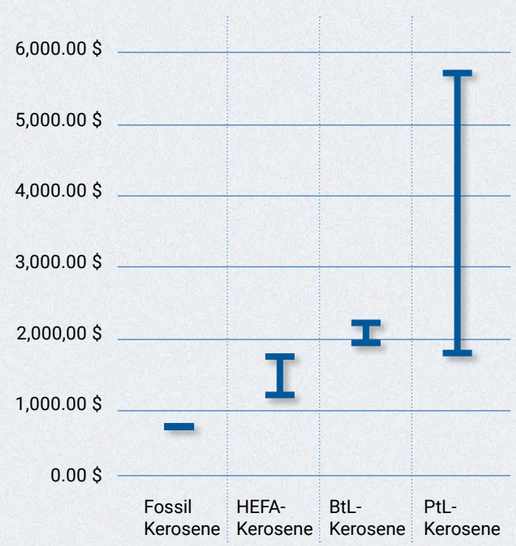
A brief overview of our biomass team's activities:

- In Tonk, India, we burn crop residues from mustard production in a power plant that cannot be used otherwise. With this, we supply 25,000 households with electricity.
- In Nairobi, we build small biogas plants for the rural population. In them, cow dung ferments into cooking gas with which people cook CO_2-neutrally. Additionally, the remaining residue can be used as good fertilizer.
- Using wood residues from sawmills, we produce biochar in our pyrolysis plant in Tanzania. This char improves agricultural soils and permanently binds carbon in the ground.
- In the Ugandan capital Kampala and in the Philippines, atmosfair inspected landfills in late 2024 and early 2025 where large quantities of unused organic waste lie and rot uncontrolled. Our goal is to utilize this waste in large biogas plants.
- In Nigeria, we will press crop residues into pellets that people can use as fuel in our efficient stoves. This way they no longer need firewood from trees, transforming the Save 80 into Save 100 stoves.
- Our efficient brick kiln in Malawi fires urgently needed building materials with waste from rice and tea production. For this it needs less than half as much energy as traditional kilns.
- In Tanzania, our partner company BioBuu collects organic waste that it processes into compost in special facilities. This way we produce fertilizer and avoid methane emissions that can arise when organic matter rots uncontrolled.

The Costs of Climate-Friendly Kerosene

A cost comparison shows that so-called sustainable aviation fuels (SAFs) are currently significantly more expensive than fossil kerosene; BtL kerosene specifically costs three to four times as much to produce. However, costs will decrease with efficiency improvements in production.

Kerosene from hydrotreated esters and fatty acids (HEFA) is fundamentally cheaper to produce but can be problematic if the fatty acids come from energy crops like oil palms. If old cooking fat is used instead, as is often the case today, the potential is very limited worldwide. Power-to-Liquid (PtL) kerosene is currently expensive because the technology is not yet mature and investment costs are high. With further expansion of renewable energy, lower costs can be expected here as well.



After World Economic Forum 2020, EIA 2024

A tractor pulls a machine for turning the waste windrows

BioBuu

The first windrows with organic waste are stacked

Sustainable Composting of Organic Waste

Like many East African countries, Tanzania has a waste problem. To prevent this from becoming a climate problem, we compost organic waste there and produce climate-friendly fertilizer.

Tanzania, south of Dar es Salaam, August 2024: Kigen and Matt from our partner BioBuu stand at the new composting facility, about 30 kilometers south of Dar es Salaam. They proudly observe what others would turn away from. Trucks roll up and unload their cargo: Fresh organic waste from a local company. The trucks bring the first fruit and vegetable scraps that would have ended up in landfills just a few weeks ago. Instead, they will now be carefully processed here. The end result is fertile, natural compost that improves soils and protects the climate.

Waste Disposal as a Global Challenge

Tanzania, like many other East African countries, faces a constantly growing waste problem. In the urban center of Dar es Salaam alone, four thousand metric tons of garbage accumulate every day. But instead of sensible use, this waste is often mixed with plastic, metal, and other refuse and disposed of in landfills. There it rots under uncontrolled conditions, releasing large quantities of methane – a greenhouse gas that significantly accelerates climate change. This is where atmosfair and BioBuu come in: collecting organic waste separately to process it specifically.

How Waste Becomes Something Valuable

The basis of composting lies in a natural process: the decomposition of organic materials by microorganisms. BioBuu stacks the organic material in a controlled manner in so-called windrows – long, aerated piles that are turned regularly. This turning increases oxygen content, preventing anaerobic decomposition, during which climate-damaging methane forms. At the same time, oxygen increases the activity of microorganisms responsible for decomposition. In the first weeks, the temperature inside the windrows rises significantly due to biological activity. The heat helps kill potentially harmful germs and accelerate the decomposition process. Over 16 weeks, the former waste transforms into nutrient-rich compost that is finally packaged and sold.

Benefits for Local Agricultureft

BioBuu sells the finished compost primarily to smallholder farmers in the region. These farmers often face the challenge of increasing their yields without being able to afford expensive chemical fertilizers. BioBuu's organic fertilizer offers them a cost-effective and environmentally friendly alternative. The benefits for the soil are enormous: The compost improves soil structure, increases water retention capacity, and provides essential nutrients like nitrogen, phosphorus, and potassium. As a result, plants grow healthier and more resilient, leading to higher yields. For many smallholder farmers, this means not only more income but also greater security in food supply – particularly important in a region repeatedly confronted with the consequences of drought and climate change.

Social and Economic Benefits

Composting is not just a benefit for agriculture. It also creates new jobs and thereby strengthens the local economy. From collecting waste to processing and marketing the fertilizer, the composting facility offers numerous employment opportunities for local people. Especially for women and young adults, who often have difficulty finding work, new prospects open up here.

The environmental benefits of composting extend far beyond soil improvement. Through controlled decomposition of waste, the formation of methane – one of the most harmful greenhouse gases – is avoided. Methane has a 27 times stronger effect on global warming than carbon dioxide. After expanding our facility, we will process 12 truckloads of organic waste every day. This will allow us to avoid 40 metric tons of CO_2 emissions.

Sustainability as a Holistic Concept

The composting project in Tanzania stands as an example of a holistic sustainability concept: It combines ecological, social, and economic benefits and shows how a supposed problem – waste disposal – can become a solution to multiple challenges. atmosfair and BioBuu rely on long-term partnerships with communities and local businesses to operate the composting facilities sustainably. The goal is to extend the model to additional regions and thus make a comprehensive contribution to improving waste management in Tanzania.

Conclusion

The composting facility demonstrates the great potential of sustainable solutions. Here in Tanzania, atmosfair and BioBuu link ecological, social, and economic interests. They are setting a good example – toward a greener future for Tanzania.

Divine Dhaka (Accountant Fayam Limited) and Dr. Isidore Yama (Managing Director Fayam Limited) at the construction site of the second vertical shaft kiln

Fighting Deforestation with Bricks

atmosfair is breaking new ground: In Malawi, we produce bricks in energy-saving shaft kilns for growing construction needs.

"Deforestation here is our biggest environmental problem," says Charles Nasala, Managing Director of our project partner New Vision Anenenji Building Construction. One percent of Malawian forest disappears annually – and the trend is rising. According to Welthungerhilfe, at this rate all forest in Malawi would be cleared in 40 years. A large portion of the wood ends up in brick production: Malawi's population is growing and needs a roof over their heads.

"A typical Malawian family builds their home with bricks, and currently brick production occurs largely in the informal sector," Charles Nasala describes the situation. The informal sector includes people and micro-enterprises that are not captured in a country's official statistics (shadow economy).

Bricks must first be formed and then fired. Malawian brick producers typically stack formed bricks outdoors. In the cavities underneath, they light a fire with firewood and charcoal and fire the bricks this way. Brick producers need large quantities of firewood because a lot of waste heat is lost during the process. They often clear nearby forests, which recover slowly or not at all.

The end product is also an unevenly fired brick because temperature distribution is difficult to control.

Inspection of the completed VSBK kiln in Mulanje
From left: Shruti Kudtarkar (Expert RINA), Stella Namakhoma (Production Manager NEVAGAS), Charles Billy Nasala (Managing Director NEVAGAS), Justin Jere (Administrative Manager NEVAGAS), David Grüttner (Project Manager atmosfair), Peter Schramm (Head of Building Materials, MIERA, GIZ) and Jordan Makasu (Lead Engineer, NEVAGAS)

"We cannot and do not want to stop people's desire for a – mind you, very simple – house. For many Malawians, these bricks are the only available building material," Charles Nasala sums up the current situation. He and others are urgently seeking alternatives. For instance, the Malawian government passed a law in 2018 prohibiting the construction of public and commercial buildings with bricks from traditional brick-firing methods.

atmosfair Enters New Territory in the Construction Sector

It was a long road to the first bricks from alternative production. Together with MIERA, a project of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), atmosfair analyzed the Malawian construction sector in 2023. After intensive preparation, atmosfair was able to sign the first contract with Charles Nasala and NEVAGAS B.C. at the end of 2023 and thus finance the construction of a first facility for climate-friendly brick production.

The vertical shaft kilns (Vertical Shaft Brick Kiln [VSBK]) run completely on renewable raw materials and consume less than half as much energy as conventional production facilities. As fuel, NEVAGAS B.C. uses not firewood but waste materials like rice husks. These biomass wastes from rice or tea production would otherwise simply rot or be burned by farmers. In the shaft kiln, their energy can be used sensibly. This only produces CO_2 emissions that are CO_2-neutral because the plants drew their carbon from the atmosphere while growing. By forgoing firewood and the efficient functioning of the VSBK, brick producers save around 1,000 metric tons of CO_2 each year.

The First Kiln is Complete

In December 2024, the time had come: construction work on the first shaft kiln was completed. Charles Nasala and his employees are pleased that his

The completed VSBK in Mulanje, Malawi

company will soon be able to start production: "With this kiln, we can produce over three million bricks per year. With that, 120 houses can be built – and we urgently need them here." Malawi's population has grown by about four million in the last 10 years.

High-Quality Brick Production

The high production capacity is part of the VSBK principle. In contrast to traditional methods, the bricks in the VSBK are fired in a continuous firing process. Unfired brick blanks are introduced into the shaft from the top together with the climate-friendly fuel and are continuously lowered to the end of the shaft within 24 hours. In the middle of the shaft is the so-called heating zone. In this zone, the agricultural residues burn off, causing the bricks to harden.

The excess heat rises upward and continuously heats the upper bricks. This saves a lot of energy. The uniform firing process ensures a particularly load-bearing, strong brick.

“The VSBK is the best and most economical kiln.”

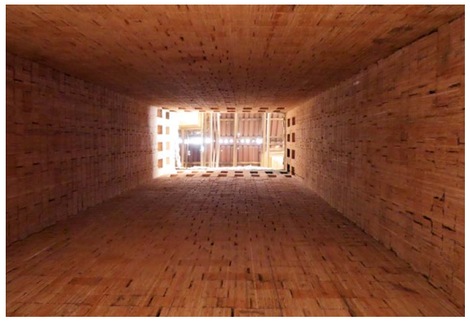
The construction of the kiln has also attracted the interest of Dr. Isidore Yama from the capital Lilongwe: “When I heard about VSBK technology, it was immediately clear that I wanted to get in touch with atmosfair.” Dr. Yama is himself a brick producer and has spent recent years intensively examining alternatives to traditional brick-firing methods. He had even built his own brick kiln for this purpose. But even his innovative capacity eventually reached its limits: “My kiln has its limits. We couldn’t make it bigger, and producing 3,000 bricks per week isn’t really a business. That’s why we couldn’t achieve much in all these years.” After thorough research, Dr. Yama came to the conclusion: “The VSBK is the best and most economical kiln.”

Like many small entrepreneurs, Dr. Yama has not been able to expand his business model so far. Malawi is currently experiencing a severe economic crisis. Bank loans are often so expensive that companies cannot possibly service them. This makes atmosfair’s work all the more important. In April, atmosfair was able to contractually conclude cooperation with Dr. Yama and his company Fayam Limited and begin construction of the kiln. The kiln should be completed by mid-2025. Dr. Yama is already preparing intensively for the operational phase: He is already in contact with producers in the wood industry and wants to use waste sawdust and rice husks as sustainable fuel.

Further Expansion Planned in Malawi

Success is attracting attention. atmosfair has established contact with additional Malawian entrepreneurs who have already carried out first steps such as soil investigations. With five of these entrepreneurs, atmosfair has created a clear roadmap to further exploit the great potential of the VSBK.

The high demand for bricks will continue to grow in the future. To prevent this from ending catastrophically for Malawian forests, investments in climate-friendly technologies are needed today – like those from atmosfair.



Rice husks are suitable as a more climate-friendly fuel for brick production. Below: View from below into the shaft of a VSBK.

From Plant Construction to Certification: **News from Our Projects**

Production of Save 80 stoves in our new factory.

Stove Factory in Kano

Milestone for Nigeria’s Climate Goal

In summer 2024, atmosfair moved and significantly expanded the existing stove factory in Kano, opening it at a new location. At the ceremonial opening, State Environment Minister Dr. Iziaq Adekunle Salako emphasized the importance of the factory for over 100 modern jobs and climate action.

With a capacity of up to one million Save 80 cookstoves annually, we meet the growing demand for efficient stoves and fulfill our target agreement with the government. The new factory features, among other things, a laser cutting machine, larger storage areas, and a solar system that supplies the entire factory with energy, thanks to a battery even at night.

At the same time, we are expanding our distribution network in Nigeria and neighboring countries. With expanded production, atmosfair aims to supply six million households with stoves by 2030, whose CO_2 savings correspond to 15–20 % of Nigeria’s climate goal. Expansion into ten additional African countries is planned.

The efficient stoves save up to 80 % firewood, reduce smoke exposure, and improve cooking comfort. We are also further developing our project. Innovative cooking solutions, including electric cooking, wood gasification stoves, and the production of briquettes from residual biomass offer long-term climate-friendly and resource-conserving solutions for clean cooking in Africa.

The water kiosk in Lomé supplies the local population with clean drinking water – made possible by solar power.

Solar Drinking Water Supply

17 New Water Kiosks in Togo

In 2024, we put 17 water kiosks into operation at six different locations in Togo: Adjegan, Kpessi, Lomé, Agou, Adetikope, and Hountsiafa. The facilities supply local communities with clean drinking water that they don't need to boil before drinking.

Despite high-quality installation work, operating the water kiosks initially proved challenging. During the dry season, the boreholes filled with sand, causing the booster pumps to become overloaded and fail.

Thanks to the technically skilled team of our local project partner Eau Propre d'Afrique, continuous monitoring by atmosfair (we have been accompanying the project for more than 15 years), and donation funds, we were able to solve these problems. Additionally, donations from German companies in 2024 enabled free drinking water supply to five schools with a total of 3,200 students and teachers. For the coming year, we plan to put another 20 water kiosks into operation – eleven of them on school grounds. We are building the facilities at two new locations, Kara and Sokodé.

Pilot Project:

Clean Cooking for Uganda

atmosfair has started the trial distribution of efficient stoves in Uganda in cooperation with three local partners. So far, we have sold over 500 of our Save 80 stoves to households in the East African country at prices that we can heavily subsidize through the CO_2 certificates. The stove components were produced in the atmosfair factory in Rwanda and assembled in Uganda. With the support of our partners, we are expanding our network to reach more communities nationwide and create a healthier, more climate-friendly future for Uganda.

DNP/Frank Fendler

In Madagascar, many villages receive electrical power for the first time with our solar project, enabling this woodworking shop in Ankililoaka to produce more, for example.

Photovoltaics

Two Mini-Grids in Madagascar Put into Operation

In 2024, we built new autonomous power grids in Madagascar. Together with our partner ANKA Madagascar, we erected solar systems with battery storage in the two small towns of Ankililoaka (600 kWp) and Ambahikily (500 kWp).

These supply up to 11,000 people with electricity – including for operating a local radio station. atmosfair also electrified five remote health centers with a solar roof system.

In many regions of Madagascar, there is no public power grid. Thanks to our total of seven mini-grids, households and businesses in 22 villages are receiving reliable energy supply for the first time. Financing through atmosfair keeps electricity prices affordable. The first three mini-grids have already saved 950 metric tons of CO_2. With new facilities, we will avoid three times as many emissions.

Our project manager Nele Erdmann was on site in November and verified the quality of the mini-grids and the positive impacts on the population. For example, a woodworking shop receives more orders through the electricity connection, can extend its production hours, and is hiring additional workers. Additionally, we will expand the pilot project for electric cooking in the regions with mini-grids. Nele Erdmann conducted stakeholder consultations with ministries and potential users for this purpose. The response was extremely positive, so the e-cooking project can start in 2025 for initially 4,000 households – another important step for climate-friendly energy in Madagascar and all of Africa.

For low-emission cooking, efficient stoves fueled by wood or crop residues are fundamentally the most affordable solution. However, the situation is different in regions suffering from severe droughts and where little renewable biomass is available. Here it can make sense to use electricity for cooking, provided sufficient electricity is produced with photovoltaics.

Solar-powered electrical cooking in Tanzania

Tanzania & Kenya

Solar Electric Cooking Pots at Schools

atmosfair installed four newly developed electric cooking pots at Magnificat School in Sanya Juu, at the foot of Kilimanjaro in northern Tanzania, in early 2024. The efficient cooking devices each hold 170 liters. Together with the photovoltaic system already installed by atmosfair, they enable solar electric cooking for the first time for all 640 students at the school. A similar system has also been supplying the Tuleeni children's home in Moshi since early 2024. Two additional solar electric cooking systems for a school in eastern Tanzania and on the Kenyan coast are already under construction.

atmosfair offers these systems at reduced prices and with interest-free financing over several years. Only this makes it financially possible for schools to switch from cooking with firewood and charcoal to clean electric cooking and thus avoid health-damaging smoke and deforestation. The solar system not only delivers 100% renewable electricity for cooking but, together with lithium batteries, also guarantees a stable power supply that is essential for electric cooking at schools.

Namibia

Scaling Industrial Biochar

In Namibia, we produce biochar centrally in an industrial plant. For this purpose, we have been working with the companies PyroCCs and PyroNam on construction and certification since December 2024. The new pyrolysis plant is being built on the Nog Verder Farm in the Otjozondjupa region in northern Namibia. Previously, in August 2024, our employee Dr. Katrin Mikolajewski traveled to Namibia to inspect a pilot plant and examine the project against our own criteria for projects and usable biomass. We are aware that removing large quantities of bush wood can be ecologically problematic. Therefore, we only use bush wood for which farmers have received permission from the Ministry of Forestry, which prohibits excessive removal of bush wood. The Environmental Compliance Consultancy (ECC) monitors whether farmers actually adhere to the approved quantities.

Pyrolysis plant for bush wood in Namibia

Long-term, we sequester over 2,000 metric tons of CO_2 per year in the ground this way. Additionally, urgently needed jobs are created at each location: Over 40 people, including 20 unskilled youth, earn their livelihood with the construction of each plant and the procurement of raw materials.

New Tool

The atmosfair CO_2 Event Calculator

Since its launch in September 2024, it enables event organizers to calculate the CO_2 emissions of their events simply and precisely and to offset unavoidable emissions in certified climate projects.

The tool guides users step by step through the accounting based on the VDR standard and current emissions data, capturing key data on arrival and departure, accommodation, catering, the event location, and logistics. Just three basic pieces of information about the event are enough to create a CO_2 report. The calculator bridges missing data with average consumption values. Each step can be individually adjusted when data is available to calculate emissions even more precisely. In calendar year 2024, emissions for over 2,000 events were already calculated using the freely accessible calculator. Users offset over 7,500 metric tons of CO_2 by financing atmosfair projects.

Learn more about the atmosfair CO_2 event calculator!

Contact us if interested or with questions at: eventrechner@atmosfair.de

From atmosfair's Perspective:

An Ideal Offsetting Model

Given the variety of (inter)governmental regulations and standards from private organizations, it's difficult to determine what "good offsetting" actually is. Therefore, building on the Science Based Targets Initiative (SBTi) and the Corporate Sustainability Reporting Directive (CSRD), we propose the following approach as best practice:

- Reducing emissions is more effective than offsetting. Therefore, companies should reduce their own emissions (Scope 1) as much as possible, with us advocating for a short-term goal within the next 5 years. Each year, external auditors should determine how much companies deviate from the intended reduction path.
- Companies should offset remaining Scope 1 emissions with high-quality CA projects outside their value chain, with a steadily increasing share of removal credits, toward a net-zero goal.
- Companies should, if possible, completely avoid indirect emissions from purchased energy (Scope 2) within 5 years by switching to renewable energy (e.g., own production, climate projects, distribution, IT, public relations, administration Power Purchase Agreements, high-quality green electricity certificates).
- Companies should account for supplier emissions (Scope 3) in accordance with the CSRD and work to reduce them as much as possible. This can be achieved, for example, by including criteria on CO_2 intensity in tenders.
- Companies should offset remaining hard-to-abate emissions from suppliers (e.g., necessary business flights for customer acquisition) and from purchased energy (e.g., for high-temperature processes) according to the same principles as remaining own emissions.

In our approach, offsetting is a supplementary measure that cannot be credited toward reduction targets. Instead of compensating for missed goals, companies take responsibility for emissions that remain after successful reduction.

Martin Herma, atmosfair expert for global carbon markets

First Airline Index Since the Pandemic

On November 20, 2024, we published the atmosfair Airline Index (AAI), based on data year 2023. This worldwide comparison of all major airlines shows that the CO_2 efficiency of global passenger aviation has improved by only about 6% compared to the last pre-pandemic year 2019. This corresponds to an annual increase rate of 1.4% – although a 4% efficiency increase would be necessary to achieve the Paris climate goals.

The German airlines Lufthansa, Condor, and TUIFly can slightly increase their CO_2 efficiency compared to 2019. Nevertheless, they slip back in the overall ranking, with Lufthansa dropping from place 66 to place 97. They are overtaken by airlines that invested more heavily in modernizing their aircraft fleets during the pandemic years. To determine the CO_2 efficiency of airlines, we also consider whether they use climate-friendly fuels. Currently, these are primarily produced from used cooking oils and cause significantly fewer CO_2 emissions when burned than fossil kerosene. However, only small quantities are available so far. Therefore, only a single airline in our ranking can improve by two places because it sources 1% of its kerosene from alternative sources.

From Donation to Project

Expenditures for Climate Change Mitigation Reach Nearly EUR 28 Million

Since 2005, atmosfair has been funding and operating climate projects globally, using voluntary contributions toward climate change mitigation. The process begins with a signed support agreement between atmosfair and the project operator, which outlines binding annual carbon dioxide reduction targets and specifies how atmosfair will support the project. The period between donation and actual carbon reduction can take up to one and a half years, as this time is needed for project setup and operation. The carbon reductions are then verified by UN-approved assessors.

Timeline for Donation Use in Climate Projects:

Start: atmosfair receives your climate change mitigation contribution.

Months 1–2: atmosfair or its partners purchase necessary hardware, such as building materials or photovoltaic panels. Whenever possible, materials are sourced locally to support local economies. However, this is not always feasible; for instance, many African countries must import steel. Despite these challenges, atmosfair strives to locally produce smaller components, such as pots for efficient cookstoves, even if the quality may not match stainless steel alternatives. Projects like building small-scale biogas plants for farms in Nepal and Kenya are a prime example, where nearly 100% of materials, such as clay bricks and floor fill, come from the region.

Months 3–4: Materials are delivered to project partners. Importation challenges often arise, such as delays at customs, with shipments stuck in ports for months and incurring significant customs duties. Negotiating with local authorities, particularly with our strict zero-tolerance policy for corruption, is difficult. Internal logistics are also problematic, especially when security situations cause delays.

Months 5–6: Production and distribution of climate products (e.g., efficient cookstoves, small biogas plants) or project setup (e.g., installing photovoltaic systems for villages) begin. Depending on the technology, production can range from assembling prefabricated components, as seen with cookstoves in Rwanda, to more complex tasks like pressing and bending steel plates, which will be implemented in local cookstove production in Nigeria and Rwanda. Other projects, like biogas plants in Nepal, require small construction sites for installation over several days. In more complex cases, like photovoltaic systems, detailed planning is needed for assembly.

In household-level projects, sales efforts play a role, as the technologies are sold at reduced prices made possible by climate mitigation contributions. For efficient cookstoves, for instance, teams may travel hundreds of kilometers to present the products in villages and deliver them later. These operations require significant local staffing, often creating hundreds of jobs in large projects.

Months 7–19: Carbon emissions are physically reduced during the project's first operating phase. For example, once the new technology is operational, a diesel generator can be switched off, resulting in immediate CO_2 reductions, to the satisfaction of local users.

Months 20–22: An external UN-accredited assessor (e.g., TÜV) verifies the reduction in carbon emissions and generates assessment reports, which are repeated annually. The assessor inspects installations, interviews operators, and reviews all relevant data, allowing them to calculate actual carbon emissions reductions for the previous period. These assessors must be re-accredited by the UN every three years and are held liable for any errors. The UN publishes these reports on publicly accessible websites for transparency and accountability.

Months 23–24: UN bodies cross-check the assessment reports, and the Gold Standard verifies that the project contributes to sustainable development in the host country. This step typically involves multiple rounds of feedback between the assessor and UN bodies.

Goal, month 24: The UNFCCC Secretariat issues Certified Emission Reductions (CERs) to atmosfair's registry with the German Emissions Trading Authority, part of the German Environment Agency (UBA). While this step no longer affects the project itself, it remains critical for atmosfair's documentation.

Registering atmosfair's emission reductions with the UBA offers donors a guarantee, as data is processed and saved by an independent governmental body.

Expenditure for climate protection projects 2024

Project category	Project	Expenditures 2024*	
Efficient cookstoves	India	5.15 %	53 %
	Nigeria	34.58 %	
	Rwanda	13.34 %	
	Lesotho	0.04 %	
	Malawi: Electric cooking	0.02 %	
Biogas & biomass	Kenya: small scale biogas plants for dairy farmers	0.01 %	14 %
	Nepal: Biogas	14.08 %	
	Tanzania: compost	0.03 %	
	Malawi: bricks	0.00 %	
	Columbia: biogas	0.01 %	
Sun and water	Kenya: solar water purification	0.22 %	16 %
	Madagascar: rural electrification	0.41 %	
	Mali: rural electrification	0.03 %	
	Senegal: solar power	3.14 %	
	Irak: solar power	0.14 %	
	Morocco: solar droplet irrigation	0.01 %	
	Dominican Republic: solar power	0.00 %	
	Burkina Faso: solar water purification	0.70 %	
	Togo: solar power	9.40 %	
	Tanazania: solar powered cooktops	1.46 %	
	Nepal Neue Energie (Helambu and Langtang Trek)	0.23 %	
	Nigeria: solar power	0.01 %	
Negative emissions	Indien: biochar TLUD	14.25 %	15 %
	Tanzania: biochar	0.49 %	
	Nepal: biochar	0.04 %	
	Namibia: biochar	0.02 %	
	Ghana: biochar	0.10 %	
Environmental education and transformative projects	Germany: Education projects	0.74 %	2%
	Transformative projects	1.06 %	
	Kenya Electro Taxis	0.27 %	
Total expenditures 2024: 28,3 Mio. Euro			100%

* Small share = Maintenance + ongoing operation; large share = New projects and expansion

Offsetting obligations and reductions achieved in 2024

Greenhouse gas reductions delivered and verified by UN auditors [1] [1,000 t CO_2]		2005 – 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025[2]	Planned total until end of 2025[2]
Efficient cookstoves	Nigeria: efficient cookstoves	21	18	0	124	86	36	40	28	20	15	21	17	424
	India: efficient cookstoves	23	75	20	20	103	140	149	273	533	674	663	656	3,329
	Lesotho: efficient cookstoves	21	22	25	28	29	29	26	25	25	25	19	0	273
	Rwanda: efficient cookstoves		7	0	98	108	124	161	193	258	334	442	447	2,172
Biogas & biomass	India: power generation from residual biomass	136	65	69	0	56	69	62	54	0	0	0	0	511
	Kenya: small scale biogas plants for dairy farmers			3	0	5	7	0	0	0	7	9	0	31
	Nepal: biogas			60	299	214	712	485	1,192	902	756	689	606	5,916
	Malawi: bricks												2	2
	Tanzania: compost										5	3	3	10
Sun, water, wind	Honduras: small scale hydropower	147	0	41	0	0	29	34	0	44	0	0	0	295
	Madagascar: solar PV									3	2	4	10	19
	Senegal: solar PV						50	85	67	120	125	106	137	689
	Other Solar PV (Iraq/Nigeria/Tanzania/Mali/Kenya)										1	1	7	9
Negative emissions	Biochar (India, Tanzania, Ghana, Namibia)											19	38	57
Concluded Projects	Diverse countries and project types	302	114	21	52	1	26	0	0	0	0	0	0	515
Total		**650**	**300**	**239**	**620**	**602**	**1,221**	**1,041**	**1,833**	**1,907**	**1,944**	**1,975**	**1,922**	**14,252**
Reduction obligation through voluntary climate protection contributions		697	108	71	86	129	488	336	372	426	426	308		
Reduction obligation through climate protection projects on behalf of clients		314	86	221	389	408	368	362	1,136	1,124	1,614	850		
Total reduction obligation		1,010	193	291	475	536	856	698	1,508	1,550	2,040	1,158		
Accumulated greenhouse gas reduction obligation		**1,010**	**1,203**	**1,494**	**1,970**	**2,506**	**3,362**	**4,060**	**5,567**	**7,118**	**9,157**	**10,316**		
Greenhouse gas reductions, verified by UN auditors, accumulated		**650**	**950**	**1,188**	**1,809**	**2,410**	**3,631**	**4,672**	**6,504**	**8,411**	**10,354**	**12,330**		

1
In the table, greenhouse gas reductions are listed for the calendar year in which they are verified by external auditors and certified by the applicable standard. Therefore, some greenhouse gas reductions achieved in 2024 are not yet recorded in this year, as they have not been certified yet

2
The greenhouse gas reductions indicated for 2025 are a forecast. The values may change in future annual reports.

In total, it takes about

- 6 months: Your contribution starts physically reducing CO_2 in a project.
- 1.5 years: The first CO_2 reductions are certified by an independent assessor.
- 2 years: atmosfair receives formal proof of CO_2 reductions from the UN.

The table above shows the carbon emission reductions achieved in the final phase—verified, reviewed, and confirmed by the UN. These reports are available on the United Nations Framework Convention on Climate Change (UNFCCC) website, with links provided on the atmosfair site. The table also compares these final carbon emissions reductions with atmosfair's reduction obligations to donors, which are accounted for when the climate change contribution is first received.

Though it can take up to two years between receiving donations and obtaining formal UN verification, atmosfair has reduced this gap to zero. By the end of 2024, atmosfair's 10.3 million tons of CO_2 reduction commitments to donors and customers were already offset by 12.3 million tons of formally confirmed CO_2 reductions.

This surplus of 2 million tons provides a buffer for 2025.

This efficiency stems from atmosfair's conservative estimates of its projects' carbon emissions reductions. Additionally, some projects have been operating longer than initially planned, generating further reductions. In 2024, 2 million tons of CO_2 reductions from atmosfair projects were certified by UN auditors.

In 2024, we spent EUR 28 million on climate projects (see financial section, pages 32–37). Of this, approximately 53% was allocated to efficient cookstove projects, 14% to biogas and biomass projects, 16% to solar projects, including solar agriculture and solar drinking water treatment, and 15% to removal projects. Around 2% of 2024's expenditures funded educational and transformative projects, primarily in Germany.

In some ongoing projects, the table may show zero carbon emission reductions. This doesn't mean the project isn't running or reducing emissions. Rather, it indicates that the UNFCCC has not yet published a report for that project in the given calendar year. As verification periods vary and don't always align with calendar years, emissions reductions can fluctuate annually, even for continuous projects.

Thanks to our solar mini-grids, people in Madagascar can now cook with electricity, without any emissions.

Financial Report

Summary

Revenue fell by 3 million euros from 2023 to 2024, reaching over 30 million euros. In 2024, atmosfair was able to invest approximately 28 million euros in climate protection projects.

In 2024, atmosfair again received no public funding. The only income from public institutions came through atmosfair's participation in the tender for CO_2 offsetting of business trips by the German Federal Government. No offsetting customer accounted for more than 10 percent of total revenue; thus, the non-profit atmosfair gGmbH remained financially independent.

For over 10 years, donations have been supplemented by income from business operations. The surpluses generated here cover part of the costs in atmosfair's non-profit section. In 2024, over 96 out of 100 euros of donations went into climate protection projects, either directly into technologies such as efficient stoves or solar systems, or to planners and operators of renewable electricity production projects. atmosfair used barely 4 out of 100 euros for its own personnel, who handle project administration and donor support, and for other costs such as IT, accounting, rent, or credit card fees.

Supervision / Organisation / Non-Profit Status

The shareholders' meeting of atmosfair gGmbH was expanded in 2021 and now consists of equal shares between the existing shareholder Foundation for Sustainability and Dr. Dietrich Brockhagen. While the foundation solely appoints the members of the company's control bodies, Dr. Dietrich Brockhagen is responsible for the company's business matters. Following the four-eyes principle, he also manages the company's business together with the second managing director Steffen Pohlmann under the supervision of the company's control bodies. The first control body is the independent advisory board for atmosfair standards, consisting in 2024 of representatives from climate-relevant federal ministries (BMWK, BMZ, AA), one professor each from ZHAW and HTW, and a representative from Germanwatch. It met two times in 2024.

The advisory board oversees management in matters of environmental integrity and decides on the approval of new climate protection projects, development and control of atmosfair standards including emission calculations, and the approval of new business cooperations.

As a second control body, the Foundation for Sustainability appointed a supervisory board in 2021, consisting of three members. As an independent body, the supervisory board controls the regularity and economic integrity of the company and exercises the following statutory powers:

A. Resolution on accounting
B. Discharge of management
C. Appointment of auditors
D. Decision on management compensation

The tax exemption of the non-profit GmbH for 2024 was certified by the tax administration. For climate protection contributions received in 2024, the non-profit GmbH properly issued donation certificates. To make its own work transparent for the public and donors, atmosfair follows the voluntary commitment of the Transparent Civil Society Initiative and publishes the desired information on its website according to the initiative's requirements.

Financially Independent

In 2024, atmosfair was entirely financed through donations for CO_2 offsetting and income from business operations. The latter is also permitted to a non-profit organization to a limited extent. In 2024, neither did the shareholders pay money to atmosfair, nor did atmosfair pay money to the shareholders.

Expenses for Planning Climate Protection Projects

The largest item in expenses is the development and operation of climate protection projects. These include costs for purchasing technologies or building materials (e.g., steel for efficient stoves) on one hand. On the other hand, they include expenses for project development and operation, including inspections by TÜV and other UN-accredited auditors, as well as for project personnel abroad.

Balance sheet 2024/Assets

Assets	2024 EUR	2023 EUR
A Fixed assets	1,940,582.38	306,419.00
I Intangible assets	15.053.80	8,587.00
II Tangible assets	54,108.58	26,412.00
III Financial assets	1,871,420.00	271,420.00
B Current assets	48,224,803.44	46,123,461.36
I Inventories	2.00	2.00
II Receivables		
Trade receivables	862,536.59	11,291,497.42
Receivables from affiliated companies	3,900,012.40	0.00
Other assets	9,845,213.87	6,35,469.79
III Cash and cash equivalents, etc.	33,617,038.58	28,472,492.15
C Accurals and deferred income	1,584.57	3,857.79
Balance sheet total	**50,166,970.39**	**46,433,738.15**

In total, atmosfair spent approximately 26 million euros here. In addition to the expenses for CO_2 offset projects, there were personnel costs for project planning and implementation, which amounted to approximately 2 million euros in 2024. In total, since its founding, atmosfair has supported climate protection projects with about 176 million euros.

As a basis for calculating funding commitments for their climate protection projects in a given year, atmosfair normally takes the average of the revenue from the previous two years. This complies with the principle of timely use of funds and gives atmosfair sufficient security for long-term funding commitments to project partners in the Global South. Furthermore, this allows for planning and building new projects, even if revenue should temporarily decline. Moreover, due to the lead time of about one year between project idea and use of funds for hardware such as efficient stoves or solar systems, new projects are not practically feasible otherwise. From 2023 to 2024, atmosfair's revenue fell by 3 million euros. According to the above principle, this would have led to a funding volume of about 32 million euros in 2024. atmosfair has fulfilled this. The bank balance increased from 28 million euros (2023) to about 34 million euros in 2024. atmosfair created net provisions of about 6,8 million euros in 2024.

Salaries According to TVöD for Employees and Management

After climate protection projects, personnel expenses were the second-largest cost factor. atmosfair employees are paid according to the public service tariff system (TVöD), with classifications ranging from project manager to management at levels 11–15. General administrative costs for telephone, postage, insurance, and office supplies amounted to about 134,000 euros. Rent and office maintenance totaled approximately 200,000 euros. Additional administrative costs can be found in the income and expenditure statement table.

Balance sheet 2024 / Liabilities

		2024 EUR	2023 EUR
A Equity		22,843,325.54	20,000,537.85
I	Subscribed capital	25,000.00	25,000.00
II	Reserves for statuory projects		
	Short-term reserves for climate protection projects	0.00	0.00
	Free reserves (including for climate protection projects)	22,818,325.54	19,975,537.85
B Provisions		26,595,314.09	24,664,269.73
	Tax provisions	1,759,808.95	1,557,591.16
	Provisions for climate protection projects	24,835,505.14	23,106,678.57
	Other provisions	0.00	0.00
C Liabilities		728,330.76	1,768,930.57
	Trade payables	360,738.78	176,249.40
	Other liabilities	367,591.98	1,592,681.17
D Accurals and deferred income		0.00	0.00
Balance sheet total		**50,166,970.39**	**46,433,738.15**

Administrative Costs of 4 Percent

One of atmosfair's standards requires efficient use of donations; therefore, only a small portion of donations may be used for administrative costs. This refers to funds that don't flow into climate protection projects because atmosfair needs them for administration and fundraising. In 2024, a total of nearly 1.2 million euros was spent on this, which, in addition to the above-mentioned items, mainly went to personnel costs and material costs in public relations, IT, accounting, credit card fees, travel expenses, etc. (see table blocks b) and c) under expenditures). This corresponds to an administrative cost ratio of approximately 4 percent of revenue.

The administrative costs are so low also because atmosfair continued to avoid paid advertising such as promotion teams in 2024 and instead gained public visibility through content-driven campaigns in the media free of charge. The participating celebrities also contribute to promoting atmosfair without offsetting.

DZI Donation Seal

The DZI audits non-profit organisations in Germany with regard to their use of donations and the appropriateness of their organisational structures. atmosfair held the DZI donation seal until September 2024 and has been confirmed a particularly low administrative cost ratio – 3.8 per cent in 2020 and 4.4 per cent in 2021. These are top values in Germany.

The DZI uses a complex approach for its calculations and arrives at lower figures for administrative costs than atmosfair itself.

Due to the high costs of the DZI seal, we have decided to refrain from renewing our certification for the time being.

Profits Achieved Increase Funding Volume for Climate Protection Projects

In 2024, atmosfair achieved surpluses of 7 million euros after taxes and before provisions in its business operations with services for companies, which were achieved through the operation of climate protection projects on behalf of customers, sale of CO_2 balancing software, and consulting services (climate service for companies). atmosfair uses the surpluses directly for climate protection projects.

Goal Achievement

Together with the CO_2 reductions certified in 2024, atmosfair has achieved more CO_2 reductions in its climate protection projects from 2005 to 2024, i.e., since atmosfair's founding, than reduction obligations arising from voluntary climate protection contributions and customer orders. This resulted in a surplus of about 2 million tons of CO_2 reductions (see table). Thus, atmosfair has overachieved its obligations to all customers and donors and built up a buffer for 2025.

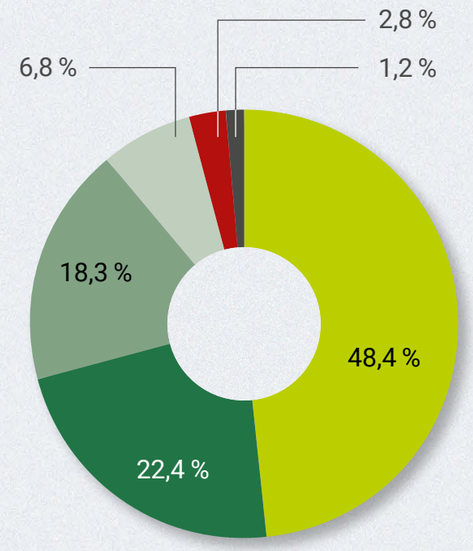
Audit and Discharge of Management

The 2024 annual financial statements were audited in accordance with the articles of association by an auditor appointed by the supervisory board. The auditor confirmed the annual financial statements, raised no objections, and issued an unqualified audit opinion as in previous years. The supervisory board confirmed the proper 2024 financial statements and discharged the management.

Income and Expenditure Statement 2024

	2024	2024	2023
Income	EUR	%	EUR
Voluntary climate protection contributions for climate protection projects	22,987,283	75,5	23,799,149
Climate protection projects on behalf of customers, CO_2 accounting software, consulting, etc. before taxes (economical business operations)	7,422,800	24,4	9,602,152
Other income (interest etc.)	47,807	0,16	19,009
Total	30,457,889	100,0	33,420,310
Expenditures			
A Climate protection projects for CO_2 offsetting, private and corporate customers			
Direct expenses (planning, construction, operation, technology purchasing, testing, personnel in developing countries)	-14,750,938	48,4	-15,951,723
Net creation/release of provisions and reserves	-6,835,954	22,4	-8,478,189
Total climate protection projects CO_2 offsetting	-21,586,893	70,9	-24,429,912
Personnel: project planning and support by atmosfair employees in Germany and in the project countries	-2,079,776	6,8	-1,369,856
B Administrative cost: support for donors and partners, donor recruitment, public relations work			
Personnel cost	-353,963	1,2	-263,667
Editorial office public relations	0	0,0	0
Total	-353,963	1,2	-263,667
C Other administrative expenses			
Office administration (telecommunications, postage, office supplies, insurance, membership fees, depreciation)	-133,536	0,4	-70,243
Rent and maintenance	-202,208	0,7	-200,534
Credit card fees, payment service providers, account fees, exchange rate differences	-123,946	0,4	-91,551
IT (fees, maintenance fees, server rental)	-37,731	0,1	-62,292
Accounting, tax consultancy, annual financial statements, auditor	-209,050	0,7	-348,061
Printing cost for publication	-12,511	0,0	-7,363
Contracts for work and services	0	0,0	-8,480
Travel and representation cost	-26,713	0,1	-8,027
Non-deductible input tax	-109,406	0,4	0
Total	-855,100	2,8	-796,550
D Commercial business operations: sustainability counseling for companies			
Expenditure on climate protection projects on behalf of customers	-4,622,271	15,2	-4,874,720
CO_2 accounting software	-37,731	0,1	-31,146
Personnel: sustainability counselling for companies	-235,976	0,8	-175,778
Taxes on income from sustainability counselling and climate protection projects on behalf of customers	-686,180	2,3	-1,478,681
Total	-5,582,158	18,3	-6,560,325
E For information purposes: surpluses and utilization			
Surpluses from economic business operations 2024, after taxes, before provisions	6,732,910	22,1	3,998,335
Total	-30,457,889	100,0	-33,420,310
Result after reserve release / surplus utilization	0		0

Expenses of atmosfair in 2024



- Disbursements for climate protection projects
- Provisions & reserves for climate protection projects
- Climate protection projects for companies
- Personnel for climate protection projects in Germany
- Other administrative costs
- Support for donors and partners, public relations

References /Selection

Companies

50Hertz
BayWa r.e. renewable energy GmbH
Beiersdorf AG
BMW AG/Group
DB Cargo AG
Deloitte
Deutsche Bahn AG
Deutscher Akademischer Austauschdienst (DAAD)
Deutsches Zentrum für Luft- und Raumfahrt e.V.
DHL
DFL Deutsche Fußball Liga GmbH
FlixBus
FTI Consulting
Hamburg Marketing GmbH
Hermes Germany GmbH
HRG Sports
InfectoPharm, Arzneimittel und Consilium GmbH
Inter.link
Klöckner & Co. SE
Knorr Bremse AG
Landesbank Hessen-Thüringen
Lufthansa AirPlus Servicekarten GmbH
Mercedes-Benz AG
meteoblue AG
Otto Group
Pfinder KG
QVC Deutschland
DB Schenker
Schülke & Mayr GmbH
SDC Bank
SICK AG
Siemens AG
Teva Health GmbH
Toll Collect
UNITO Versand & Dienstleistungen GmbH
VHV Vereinigte Hannoversche Versicherung a.G
WALA Heilmittel GmbH
WEFA Inotec GmbH
wpd AG
W&W Service GmbH

Government, NGOs, Politics, Science and Associations

Acted
Alexander von Humboldt Stiftung
Bundesverband Solarwirtschaft e. V.
Deutsche Bundesregierung
Deutsches Youth For Understanding Komitee e.V. (YFU)
École Polytechnique Fêdêrale de Lausanne
Enagement Global
ETH Zürich
European Green Party
Fraunhofer Gesellschaft
German Doctors e.V.
GIZ
Goethe Institut e.V.
Greenplanet Energy
Greenpeace e.V.
Harvard University
Klimaschutzstiftung Baden-Württemberg
Landeshauptstadt Düsseldorf
Landeshauptstadt München
Landesregierung Hessen
Lions Clubs International
Öko-Institut e. V.
Stadt Hamburg
Stiftung Entwicklungs-Zusammenarbeit
The Climate Group
Universität Basel
Universität Bern
Universität Zürich
Université de Genève

Events

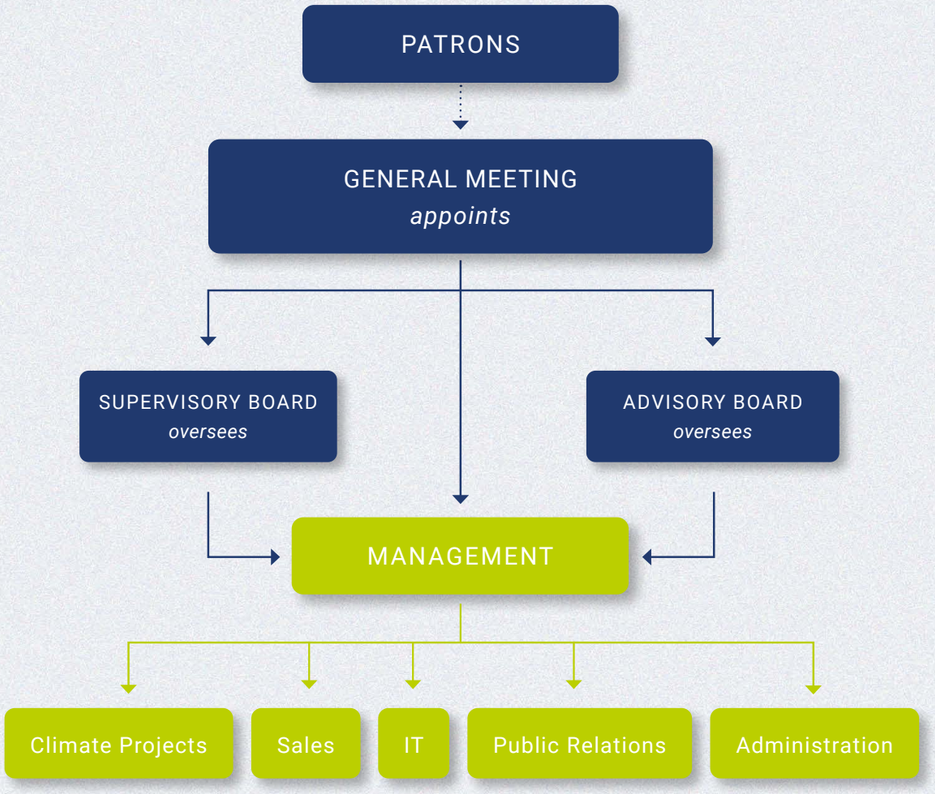
ARRtist Summit
Berlin Energy Transition Dialoge Conference 2024 (DENA)
Deutsche Hospitality
Die Ärzte
Die Toten Hosen
FKP Scorpio Konzertproduktionen
ITB Berlin
NY Climate Week
Tollwood

Tourism

AER Ticket
Aldi Suisse
Contrastravel
DAV Summit Club GmbH
Dein Marokko
Durchblick Leserreisen
Fairweg
Forum Anders Reisen
Frosch Sportreisen
Hauser Exkursionen
Hofer
Insight Reisen GmbH
Laade Gartenreisen
Lufthansa City Centre Reisebüropartner GmbH
Neue Wege Reisen
Papaya Tours GmbH
QTA Raiffeisen-Tours RT-Reisen GmbH
REISEN MIT SINNEN
RTK Reisebürokooperation
Schauinsland Reisen
Weltweitwandern
World Insight

Structure & Organisation

atmosfair gGmbH was founded in 2004 by the two current shareholders Stiftung Zukunftsfähigkeit and Dr. Dietrich Brockhagen from a research project of the BMU. The research project had previously developed the central standards for CO_2 offsetting that still guide atmosfair today. To ensure compliance with these standards, the federal government still sends employees from various ministries to the atmosfair Expert Advisory Board.



Patrons

The patrons are voluntary supporters and ambassadors of atmosfair. They are also members of the Expert Advisory Board but have no voting rights

Prof. Dr. Mojib Latif
Latif Senior Professor at GEOMAR
President, German Chapter CLUB OF ROME
Board Chairman, German Climate Consortium

Prof. Dr. Hartmut Graßl
Physicist, former Director of the Max Planck Institute for Meteorology in Hamburg

Supervisory Board

As an independent body, the supervisory board controls the regularity, economic integrity, and soundness of the company. The supervisory board adopts the annual financial statements of atmosfair gGmbH, appoints auditors, decides on the discharge of management, and their compensation. The members of the supervisory board are appointed and removed by the shareholder Stiftung Zukunftsfähigkeit.

Dr. Harry Lehmann
Supervisory Board Chairman and Director PtX Lab Lausitz, Zukunft – Umwelt – Gesellschaft (ZUG) gGmbH

Yvonne Wende
Deputy Chair and Founder, CEO and Principal of Berlin Cosmopolitan School

Dr. Christoph Mecking
Managing Partner, Institute for Foundation Consulting

Expert Advisory Board

The Expert Advisory Board approves projects and the allocation of funding. It also advises atmosfair on environmental integrity issues and develops atmosfair standards further.

Klaus Milke
Chair without voting rights Chairman of Stiftung Zukunftsfähigkeit

Prof. Dr. Barbara Praetorius
Professor of Sustainability, Energy and Environmental Economics, Berlin School of Economics and Technology

Christoph Bals
Political Managing Director, Germanwatch Spokesperson, Climate Alliance Germany

Prof. Dr. Regina Betz
Professor of Energy and Environmental Economics, Zurich University of Applied Sciences
Head, Center for Energy and the Environment

Malin Ahlberg
Deputy Head of Department, Federal Ministry for Economic Affairs and Climate Action (BMWK)

Dr. Ursula Fuentes Hutfilter
Head of Department, Climate Foreign Policy, International Climate Action, UNFCCC, Federal Foreign Office

Dr. jur. Annette Windmeisser
Head of Department, Climate Finance, Federal Ministry for Economic Cooperation and Development (BMZ)

Tests & Press

atmosfair emerged as the winner in all twelve comparative studies and tests since its founding in 2005.

In our test winner brochure, we present all comparisons for offsetting providers according to various criteria. You can view and download the brochure on our website at: atmosfair.de/testsieger

Here are our latest test results:

Stiftung Warentest Finanzen (Issue 3/2025)
CO_2 Offsetting: Flying, donating and helping the climate

Stiftung Warentest Finanzen compares four providers for CO_2 offsetting and concludes that only atmosfair offers a true offset for greenhouse gases caused by a flight. A unique feature is that only atmosfair has agreed on Corresponding Adjustments with partner countries. Saved CO_2 emissions are thus actually offset. In assessing the quality of climate projects, the article refers to the results from the previous test in 2022.

Quote from the testers' report: "You can currently find a true 'direct' offset for the greenhouse gases caused by your flight at atmosfair."

Stiftung Warentest (Finanztest, Issue 11/2022)
CO_2 Offsetting – Help climate action with these providers

Stiftung Warentest's Finanztest examined four providers offering voluntary CO_2 offsetting. Between June and September 2022, questionnaires were sent out and websites evaluated. The focus was on offsetting quality, transparency, management and control, as well as the principle "Avoid before Reduce before Offset." There are differences especially in offsetting quality.

Only atmosfair could "convince comprehensively." As test winner and the only provider, we received the overall grade "Very Good" (0.5) and the top grade in offsetting quality in the test.

You can find the complete article as a paid download on the website test.de

Test result:
Overall grade: 0.5 (very good)
Offsetting quality: 0.5 (very good)
Transparency: 0.5 (very good)

Quote from the testers' report: "Compared to the previous study, the quality of offsetting has deteriorated for three of the four providers. Only atmosfair could convince comprehensively."

Download Broschüre:

atmosfair.de/testsieger

"Donate for the climate and offset CO_2 – here's how to do it right!"

January 24, 2024 / Consumer Center North Rhine-Westphalia

"It's also good that when offsetting flights, not only emissions from kerosene combustion are calculated, but many other factors such as nitrogen oxides, ozone, and particles. Particularly noteworthy is that atmosfair – as the only provider in the German-speaking region to our knowledge – works with 'Corresponding Adjustments.' [...] Due to the broad portfolio and comprehensive quality assurance measures, we recommend atmosfair for consumers who want to offset their CO_2 emissions."

"atmosfair produces CO_2-neutral kerosene for the first time"

June 28, 2024 / Tagesschau

"We can now show that the process for electricity-based kerosene works and saves nearly 100 percent CO_2,' explained atmosfair Managing Director Dietrich Brockhagen. At the same time, he qualified that the technology is not yet mature and must overcome further important hurdles for the necessary market scale-up."

"First e-kerosene flies without Lufthansa"

June 28, 2024 / faz.net

"In Emsland, the world's first plant delivers CO_2-neutral kerosene. Airlines find it too expensive; they're not buying. Yet Lufthansa once declared itself the 'pilot customer.' [...] Climate researcher Mojib Latif adds: 'Now the airlines must also take on their share of the risk and commit to purchasing relevant quantities.' That is to say: Only if greater demand from aviation is secure will larger PtL production facilities be built."

"International airlines miss climate targets"

November 21, 2024 / ZDF heute

"According to this, international passenger airlines improved their CO_2 efficiency in 2023 by only about 6 percent compared to the pre-COVID year 2019, which corresponds to about 1.4 percent annually. However, with continued growth in air traffic, 4.0 percent per year would be necessary to achieve the climate goals agreed in Paris, says atmosfair."

"Climate transition in aviation is taking its time – German airlines falling behind"

November 21, 2024 / Frankfurter Rundschau

"An analysis by the NGO Atmosfair now shows, however, that airlines have not sufficiently increased their CO_2 efficiency in the last five years. 'The climate transition in air traffic is taking its time,' is the organization's verdict. [...] Atmosfair Managing Director Dietrich Brockhagen said about the airline index: 'Air traffic has almost grown back to pre-pandemic levels; unfortunately, the same cannot be said for climate efforts.'"

Bernd Fuchs has been a weather and climate expert at RTL since 1997.

The Climate Update is particularly close to his heart. For him, reason and decency are the two most important prerequisites for a livable future.