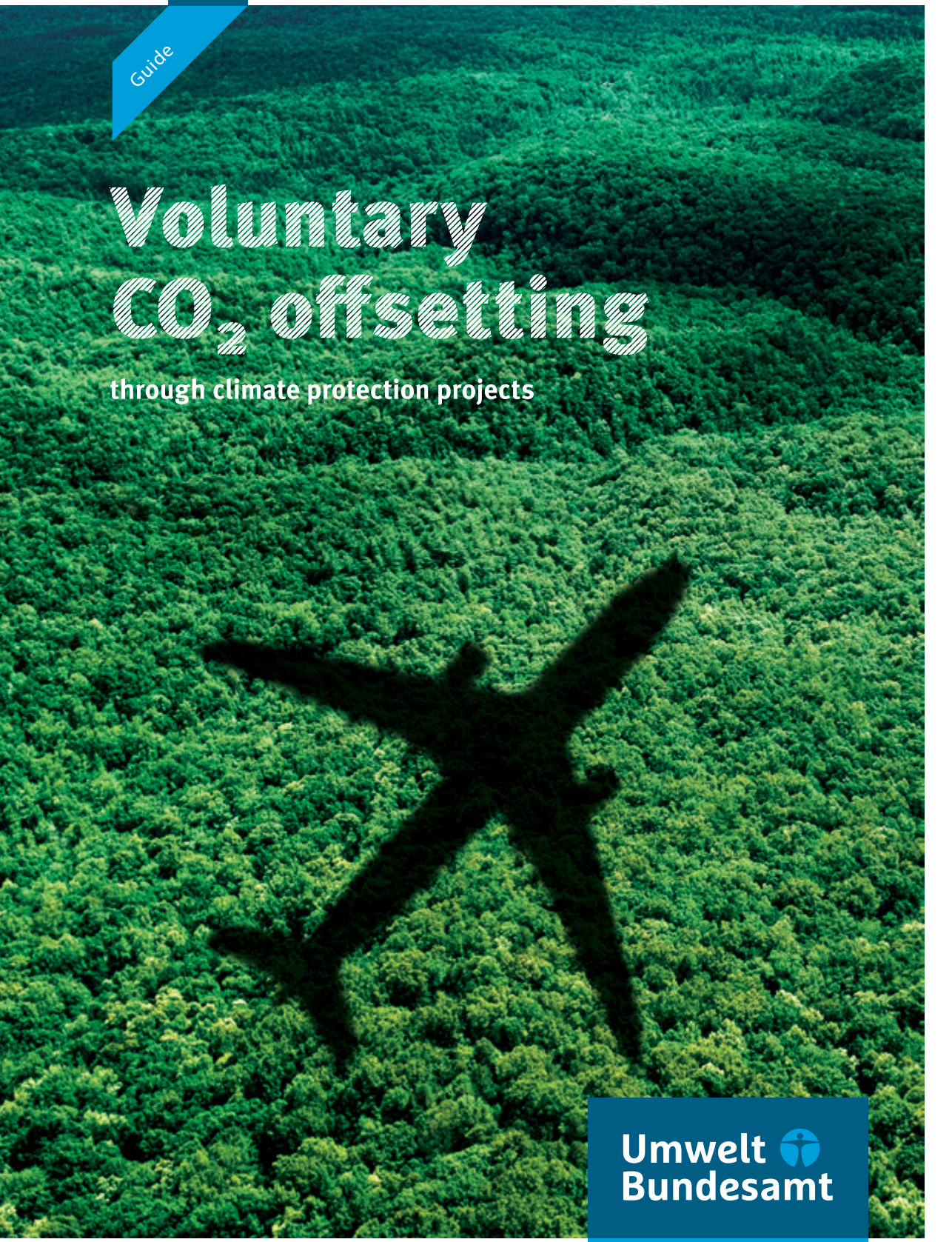
Guide

Voluntary CO_2 offsetting

through climate protection projects



Umwelt Bundesamt

Note:

The term "CO_2 equivalent" is omitted in this guide for better readability and CO_2 is used in a general sense.

Contents

Foreword

Climate protection as a key global task is important in order to reduce risks to people and nature. Climate change is one of our biggest challenges and is progressing relentlessly: global greenhouse gas emissions are rising steadily. The Paris Agreement is a milestone in this respect. It states that global warming must be kept well below 2 degrees Celsius above pre-industrial levels. Furthermore, efforts should be made to limit temperature rise to 1.5 degrees Celsius. We can only achieve this together, even if the way to a climate-friendly society is still far away. On average, each German citizen can account for just over eleven tonnes of greenhouse gas emissions annually. The sources are housing, heating, travel, nutrition and many other activities of everyday life. However, an increasing number of people are changing their way of life to make a contribution to global climate protection. **Only when greenhouse gases can no longer be avoided and reduced, offsetting is the last step for an environmental-friendly footprint.** For this purpose, institutions and private individuals can acquire emission reduction credits (also termed *certificates*) for voluntary offsetting, which can finance climate protection projects. The actual benefits of the projects are verified using *quality standards*. Meanwhile various standards are available for voluntary offsetting.

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This guide summarises the most important aspects in a concise form to be taken into account in voluntary offsetting. The guide will also help you understand how voluntary offsetting of greenhouse gas emissions works in climate protection projects and explains the most common project types and the terminology used.

The guide provides further information and useful links for terms marked with an arrow (▸).

Eight profiles on current standards and a practical summary will help you in your voluntary contribution to climate protection.

Why offset climate-damaging emissions?

Emissions of carbon dioxide (CO_2) and other greenhouse gases (such as methane and nitrous oxide) produced by humans have been changing the Earth's climate. Climate change manifests itself in both long-term climate changes such as slowly rising average temperatures and altered climate variability, i.e. greater climate fluctuations and more frequent extreme weather events such as storms, droughts or hot summers. The Intergovernmental Panel on Climate Change (IPCC) predicts that increasing climate change will slow global economic growth, jeopardise food security, exacerbate social inequalities and thereby increase the risk of conflicts and encourage migration. Global warming must be kept well below 2 degrees Celsius compared to pre-industrial levels in order to keep climate change manageable.

Efforts should be made to limit temperature rise to 1.5 degrees Celsius above pre-industrial levels. This is the only way to make the risks to people and the environment acceptable. This means that the increase in global greenhouse gas emissions must be stopped. We can only succeed if everyone contributes to this target.

There are many ways to keep individual greenhouse gas emissions as low as possible without sacrificing anything. Even small changes can improve our carbon footprint: buy regional products, use your bicycle more frequently or change to green electricity. Greenhouse gases can even be prevented or reduced by holiday planning. If someone cannot or does not want to forego a flight, one should make a voluntary contribution and offset the emissions caused.

From global to personal climate protection ideas

Global climate protection: The most effective protection for our climate is the prevention of greenhouse gas emissions. The aim of international climate protection policy is to limit global warming. To achieve this goal, all countries will need to significantly reduce greenhouse gas emissions and halve them by 2050.

The German Federal Government has set itself the goal of reducing national emissions by 80–95 percent by 2050 compared to 1990 levels.

Local climate protection: There are many different approaches to climate protection at the local level as well.

On the one hand, more and more municipalities and cities are pursuing sustainability goals by creating sustainable living spaces or developing modern mobility concepts for example. Some federal state of Germany ("Bundesländer") such as Hesse, Thuringia, Rhineland-Palatinate and Berlin are also setting themselves the goal of climate neutrality. Likewise, an increasing number of companies are committed to sustainable development and pursue climate-conscious actions. Numerous small initiatives also contribute to the development of a climate-conscious society – either by (car) sharing models, agricultural cooperation or energy cooperatives.

Personal climate protection: everybody has a carbon footprint which is made up, among other things, of the consumption of heat and electricity, mobility, consumer goods and nutrition. The CO_2 calculator of the German Environment Agency calculates the individual footprint.

There are many ways to save emissions in everyday life, for example using energy-efficient household appliances or taking public transport. However it is not always possible to reduce or to avoid emissions.

Voluntary offsetting by individuals, companies or organisations will offset these remaining emissions. They make an individual contribution to climate protection without being obliged to do so.

Climate protection in companies: many companies take responsibility for their emissions and optimise their processes to protect the climate. Our UBA studies on the voluntary market confirm that companies are the most important target group for voluntary offsetting. The voluntary offsetting option is most often used to offset business flights or the carbon footprint of the entire company or even individual products.

Further information on the Internet:
How does a climate-friendly lifestyle look like?

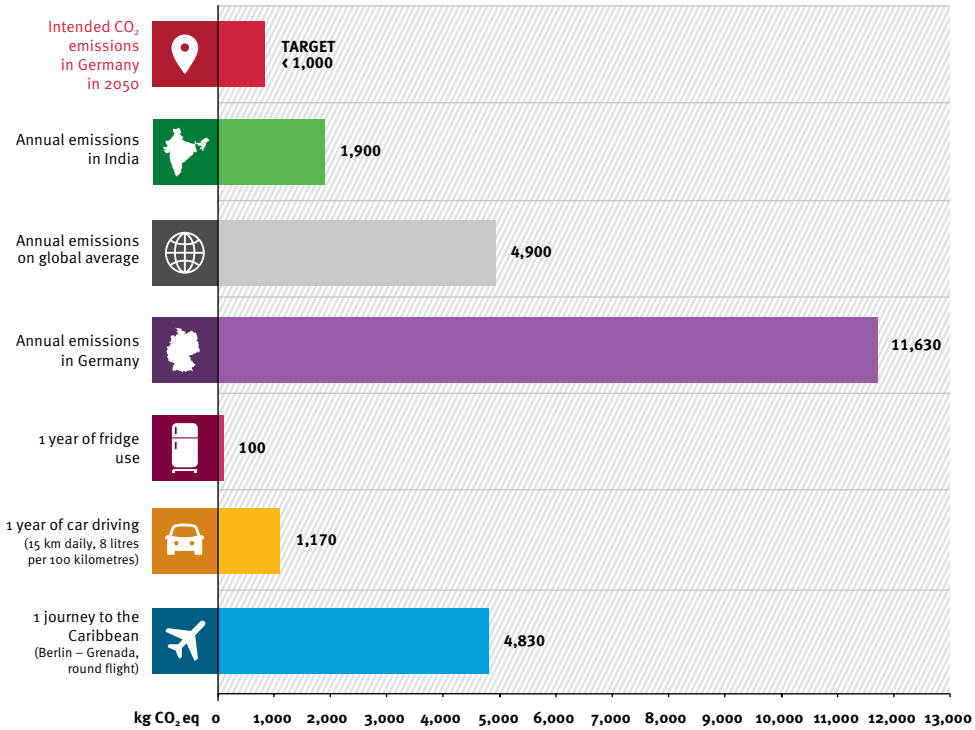
→ **"Climate-neutral living – consumers start protecting the climate" – A German Environment Agency guide**
www.umweltbundesamt.de/en/publikationen/a-climate-neutral-lifestyle

→ **"CO_2 saving potential for consumers" – Study commissioned by the Federation of German Consumer Organisations**
http://adelph.it/einsparpotential (only in German available)

→ **UBA 2015: German Environment Agency, Updated analysis of the German market for the voluntary offsetting of greenhouse gas emissions, Climate Change 02/2015, Dessau-Roßlau 2015**
www.umweltbundesamt.de/publikationen/aktualisierte-analyse-des-deutschen-marktes-zur (only in German available)

→ **UBA 2017: German Environment Agency, Results of the 2017 market survey**
www.dehst.de/Freiwillige-Kompensation-Ratgeber-Marktumfrage (only in German available)

The CO_2 footprint per person in comparison*



* Baseline year: 2017

Source: German Environment Agency, UBA CO_2 calculator, adelphi, Global Carbon Atlas, Weltbank

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What does CO_2 equivalent mean?

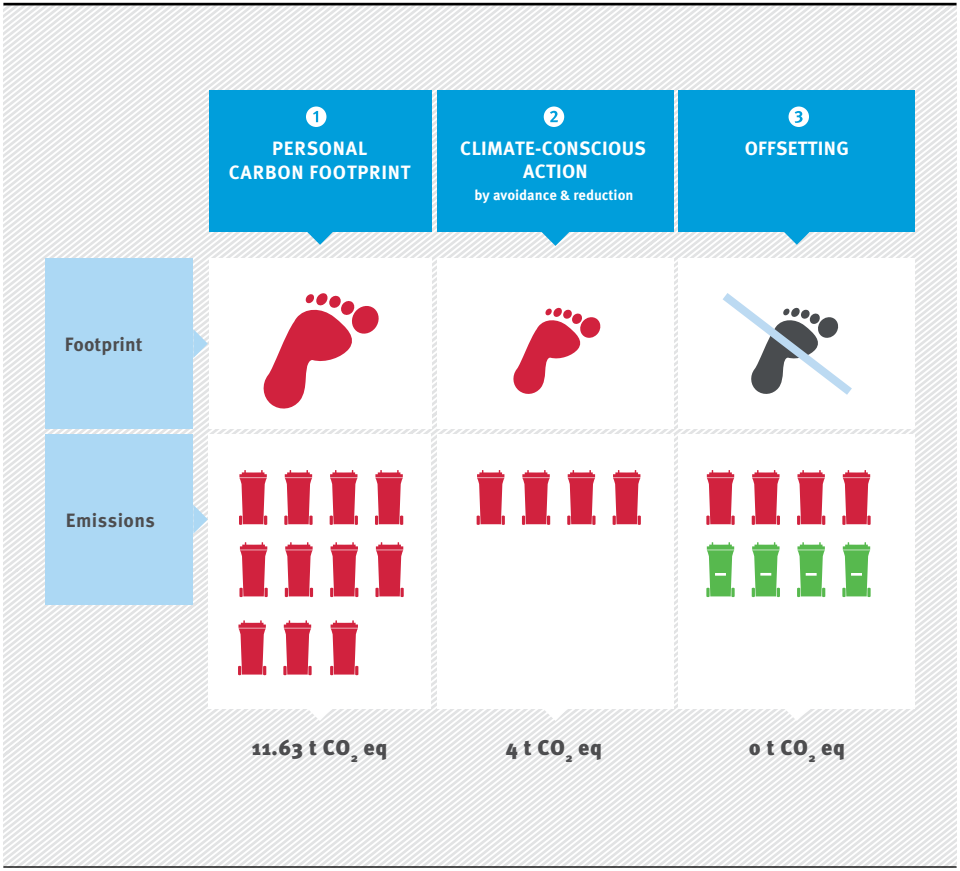
In addition to carbon dioxide (CO_2), other gases are also responsible for the greenhouse gas effect, in particular methane (CH_4) and nitrous oxide (N_2O). They have a much more harmful greenhouse gas potential than CO_2 because the same amount works much stronger. To compare the efficiencies of greenhouse gases with each other, they are converted to CO_2 and we speak of CO_2 equivalents (eq). For example, when flying to the Caribbean (round-trip), you account for about five tons of CO_2 eq – roughly what the average person causes in a year.

How does the voluntary emission offsetting work?

The principle of offsetting is based on the idea that for the climate it does not matter where the greenhouse gases are emitted or avoided. Therefore, emissions generated at one point can be offset at a remote location. However, as a general rule, it is better to avoid and to reduce emissions in the first place than to offset them later. The amount of climate-relevant emissions of a given activity is first calculated for voluntary offsetting. Every conceivable activity that releases emissions is considered: air travel, rail or car travel, gas, electricity or heating energy consumption at home, the production of printed products or organising events.

Offsetting then takes place via emission credits, which offset the same amount of emissions in climate protection projects. It is important that the climate protection project would not exist without the offsetting mechanism. The purchase of a credit can finance projects for the promotion of renewable energy or reforestation of forests. Many of these projects are located in emerging and developing countries. The prerequisite is always that the respective project could not have been carried out without the credit revenues (▸ **Additionality**).

Avoidance – reduction – offsetting triad



One's own footprint – 11.63 t CO_2eq on average in Germany in this example – can be significantly reduced through a climate-conscious action. The remaining unavoidable emissions – 4 t CO_2 eq in this example – can also be offset by voluntary offsetting.

Source: adelphi/sustainable

Critics of voluntary offsetting sometimes warn that buyers cleanse their conscience and substitute their own reduction efforts with offsetting. However, climate-conscious action should always be at the forefront. Consumers should therefore be aware that CO_2 offsetting cannot be considered a license to harm the environment. The first step should always be to minimise your own footprint as much as possible, e. g. to fly less or eat less meat. CO_2 offsetting alone does not suffice to solve the global problem of climate change.

What projects can you support?

The most common project types include

Energy projects

Renewable energy (36%)

Energy efficiency (19%)
Fuel switching (2%)

CO_2 reduction or capture projects

Agriculture (17%)

Forests and forestry (17%)

Peatlands (< 1%)

Projects reducing emissions from deforestation and forest degradation

Prevented deforestation (4%), also called “REDD”
(Reducing Emissions from Deforestation and Forest Degradation)

Further emission reduction projects

Waste and landfill gas (2%)

Industry (1 %)

Transport (1%)

Selected project types

Renewable energy:
Such projects promote energy from renewable sources through the construction of alternative energy installations and the production and distribution of electricity. Renewable energy sources include biogas, biomass, geothermal energy, hydro, solar and wind power.

Nepal: clean biogas in households

Nepal is one of the poorest countries in the world. People living in rural areas use firewood to cook on an open fire, which creates a lot of smoke. Women and children are thus exposed to enormous health risks. Furthermore, high deforestation rates caused by the use of wood are responsible for the increasing reduction of forests.

On the one hand, biogas replaces the firewood used for cooking and therefore reduces CO_2 emissions, on the other hand, it is a smoke-free, affordable and a decentralised energy source, especially for poorer rural households. Small underground biogas installations convert cow dung, other agricultural waste and faeces into biogas through anaerobic fermentation which can then be used for cooking. A biogas installation saves an average of three tonnes of CO_2 or about 2,000 kg of firewood a year compared to the use of a traditional "three-stone fire".

Waste and landfill gas:
Such projects focus on improving waste and wastewater management and reducing the emission of gases that adversely affect the climate.

Indonesia: avoiding methane emissions

Huge amounts of waste affect people and the environment in the densely populated cities of Indonesia by polluting the air, groundwater and soil. Methane emissions are particularly problematic for the climate – they occur when organic waste is not separated and recycled but instead is left to rot in public spaces. Targeted composting and recycling of waste not only creates jobs and reduces local environmental problems, but also saves up to 2,000 tonnes of CO_2 per year (source: atmosfair). When collected separately, waste can also be transformed into an energy source or fertiliser and thus become a valuable resource.

Forests and forestry:
Trees store carbon and unburden the atmosphere. Climate protection projects include reforestation and sustainable forest management. The long-term binding of carbon in forests is subject to risks such as forest fires and thus the release of CO_2. Therefore, risk analyses and buffer regulations in the quality standard should ensure permanent emission savings (see ▸ **Permanence** on page 26).

Nicaragua: planting mixed forests

In Nicaragua, smallholder farmers are supported in planting indigenous trees that are good for the climate and protect local families from the effects of climate change such as floods or long dry seasons. The growth of almost 9,000 trees planted so far removes about 36 tonnes of CO_2 from the air each year (Source: Primaklima). However, mixed forests also ensure that more water is stored in the soil, they prevent soil erosion and contribute to the regeneration of the strained ecosystem. The fast-growing trees are also an additional source of income and reduce the deforestation of existing old trees.

Further information on the Internet:
→ **Investing in forest carbon projects – Guidelines for companies and private investors**
www.dehst.de/SharedDocs/downloads/EN/project-mechanisms/Carbon_Offsetting_forest_carbon_projects_guidelines.pdf

Peatlands:
Peatlands are hotspots of climate protection and biodiversity. They have been storing carbon in organic sediments (peat) for thousands of years. Intact, peatlands retain twice as much carbon as is contained in forests worldwide.

When a peatland is drained, the carbon reservoir becomes a greenhouse gas source. This negative effect occurs when peatlands dry out or are drained by humans, for example, for farming. Through climate protection projects, drained peatlands are rewetted, which significantly reduces greenhouse gas emissions. Intact peatlands in Germany are retreats of real wilderness for unique animals and plants such as the short-eared owl or the sundew.

Peatland protection projects in Germany

In Germany, many small initiatives have been set up in addition to
▸ **MoorFutures** to protect peatlands and allow consumers to participate.

MoorFutures
MoorFutures are dedicated to the protection of peatlands. Through the purchase by MoorFutures, peatlands are currently being rewetted in Mecklenburg-Western Pomerania, Brandenburg and Schleswig-Holstein. Not only will this avoid CO_2 emissions in the long term, but it will also provide additional benefits for nature conservation – such as improving water quality and water balance, preserving rare plant and animal species, and maintaining a unique cultural landscape. In total, there are three peatland protection projects of different sizes. MoorFutures was the first initiative in Germany dedicated to the rewetting of peatlands in the interests of climate protection. Further information can be found in the description.

Moorland
Moorland climate credits finance the rewetting of peatlands in the North Sea-Elbe-Weser-Ems region, thus also promoting species and nature conservation. The initiative, jointly founded by Friends of the Earth Germany (BUND Landesverband Bremen e. V.), the Bremerhaven Tourism Society and the county of Osterholz, comprises twelve peatland projects.

Clever offsetting – what really counts

The Internet offers many options for voluntary offsetting. However, getting an overview and determining the quality of an offer is often difficult in practice.

There are many **providers** that offer offsetting. Some develop their own climate protection projects and sell the resulting credits. Others make use of the already existing market where they acquire credits and offer them to their customers.
The providers' websites often also offer their own CO_2 calculator and selected climate protection projects. Providers generally use credits of a *quality standard*, which certify that the projects verifiably comply with certain *quality criteria*.

Meanwhile, numerous airlines and bus companies, travel portals or printers offer CO_2 offsetting ("*third party providers*"). Often, these can be optionally added with one click, or the offsetting is already included in the offer.

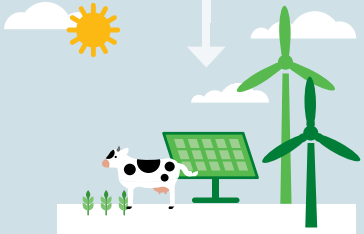
The platforms either use their own CO_2 calculator to calculate the emissions and specially selected climate protection projects or they collaborate with offsetting providers. Offsetting in the booking process is easy, but weaknesses have been uncovered in the past. For example, the calculation contained insufficient data, which meant that the suggested amount to be offset was too low for the travel route in question.

How does the voluntary market for emission offsetting work?

AIM: CO_2 OFFSETTING

CO_2 ⊕

CO_2 ⊖



Consumers and companies

- buy credits to offset their emissions

Providers

- buy and sell credits mostly over the internet; they also develop projects

Project developing institutions

- develop climate protection projects and generate credits by reducing or avoiding greenhouse gases

Consultancies

- advise, assess the carbon footprint, and handle offsetting

Third party providers

- cooperate with providers and offer offsetting

Quality standard

- develops methodologies for the implementation, validation and verification of projects

Registry

- records all transactions
- assigns individual serial codes for certificates

External institutions

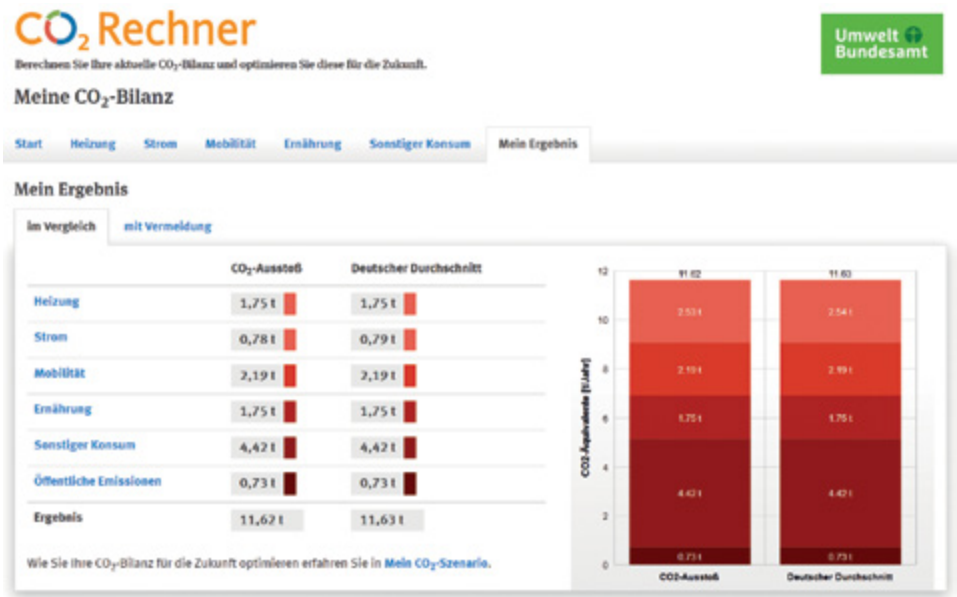
- inspect compliance with the rules during planning and implementation, validate and verify

International and national regulations

1. Starting point: calculating emissions

First, the level of the resulting emissions must be calculated realistically. Many providers operate their own CO_2 calculators. The more detailed and differentiated the calculation, the more accurately the greenhouse gas emissions actually generated are recorded. When calculating products' carbon footprint to be offset, which phases of the product cycle are examined is also important – from manufacture and distribution to use and disposal.

- **If the output is automatic (in the case of an airline for example), check if the calculation method is explained transparently. If in doubt, you can classify the emissions with the UBA CO_2 calculator.**



More information on the Internet:

→ **The German Environment Agency's CO_2 calculator:** uba.co2-rechner.de (only in German available)

Flying high

The offsetting of air travel was one of the first ever offsetting motives. It could even be said, ‘that's how it all started’.

The accurate calculation of emissions is particularly important for this type of offsetting. This is because the climate impact of aviation is not limited to CO_2 emissions alone. Nitrogen oxides, soot particles and water vapour as well as influencing cloud formation also contribute to changes in the atmosphere.

In the case of air travel, attempts to record these non-CO_2 effects are another particularly important factor for the calculation of emissions in order to reflect the actual climate impact.

The German Environment Agency’s CO_2 calculator integrates the current state of scientific knowledge.

A variety of assumptions must be made for air travel, including the average capacity of the aircraft or the average kerosene consumption of the aircraft type. Exact queries about air travel such as your chosen flight class – economy or business class – increase the accuracy of the emissions calculation.

2. Provider selection and provider check

Since there are major differences in the quality of offsetting providers, consumers should pay attention in choosing their provider. Considerate offsetting services also advise their customers to avoid or at least reduce emissions before they are offset. This gives them a holistic view of climate protection and sustainability. The provider must give a comprehensive explanation of how the emission calculation takes place, from which projects and from which countries the credits originate. Furthermore, the quality standard used should be clearly named. If in doubt, contact the provider.
The offsetting offer should be as transparent as possible for a sophisticated and comprehensible offsetting.

3. Selecting and deleting credits

When selecting credits, three aspects are crucial: quality assurance through the standard, project-specific aspects and, if necessary, your own criteria.

- **Quality assurance through standards:** Private individuals and companies may find it difficult to assess the concrete benefits of a climate protection project, which is why there are quality standards. Since not all of them apply the same standards to the projects, make sure you pay particular attention to the quality of the standard when making your purchase.
- **The climate protection project:** You should also pay attention to the quality of the specific project. Good providers carefully examine the projects they include in their portfolio. For example, make sure that the provider is also involved in project development, or offers annual reports that show you how much of your money is spent on the projects and the provider's administration.
- **Own preferences:** Your own preferences also play an important role when selecting the credits and the specific project regarding the additional local benefits, the project type (see p. 11 et seq.), the country of origin, the size of the project and the price. For example, some consumers find it important that their money benefits forest projects, contributes to poverty reduction or is implemented in their own region.

Finally, the credits must be surrendered permanently, meaning cancelled.
This ensures the durability of the offsetting because deleting the credits excludes them from being used any further.

- **You should ask the provider for evidence that the credits have been cancelled.**

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Why are there price differences when buying credits?

On the one hand, the quality and size of a climate protection project strongly influence the price which can lead to price fluctuations within a standard. In addition, it is more advantageous to reduce the same amount of CO_2 in less developed countries than in industrialised countries. Other influencing factors are the age of the credits and the level of demand for specific project types or locations. The volume that is purchased is also crucial. The unit price is lower if large quantities are bought – same as in wholesale and retail. The price of an offsetting credits is therefore influenced by many factors.

What makes quality? Why standards are important.

Quality standards ensure compliance with certain criteria. Above all, they should ensure that greenhouse gas emissions are offset at the desired level. In the end, does a new wind turbine really ensure lower emissions than without it? Are there any negative side-effects after afforestation that undermine the benefits of the project? And should not the Indonesian city administration have tackled the hazardous waste anyway?

Comprehensive methodologies have been developed to answer these questions. The test criteria are frequently based on the so-called compliance market:

The United Nations established criteria for international climate protection projects such as the Clean Development Mechanism (▸ **CDM**).

In recent years, more and more standards have been established in the voluntary offsetting market, which is developing dynamically. International standards such as the ▸ **Verified Carbon Standard (VCS**) or the ▸ **Gold Standard** cover most of the market. In addition, there are other national initiatives and standards. In Germany, for example, there are projects and standards for the renaturation of peatlands (see Box on page 15).

National standards: examples from other countries

Many countries have launched initiatives to develop national mitigation projects, including Switzerland, Italy, Great Britain and Australia. Non-governmental organisations originally launched the national projects but currently, as with MoorFutures in Germany or ▸ **max.moor** in Switzerland, governments are also taking action to boost the market for voluntary offsetting.

Great Britain – Woodland Carbon Code and Peatland Code
The ▸ **Woodland Carbon Code** certifies afforestation projects and ensures that the stored carbon is correctly calculated and projects are registered in the UK Woodland Carbon Registry. The standard has developed its own methodology which is based on the Gold Standard and the VCS. About 240 projects are currently registered and have offset approximately 260,000 tonnes of CO_2 so far. The greenhouse gases stored by the trees are privately purchased and also contribute to Britain's national climate goals. There is also a standard for peatlands – the ▸ **Peatland Code**, which is similar to the Woodland Carbon Code. Peatlands are rewetted under this standard. So far, the initiative is still in its initial phase and has not yet distributed any certificates.

Further information about these and other national standards on the internet

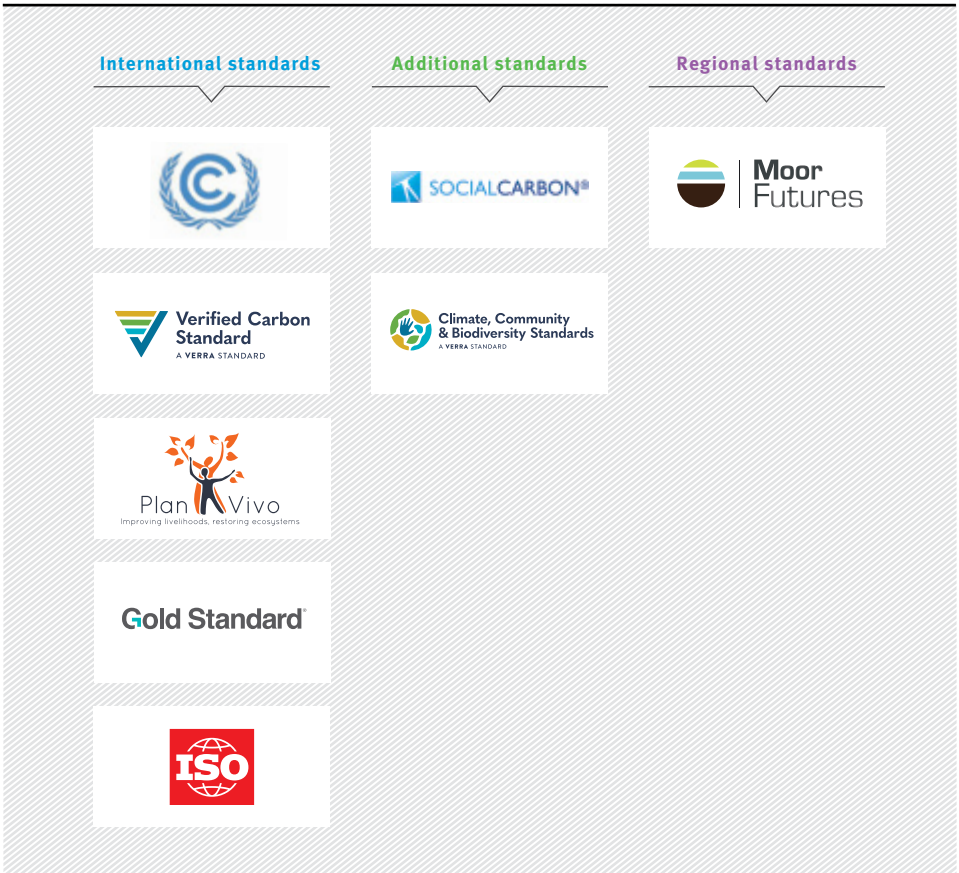
→ **Leveraging domestic offset projects for a climate-neutral world. Regulatory conditions and options (2017):**
www.dehst.de/EN/climate-projects_maritime-transport/carbon-offsetting/carbon-offsetting-node.html

→ **Information on the Woodland Carbon Code:**
www.forestry.gov.uk/carboncode

→ **Information on the Peatland Code:**
www.iucn-uk-peatlandprogramme.org/peatland-code

→ **Information on the Swiss peatland protection project max.moor:**
www.wsl.ch/de/projekte/klimaschutz-durch-hochmoorschutz-1.html (only in German available)

The most important quality standards in Germany



Source: German Environment Agency

What is the added value of additional standards?

The classic quality standards certify projects predominantly with the aim of proving and guaranteeing the climate efficiency. However, since the overall benefit of a climate protection project depends on many other factors, it makes sense to apply additional standards. In the end, the sustainability of a project can only be ensured by taking a close look at the positive and negative impacts on biodiversity and human rights, the participation of the local population and other aspects.

These voluntary additional standards are used to evaluate sustainability aspects, particularly in forest projects. The most widely used additional standards are ▸ **Social Carbon** und ▸ **Climate, Community and Biodiversity Standards (CCBS)**. These two standards are only available in combination with a classic standard – not individually.

What does the future hold?

Many standards are moving toward a more holistic view of sustainable development. The focus is on the 17 Sustainable Development Goals (▸ **SDGs**) adopted by the UN General Assembly. These include not only poverty and hunger but also many other sustainable development goals such as education and equal opportunities, or clean water and sanitation. In line with the SDGs, quality standards expand and refine their methodologies in order to grasp the wider context of climate protection projects. Examples of this trend are the Fairtrade Climate Standard, the Gold Standard for Global Goals (GS4GG) and the SD VISta of the Verified Carbon Standard.

Fairtrade Carbon Credits

Fairtrade International has been selling Gold Standard certified offsetting credits since the beginning of 2017, the ▸ **Fairtrade Carbon Credits (FCCs)**. The standard connects Fairtrade producer organisations and communities in developing and emerging countries with those companies and organisations that want to offset their emissions. In their own view, Fairtrade provides not only the requirements of the Gold Standard for ensuring minimum prices but also bonuses for the local workforce. The Fairtrade Carbon Credits are available in Germany, the Netherlands and Belgium. In Germany, the standard is currently aimed at companies and not at end users.

Further information on the internet:

→ **Information from the German Environment Agency on SDGs:**
www.umweltbundesamt.de/en/topics/sustainability-strategies-international/sdgs-a-challenge-for-sustainability-policy

→ **Official website for SDGs:**
sustainabledevelopment.un.org

→ **The Fairtrade Climate Standard:**
www.fairtrade.net/standard/climate

What should be considered as quality standards? The detailed criteria

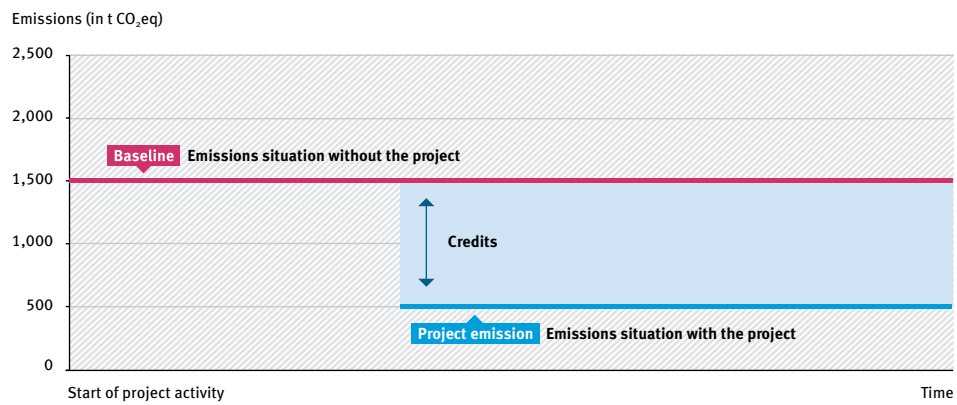
To capture the benefit of quality standards, many aspects need to be tested. The most important criteria are explained below.

1. Additionality

Projects to reduce greenhouse gases must ensure that their reduction, avoidance or storage of emissions shows additionality. This means that the climate protection measure of the project would not have taken place without the expected proceeds from the sale of the credits. Measures that are already economically sound and therefore would have been carried out anyway, are therefore not eligible for offsetting (*financial additionality*). The additionality check guarantees this. There are a number of verification tests that check projects for additionality, for example based on investment or barrier analysis, defined benchmarks or technology lists. In addition, the reduction should not be required by law (*regulatory additionality*) or comply with current practice in the region or the host country. Small projects have simplified procedures because complex tests can be particularly costly which can prevent project developers from putting them into practice.

For each project, a **baseline scenario** is first created. The baseline provides information on how greenhouse gas emissions would have developed without the implemented climate protection measure. For example, when constructing a wind farm, the amount of emissions would be lower than electricity generated from non-renewable energies.

Climate protection project scenario



Source: German Environment Agency

By comparing the expected project emissions of the climate protection measure with those of the reference scenario, the emission reduction achieved can then be calculated.

Baseline and emission savings must be calculated *comprehensibly and in detail*. When calculating emission savings, cautious assumptions are important. This means that emission savings should be underestimated rather than overestimated (conservatism).

2. Duration of emissions saving (Permanence)

Emission savings must be *permanent*. For forest and peatland protection projects, there are risks such as forest fires, pest infestation or illegal deforestation. This risk can be counteracted, for example, by a buffer. Quality standards can demand risk analyses, set buffers or exclude certain high-risk project types. In the case of a buffer regulation, a number of the distributed credits must be transferred to a central credit account which is managed by the quality standard in order to ensure a reduction in the event of an emergency.

3. Calculation, monitoring and verification of emissions

Methodologies: Ambitious quality standards only use approved guidelines (methodologies) for the development of climate protection projects that have been independently and externally checked (validated).

Examination of "Leakage": Leakage refers to the relocation of emissions if the implementation of a project elsewhere increases greenhouse gas emissions and results in emissions (in part) that should have been avoided. Leakage risks mainly exist in forest or land use projects. For example, a reforestation project of a pasture area could result in local farmers clearing forests elsewhere because they need new pastures.

Standards and their methodologies could ensure that such risks are integrated into the project planning so that possible leakage effects are either largely reduced or deducted from the expected emission reductions.

Validation: Before the project starts, a plan (*project documentation*) is created based on the specifications of the respective quality standard. The standard specifies which steps in the project documentation must be processed and presented. These include, although are not limited to, a description of the project, the additionality test, baseline calculation, expected emission savings and monitoring plan, and stakeholder interviews (global and local). In a second step, the project documentation is checked by an independent, accredited, external expert office. To ensure that the rules and regulations of the chosen standard have actually been met, the validation is preferably carried out both in the office and also through on-site visits to ensure that project measures exist and are implemented as planned.

Monitoring: The monitoring takes place at certain intervals specified in the project documentation (for example, annually). During monitoring the *actual saved emissions* are calculated. A monitoring report is prepared covering all the points laid down in the monitoring plan.

Project cycle based on the CDM

1 **Start of project – step 1**
The project-developing institution creates a project documentation. The document describes additionality, methodologies, "Leakage" testing, monitoring and the method of calculating emission savings.

2 **Validating the project documentation – step 2**
The project documentation is checked (validated) by an independent, accredited expert office.

3 **Registration – step 3**
Once the project documentation has been examined, the project is registered by the CDM Executive Board. Registration is a prerequisite for the later issuance of certified emission reductions, the CERs.

4 **Monitoring – step 4**
The report on emission reductions, the monitoring, follows once the project has been carried out. Thus the actual emissions avoided are calculated according to the accredited methodology. A monitoring report is created.

5 **Verification and certification of the emission reduction – step 5**
The monitoring report with proven emission reduction is checked (verified) by another independent, accredited expert office. A verification report will be prepared confirming that the proved emission reduction took place during the specified period.

6 **Issue of the CERs – step 6**
The project-developing institution applies to the CDM Executive Board for the issue of CERs. After further consideration by this board, CERs will be distributed. These reach the account of the project-developing institution and can then be held, sold or cancelled.

Source: Based on: cdm.unfccc.int/Projects/diagram.html

Verification: Verification confirms that the data evaluation, including the determination of emission reduction, was carried out according to the monitoring plan and that the greenhouse gas reductions indicated in the monitoring report were actually achieved. Verification may include an on-site visit. There are also standards where validation is merged with verification. Ideally, the verification will be done by an independent, accredited expert office

4. Transparency and Regulations

Transparency serves verification and traceability but should also prevent arbitrariness and corruption. The project documentation, monitoring, validation and verification report should be publicly visible and freely accessible. For external communication, care should be taken to ensure that the wording is understandable and that information is easy to find.
The external institutions that certifies a project should be accredited according to clear rules and regularly inspected. If a standard is particularly demanding, it will make the institution *liable* for the emission reductions it has verified.

5. Time of issue

Climate protection projects can issue "*ex ante*" credits (before the realised reduction) or "*ex post*" credits (after the actual reduction). When crediting *ex post* emission reductions, the savings have already been made when sold to customers. Only verified *ex post* credits guarantee emission savings safely. *Ex ante* offsetting carries the risk that emission reductions cannot be achieved as planned since the exact amount of savings is only a forecast.

Such credits are only partially suitable for offsetting as past emissions will be offset by reductions in the future. Often, however, start-up financing is necessary to cover the time until initial earnings flow from the projects. Their mobilisation poses a challenge to project-developing institutions which under certain conditions can be met with *ex ante* credits. In any case a transparent identification of the timing of the distribution is essential as well as a buffer for uncertainties in the later implementation of the reduction projects.

6. Double counting

Under double counting a negative scenario is implicit, in which an emission reduction is *claimed or sold twice*. Double counting is a risk that can undermine environmental integrity. This can be countered as follows:

Registration and cancellation: The credits issued for a project should be registered *centrally in a register*. Registries issue serial numbers and track the ownership of the credits. The information on whether credits have already been used for offsetting purposes and thus "cancelled" is thereby publicly accessible. This prevents the possibility of reselling or continuing trading of the "actual cancelled" credits.

There is no universal public registry for voluntary market credits. Particularly relevant are two registries, the ▸ **APX** and ▸ **IHS Markit**, the two largest registries for voluntary CO_2 transactions.

Further information on the internet:

→ **APX VCS Registry:** https://apx.com/registries/apx-vcs-registry

→ **IHS Markit:** www.markit.com/product/registry

Domestic projects in Germany and the handicap of double counting

Both providers and customers often prefer climate protection projects in Germany. Unfortunately, domestic projects often carry the risk of double counting.

Germany, as a member of the EU, has signed the Kyoto Protocol and is thus legally bound to emissions restrictions and reductions. The **first commitment period (2008–2012)**, when Germany had to report its emissions due to afforestation, reforestation and deforestation is over. Within this period, reductions from domestic forest projects could be taken into account for reaching the German target and at the same time offered as offsetting to customers which is a clear case of double counting. In the **second commitment period (2013–2020)**, additional cropland and grassland management were included in the national emissions inventory reporting. However, double counting is currently a rather theoretical issue as the second commitment period has not yet come into force. Also, individuals can consciously decide on a national domestic protection project. The background is that it might be deliberately supporting a regional project that is much more than a mere reduction or mitigation of emissions but also protects biodiversity. It is also possible to communicate openly that this domestic project should help Germany to achieve its climate goal.

In general, it should be said that these domestic projects finance local climate protection. Furthermore, some providers also offer combined credits. This usually means that, in addition to a domestic project, an international one is also promoted without any problem of double counting. In addition to domestic credits, some providers offer international CERs to meet the challenge of double counting.

7. Involvement of stakeholders
A climate protection project must be planned so that local people are involved to make it really feasible. That is why involving local and global stakeholders is good practice as is the the host country's approval for the project.

8. Sustainable development
Climate protection projects can also contribute to sustainable development at the project location and fulfil one or more SDGs (▸ **SDGs**, see page 24), in addition to saving greenhouse gas emissions. These represent a very important added value (also called "co-benefits") for the host countries. It should be counted positively to the climate protection projects when for example jobs are created, the local population builds up knowledge or air quality is improved. Violation of human rights and damage to biodiversity should be sanctioned by exclusion.

Standards have specified requirements and paid more attention to them. The impact on biodiversity, health or local job effects are examined for example.

Small projects – big handicaps?

*Small climate protection projects usually face major implementation obstacles. They are often economically disadvantaged by relatively high fixed costs for project development and low revenues from smaller amounts of credits, which can only be set off partially by higher credit prices. Also, these projects often have a number of co-benefits (▸ **Sustainability** ▸ **SDGs**) and thus make a direct contribution to local sustainable development.*

Programme of Activities (PoA) bundle the implementation of small and micro projects under the CDM. Nevertheless, these PoA projects are also huge compared to the very low emission saving versions, for peatland protection projects in Germany. The average annual savings potential for the MoorFutures projects is between 150 and 850 t CO_2. This is extremely low in relation to international projects. For small projects in the CDM, the limit is 60,000 t of annual CO_2 savings and is thus significantly higher. Even the micro projects in the CDM with 20,000 tonnes of annual CO_2 savings are still far higher.

In general, (both practical and bureaucratic) outlay and costs of small and micro projects in implementation are very high. Simplified procedures for these projects should be devised in the long term with regard to timing of the credit distribution and high expenditure for comparatively low emission reductions.

Finally, personal criteria can also play a role in project selection. Projects differing from internationally established standards may be chosen that nevertheless can provide a special contribution to climate protection.

At a glance: fact sheets for quality standards

Below you will find eight fact sheets of the most common quality standards including their most important features. In addition, the fact sheets show *market share* and *price range* of the respective standard. The market share indicates the relative cancelling volume in Germany in 2016 (based on the market survey of providers of 2017, see link to survey on page 7); the price range gives the lowest and highest prices per credit for individuals. In addition, there is also information about each standard as to what project types are certified, in which countries the projects are based and what other special features characterise the standards.

?

What do the colours of the fact sheets mean?

The fact sheets of the quality standards have three colours. Fact sheets of international standards are in blue, additional standards in green and regional standards in violet (see diagram on page 23).

International **Additional standard** **Regional**

Does the standard meet the minimum requirements for preserving climate integrity?

- ✓ Gold Standard CER
- ✓ Gold Standard VER
- ✓ MoorFutures
- ✓ CDM
- ✓ Plan Vivo
- ✓ VCS

Is it an ambitious standard in the field of...

...sustainability?

- ✓ Gold Standard CER
- ✓ Gold Standard VER

...innovative and small projects?

- ✓ MoorFutures

...transparency and regulations?

- ✓ CDM
- ✓ Gold Standard CER

Clean Development Mechanism (CDM)

www.unfccc.int

Brief description

The Clean Development Mechanism (CDM) was decided in connection with the Kyoto Protocol. The CDM is today by far the largest tool for production and tradability of credits from climate protection projects. Governments, companies and individuals can purchase Certified Emission Reductions (CERs). An independent board of directors (Executive Board) draws up rules of execution and decides on the projects and issuing CERs.

Foundation & organisation

- **Implementation rules:** 2001 (Marrakesh Accords)
- **Founder & supervision:** Parties to the Kyoto Protocol (CMP)
- **Administration:** CDM Secretariat
- **Type of organisation:** public (international organisation)

Price & market share (2016)

€5–59.90
price range

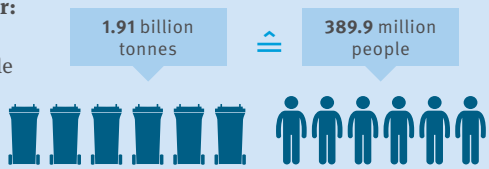
4.2%
market share in Germany
(without any additional standard)

Climate protection projects

- **Project locations:** worldwide in developing countries
- **Project types:**

Renewable energy
Energy efficiency & fuel switching
Agriculture
Waste & landfil
Forests & forestry
Industry
Transport
Others

- **Number of projects:** 7,797 projects, including 310 PoAs (as of 01/03/2018)
- **Volume of greenhouse gases prevented so far:** 1.91 billion tonnes of CO_2eq. This is about the average annual emission for 389.9 million people (on worldwide average).



Special features

- An independent Executive Board draws up rules of execution and decides on the projects and issuing CERs.
- Simplified regulations apply to small and micro projects. Programmes of Activities (PoAs) bundle small measures as one project.

Verified Carbon Standard

http://verra.org/project/vcs-program/

Brief description

The Verified Carbon Standard (VCS) is the world's most widely used voluntary standard for offsetting greenhouse gas emissions. In 2015, VCS performed over half of the transactions on the global voluntary market and therefore has great market relevance, especially in terms of prevented deforestation.

Foundation & organisation

- **Foundation year:** 2005
- **Founders:** Climate Group, International Emissions Trading Association (IETA) and World Economic Forum
- **Administration:** 10 board members
- **Type of organisation:** non-profit

Price & market share (2016)

€5–23
Price range

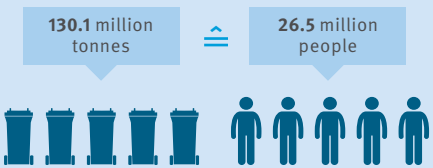
20%
Market share in Germany
(without additional standards)

Climate protection projects

- **Project locations:** worldwide in developing countries
- **Project types:**

Renewable energy
Energy efficiency & fuel switching
Industry
Waste & landfill
Transport
Forests & forestry
Deforestation prevented
Agriculture
Peatlands

- **Number of projects:** 1,385 (2017)
- **Volume of greenhouse gases prevented so far:** 130.1 million tonnes of CO_2eq. This is about the average annual emissions for 26.5 million people (worldwide average).



Special features

- VCS belongs to the Verra organisation. Verra has several standards and programmes that investigate environmental and sustainability issues.
- VCS is currently developing the “Sustainable Development Verified Impact Standard” (SD VISta) which should consider sustainable development even more stronger.

Plan Vivo

www.planvivo.org

Brief description

Plan Vivo was founded in Chiapas, Mexico in 1994 to improve the situation of the local population through community agriculture and forestry projects. The Plan Vivo Standard helps village communities to sustainably use their natural resources and protect the climate, ecosystems and livelihoods by enabling payments for ecosystem services

Foundation & organisation

- **Foundation year:** 1994
- **Founder:** Edinburgh Centre for Carbon Management (ECCM), University of Edinburgh, El Colegio de la Frontera Sur and local partners
- **Administrator:** Plan Vivo Foundation

Price & market share (2016)

€15–22
Price range

< 1%
Market share in Germany

Climate protection projects

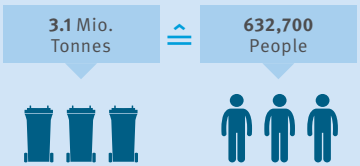
- **Project locations:** Mexico, Bolivia, Nicaragua, Uganda, Mozambique, Tanzania, Malawi, Sri Lanka, India, Nepal, Vanuatu, Indonesia, Mongolia
- **Project types:**

Forests & forestry

Deforestation prevented

Agriculture

- **Number of projects:** 15 (2017)
- **Volume of greenhouse gases prevented so far:** 3.1 million tonnes of CO_2eq. This is about the average annual emissions for 632,700 people (on worldwide average).



Special features

- Plan Vivo attributes particular significance to fair trade and promotion of rural communities. Local residents participate in planning and implementing Plan Vivos climate protection projects. The credits can also be purchased directly from the facilities that perform the projects.

Gold Standard

www.goldstandard.org

Brief description

The Gold Standard has been developed by the WWF and other environmental organisations. Gold Standard projects also identify social and environmental aspects that contribute to the achievement of sustainability goals. It is an additional standard among UN-registered projects ("Gold Standard CER") and it has also been applied on the voluntary market ("Gold Standard VER, Voluntary Emission Reductions") since 2006.

Foundation & organisation

- **Foundation year:** 2003
- **Founder:** World Wide Fund for Nature (WWF), SouthSouthNorth, Helio International
- **Administrator:** Gold Standard Sekretariat

Price & market share (2016)

€5–23
Price range

72.7%
Market share in Germany
(combined with CER and own VER projects)

Climate protection projects

- **Project locations:** worldwide in 80 developing countries
- **Project types:**

Renewable energy

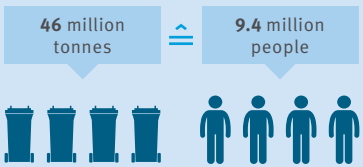
Waste & landfill

Forests & forestry

Agriculture

Others

- **Number of projects:** 1,500 (2018)
- **Volume of greenhouse gases prevented so far:** 46 million tonnes of CO_2eq. This is about the average annual emissions for 9.4 million people (on worldwide average).



Special features

- Gold Standard has developed a new standard, the Gold Standard for the Global Goals (GS4GG), in response to the adoption of the Sustainable Development Goals (SDGs). It also measures the impact on areas such as health or water supply, thereby triggering quite new investments for projects.

ISO 14064

Brief description

In addition to many other standards, the International Organisation for Standardisation (ISO) has a standard for greenhouse gas balancing. The ISO 14064 standard is the basis for many of the UN's Clean Development Mechanism (CDM) methodologies and other internationally recognised standards but is not a provider of credits itself. It is regarded as a good method for quantifying and verifying reductions, especially by industry.

Foundation & organisation

- **Publication year:** 2006
- **Founder:** International Organisation for Standardisation (ISO)

Climate protection projects

Since the standard acts as the basis for other standards, no reliable reports are available.

- **Administrator:** ISO
- **Type of organisation:** non-profit

Special features

- ISO 14064 is a standard for measurement, reporting and verification of greenhouse gas emissions. It consists of three parts:

  Part 1 describes the basics and requirements of greenhouse gas balancing at company level.

  Part 2 deals with the project level.

  Part 3 specifies the basics and requirements for validation, verification and certification of greenhouse gas reductions.

- The standard itself does not issue credits.

Social Carbon Standard

www.socialcarbon.org

Brief description

The Social Carbon Standard is an additional standard that can be combined with common standards such as Verified Carbon Standard (VCS). Not only does it certify projects for their CO_2 prevention but also checks the additional contribution to long-term sustainable development in the project region. It evaluates this contribution based on six criteria including impacts on biodiversity, financial and natural resources and social sustainability.

Foundation & organisation

- **Foundation year:** 2000
- **Founder und Administrator:** Ecológica Institute
- **Type of organisation:** non-profit

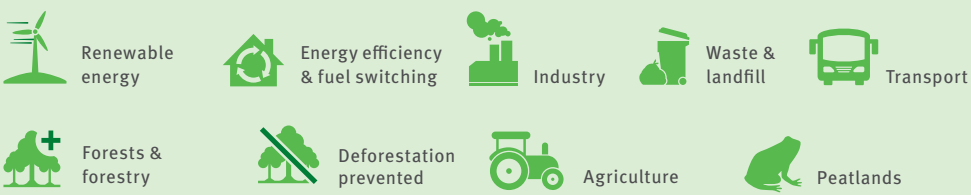
Price & market share (2016)

No unit price,
since additional standard

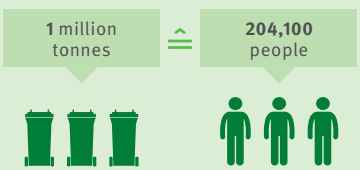
< 1%
Market share in Germany,
(combined with VCS)

Climate protection projects

- **Project locations:** Brazil, Turkey, China and Indonesia
- **Projekttypen:** all project types that are accepted by the main standard



- **Number of projects:** ca. 59 (2016)
- **Volume of greenhouse gases prevented so far:** approx. 1 million tonnes of CO_2eq. This is about the average annual emission for 204,100 million people (on worldwide average).



Special features

- The Social Carbon Standard does not have its own emission calculation method as it is only applied in combination with other standards. It does not set any minimum requirements but requires continuous improvement of social and environmental impacts.
- The Social Carbon Standard provides the credit with an additional and permanent identifier in its unique registration code.

Climate, Community and Biodiversity (CCB) Standard

www.verra.org/project/ccb-program

Brief description

The Climate, Community and Biodiversity (CCB) Standard is a widely used additional standard on the voluntary market. It investigates the overall benefit of a project beyond emission reduction alone, with a particular focus on preserving biodiversity and social impacts in the project region. The standard jointly developed by research institutes, companies and environmental groups is used primarily in forestry and agricultural projects

Foundation & organisation

- **Foundation year:** 2012/13
- **Founder und Administrator:** development by Climate, Community and Biodiversity Alliance, administration by Verified Carbon Standard (VCS)
- **Type of organisation:** non-profit

Price & market share (2016)

No unit price, since additional standard

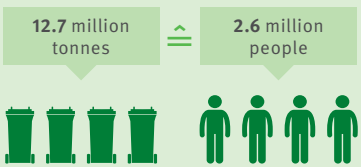
2%
Market share in Germany,
(combined with VCS)

Climate protection projects

- **Project locations:** worldwide in developing countries
- **Project types:**

Forests & forestry | Deforestation prevented | Agriculture | Peatlands

- **Number of projects:** 100+
- **Volume of greenhouse gases prevented so far:** approx. 12.7 million tonnes of CO_2eq. This is about the average annual emissions for 2.6 million people (on worldwide average).



Special features

- The CCB standard does not have its own emission calculation method as it is only applied in combination with another standard, usually VCS.
- The CCB standard provides the credit with an additional and permanent identifier in its unique registration code.
- It is listed in the Markit Environmental Registry and the APX VCS Registry. The marking takes place at distribution and cannot be caught up on.

MoorFutures

www.moorfutures.de

Brief description

MoorFutures is a German initiative that has distributed credits for the renaturation of peatlands in three federal states (“Bundesländer”) so far. By rewetting peatlands, not only can greenhouse gas emissions be prevented but a number of positive side effects can be achieved for the local ecosystem. MoorFutures has developed its own rules (standard, methodology, monitoring) and the projects are checked and supervised by a scientific advisory board.

Foundation & organisation

- **Foundation year:** 2011
- **Founder und Administrator:** Ministry for Agriculture, Environment and Consumer Protection of Mecklenburg-Western Pomerania; Ministry of Rural Development, Environment and Agriculture; Flächenagentur Brandenburg GmbH; Ausgleichsagentur Schleswig-Holstein GmbH .
- **Type of organisation:** mixed

Price & market share (2016)

€35–80
Price range

< 1%
Market share in Germany

Climate protection projects

- **Project locations:** Germany (Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania)
- **Project types:**

  Peatlands (renaturation)
- **Number of projects:** 3 (2017)
- **Total of credits sold:**
  15,000 tonnes of CO_2eq from the planned 61,000 tonnes of CO_2eq. This is about the average annual emission for 3,000 people (worldwide average).

Special features

- The federal states ("Bundesländer") are involved in the development and administration of the standard.
- The CO_2 credits are also issued for reductions not yet made (ex ante). The German procedural rules for rewetting peatlands (plan approval, nature conservation) ensure the successive reduction of greenhouse gas emissions in the future.

Summary: how do I make a good choice?

Avoid and reduce

Can I avoid my own greenhouse gas emissions?	Can I reduce my own greenhouse gas emissions?

Calculate emissions

How much emissions do I want to offset? Do I or does the provider use a comprehensible emission calculator?

Check providers

Is the provider trustworthy? Does he make where the credits come from transparent and how they come about? Are the explanations understandable?

Select and delete credits properly – check standards and projects

Minimum requirements for the climate benefit

- **Please choose a quality standard that meets the minimum requirements.**

Specific project implementation

- **What exactly is your money used for?**
- **Is the provider himself involved in the project development?**
- **How well is the project customised to local development needs?**

Project description or project fact sheet by the provider can help.

Operator's preferences

- **Does the project contribute to sustainable development, for example reducing poverty?**
- **Is the project innovative and does it promote climate protection in Germany?**
- **What project type do you want to support?**

Think about what is important to you and choose a suitable project.

Good choice

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