

Climate neutral business trips of the Federal Government

Background Paper





Editorial Information

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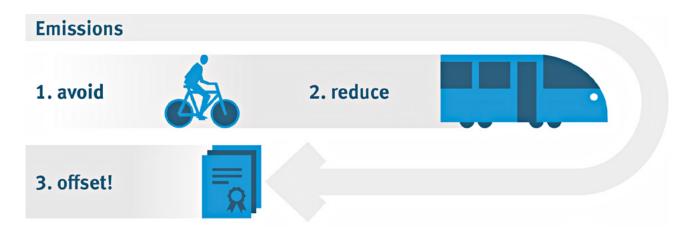
Introduction

The German Federal Government has been offsetting the climate impact of its employees' business trips by planes and cars since 2014. After each calendar year, the climate impact caused is calculated and offset in the following year.

In 2018 the offsetting was extended to business trips (e.g., law enforcement travel by the Federal Police).

The German Federal Government generally follows the principle of "first avoid, reduce and then offset". The Federal Government voluntarily offsets the remaining emissions by saving emissions elsewhere in such a way that it acquires credits from ambitious climate protection projects and then cancels them. So far, Certified Emissions Reductions (CERs) have been procured from projects certified under UN rules within the Clean Development Mechanism (CDM) of the 1997 Kyoto Protocol.

We announce our intention to acquire high-quality emission reduction credits through a public tender. National and international bidders can offer credits from one or more CDM projects. We evaluate the offers received against quality criteria and purchase the selected project credits. Finally, we irrevocably cancel the credits acquired by deleting them in the Kyoto registry.



Which greenhouse gas emissions are offset?

Offsetting business trips and travel considers air travels and those by company cars. The Federal Government purchases "green tickets" for rail travel, for which no offsetting is currently made. Business trips are journeys for the purpose of carrying out official business outside the place of work (e.g. participating in a workshop). Business travels are journeys within the scope of the usual performance of duties such as emergency response or law enforcement travel by the Federal Police.

Flights

Emissions from flights are broken down into individual sections of a journey. A flight from Berlin to New York including a change in Frankfurt comprises two individual events. By breaking down flights into parts, different types of aircraft can be considered. In addition, seat categories and the most probable aircraft type is taken into account for all sections of the journey in order to increase the accuracy of calculations. A direct flight usually has a shorter distance and therefore causes less emissions.



A fairly important component is the inclusion of the additional climate affecting "non-CO₂ effects". The climate impact of air traffic is not limited to CO_2 emissions alone. Nitrogen oxides, soot particles and water vapour and their influence on cloud formation also contribute to changes in the atmosphere. The other factors that reflect these effects are therefore particularly important for calculating emissions from air travel. According to current scientific knowledge, we use the Radiative Forcing Index (RFI) to calculate emissions from air travel. This is based on RFI = 3, i. e. CO_2 emissions are multiplied by a factor of three. This makes it possible to estimate the actual climate impact by aviation emissions. The total climate impact of emissions by air travel are determined from all these data.

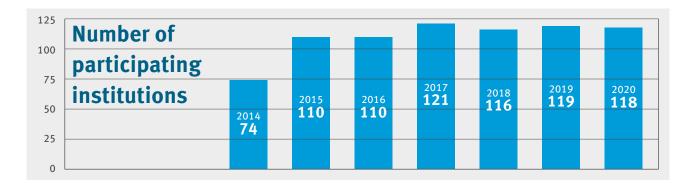
Business trips by company cars

Emissions from car journeys are determined based on fuel consumption combined with emission factors for different fuels.



How large is the group of participants?

The structure of governmental institutions in Germany is not constant and can change over time. Authorities are reassigned, new ones established or some closed. The list of authorities in terms of offsetting business trips and travel of the Federal Government¹ and the Federal Administration² has expanded over the years. With these adjustments, the voluntary activity fits into the "Programme of sustainability measures"³.



¹ The Federal Government comprises the Chancellor and the federal ministers. Together they make up the Cabinet. The Federal Government exercises the executive power at the federal level.

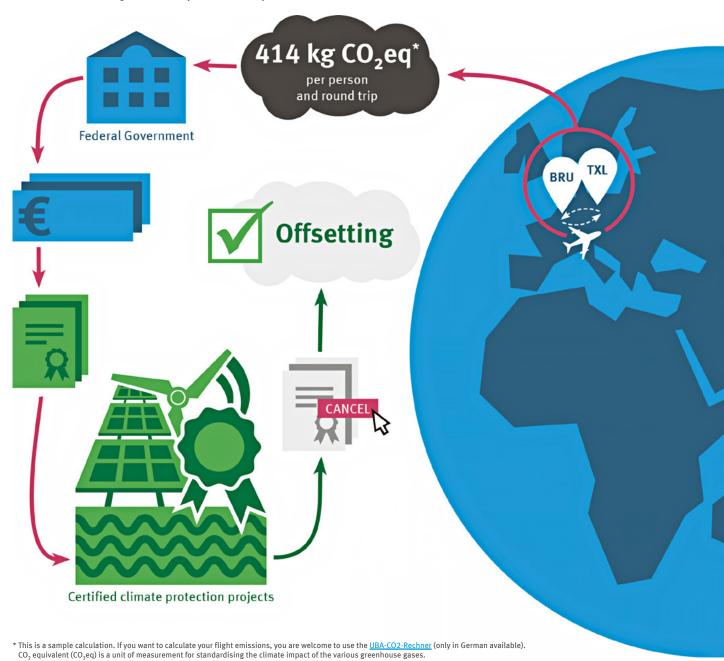
The direct Federal Administration consists of the supreme federal authorities (including, for example, federal ministries and the Federal Audit Office), the senior federal institutes (such as the Federal Administrative Office or the German Environment Agency) and the federal medium authorities (e.g. the Waterways and Shipping Directorates) as well as the subordinate authorities (e.g. chief customs offices).

On 30 March 2015, the State Secretaries' Committee on Sustainable Development adopted the new edition of of 6 December 2010, with which the Federal Government consistently pursues the goal of implementing its guiding principle of sustainable development in its own administrative actions as well (a full version is only available in German, a short one in English is available under the "German Sustainable Development Strategy" under the chapter "programme of sustainability measures").

How is offsetting actually made?

So far, the emissions caused by business trips and business travel by the Federal Government and Administration have been offset by Certified Emission Reductions (CERs) from the Clean Development Mechanism (CDM). CDM is one of the two project-based mechanisms under the Kyoto Protocol. Using the project mechanisms, industrialised countries can achieve a part of their reduction targets from the Kyoto Protocol through international climate protection projects. At the same time, CDM projects promote sustainable development and technology transfer.

In order to be registered as CDM projects, these climate protection projects must undergo a scrutiny in accordance with the Kyoto Protocol rules and institutions and presented to the United Nations Climate Change Secretariat (UNFCCC-Secretariat) after they have been checked for quality by independent experts. The amount of emission savings achieved is also regularly checked by independent experts during the project's lifetime. The German Federal Government is currently using this instruments and is buying CERs from ambitious CDM projects to offset the greenhouse gas emissions caused by its business trips and travels. To offset the climate impact of business trips and travels, we purchase one CER for each tonne of carbon dioxide equivalent (t CO_2 eq) emitted. They are transferred to an account of the Federal Government in the German Emissions Trading Registry immediately after purchase, then deleted and thus removed from the market. This ensures that emissions are permanently offset as any further use of the CERs is excluded after deletion.



How many CERs have been purchased and cancelled to date?

Mobility-related emissions are offset by climate protection projects in emerging and developing countries through cancelling the CERs from the CDM. The table shows how many CERs have been or will be cancelled on behalf of the German Federal Government for mobility-related emissions in the respective year.

1,706,834	
CERs cancelled since 2014	R

Cancelled CERs of each year:

Offsetting year	Number of CERs
2014	138,038
2015	203,630
2016	235,240
2017	298,040
2018	309,358
2019	347,507
2020	175,021

Which climate protection projects are selected?

CERs have been purchased from ambitious, additional CDM projects.

Because so far only CDM projects have been used, this ensures that emission reductions are certified under the umbrella of UN rules. Part of the assessment of projects under the CDM is in particular the confirmation of "additionality", i.e. that the emission reductions would not have been achieved anyway (i.e. without CDM). Furthermore, the UN CDM rules ensure that a realistic reference scenario without CDM is chosen for calculating the emissions reductions of the respective CDM project. Also, they are verified by an independent third party. It is important that CERs are only issued for emission reductions that have actually been achieved and verified and not based on mere project assumptions.

In addition to the UN rules on the CDM, care is taken to comply with various criteria to ensure the high quality of the projects. For example, the climate protection projects should go beyond a mere CO₂ reduction in their effect and should have an additional sustainable added value for developing countries (co-benefits).

Co-benefits include, for example, the protection of other environmental media – such as air, soil or water –, resource protection, the development of rural electrification, the strengthening of local jobs, further training of local employees, support for local supply facilities and health protection. The co-benefits are proven by the fulfillment of the global Sustainable Development Goals of the United Nations for sustainable development (SDGs).





























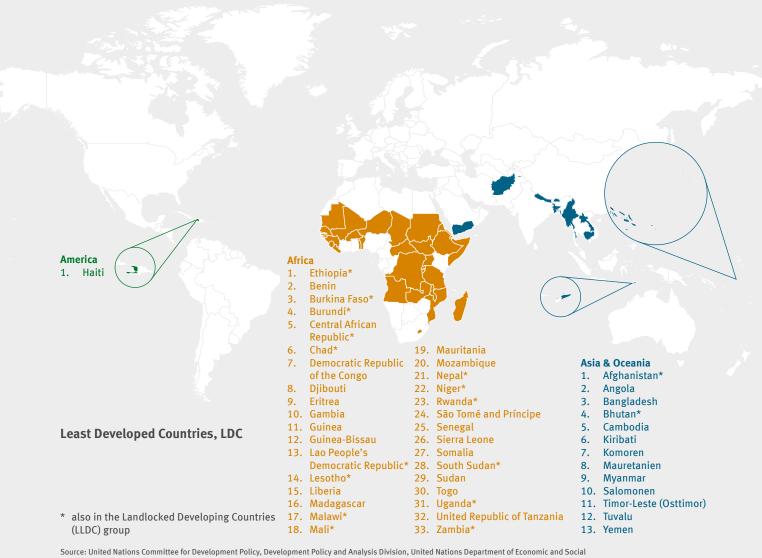








Other procurement criteria include additional certification according to the international Gold Standard⁴, an embedding in the climate protection policies of the host country of the project and the promotion of bundled micro projects (Programme of Activities, PoA), if possible, from Least Developed Countries (LDC).



Certain CDM project types are excluded such as lighting programmes where lamps contain mercury, biogas use projects at palm oil mills or fossil fuel extraction and processing projects (excluding private households).

In selecting projects, the German Federal Government is pursuing its energy and climate policy objectives and is focusing on projects in the "renewable energy" and "energy efficiency" sectors. They predominantly meet the Gold Standard criteria.

The selected projects are mainly small-scale projects and PoA projects as their cost structure usually puts them at an economic disadvantage compared with large projects. The costs of project development in small and micro-projects are generally significant while the income from smaller volumes of credits is regularly lower than in large projects. At the same time, smaller projects specifically have a number of co-benefits and thus make a direct contribution to local sustainable development. Regional labour markets are strengthened by the creation of new jobs or additional sources of income, for example in the production, distribution and maintenance of efficient cooking stoves or the purchase of harvest residues, a source not used previously.

⁴ The Gold Standard is a standard developed by a worldwide alliance of NGOs under which CDM projects can be additionally certified. This standard places particularly high demands on the environmental, economic and social sustainability of the projects.

Transition to the Paris Agreement

The Paris Agreement came into effect at the beginning of 2021. Purchase of emission reduction credits to offset emissions must therefore be realigned from 2021 onwards to meet the requirements of Article 6 of the Paris Agreement.

Key elements in this context are:

- Contributing to sustainable development and raising ambition, and
- Avoiding double counting.

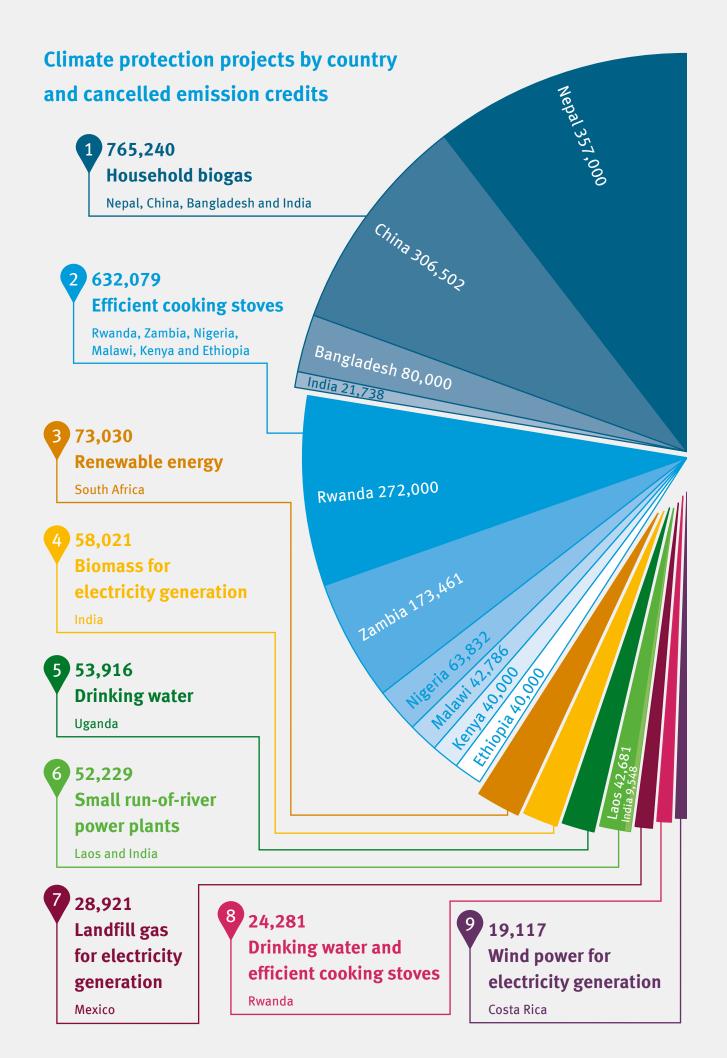
The danger of double counting has always been immanent in the voluntary market so that the German Federal Government has so far not used national projects to offset emissions from its business trips. The challenge of avoiding double counting now arises for all countries under the Paris Agreement. Because with the Nationally Determined Contributions (NDCs) each contracting state has formulated its own climate targets to be achieved. Credits for offsetting may not be used at the same time to achieve the binding targets of these NDCs. Otherwise, no added value for the climate would come from any offsetting that goes beyond the targets already agreed, so this risk must be excluded. A real additional contribution to climate protection can only be assumed when offset measures go beyond the existing targets.

World Climate Conference (COP 26) rules for Article 6.4 of the Paris Agreement being, the "successor mechanism" to CDM, were adopted. It will take a certain amount of time for the new rules to be implemented on the one hand and for the market to be able to provide corresponding credits under this mechanism on the other. In a corresponding event, we will present to potential bidders and other interested parties how we will design the tenders in this transition phase in order to still meet the new requirements of the Paris Agreement.

Details of the types of selected climate protection projects

So far, the German Federal Government has acquired and cancelled CERs for a total of $1,706,834 \text{ t CO}_2$. Most of the CERs are from Asia and Africa (875,490 and 783,306, respectively) and originate from household biogas and cooking stove projects (765,240 and 632,079, respectively). A total of 20 different projects in 9 different project types have been selected so far.







Household biogas

Rural regions in particular suffer greatly from consequences of climate change. The population mostly uses coal or firewood for cooking. Especially women and children are affected by the strong smoke development during cooking. The use of coal and firewood leads to considerable health problems, especially for the eyes and respiratory tract. Furthermore, felling trees for fuel is one of the reasons for the increasing decline of forests. Biogas replaces the usual coal or firewood for cooking and reduces carbon dioxide emissions. It is a smokeless, affordable and decentralised energy source, especially for poorer households in rural areas.



Small biogas plants are used, which convert cow dung, other agricultural waste and faeces through anaerobic digestion into biogas that can be used for cooking. Instead of the widespread disposal of animal faeces in open manure pits, these biogas plants treat the excrements anaerobically in closed tanks and provide the farmers with methane produced as a clean biogas for cooking. The extremely smoke-intensive and health-damaging burning of coal and firewood in outdated stoves, which has been common practice up to now, becomes superfluous. Small farmers' households are equipped with climate-friendly biogas fermenters and practical biogas cooking stations. The project reduces greenhouse gas emissions from two major emission sources in rural areas by using methane emissions from livestock farming and replacing coal and firewood with biogas. It also reduces pollution by smoke, improves sanitary conditions and encourages the production of organic fertilisers.

PROJECTS

Country: China

Project name: Sichuan Rural Poor-Household Biogas Development Programme

Project number: CDM PoA 2898 **Special features:** PoA, Gold Standard

Number of CERs cancelled: 10,000 for 2014; 40,000 for 2015; 41,502 for 2016;

55,000 for 2017; 40,000 for 2018, 80,000 for 2019

& 40,000 for 2020

Country: Nepal

Project name: Nepal Biogas Support Program

Project number: CDM PoA 9572

Special features: PoA, LDC, Gold Standard

Number of CERs cancelled: 40,000 for 2014; 22,000 for 2015; 40,000 for 2016;

55,000 for 2017; 40,000 for 2018, 80,000 for 2019

& 40,000 for 2020

Country: Bangladesh

Project name: Improved Cooking Stoves in Bangladesh

Project number: CDM PoA 4791 **Special features:** PoA, LDC

Number of CERs cancelled: 40,000 for 2017 & 40,000 for 2018

Country: India

Project name: SKG Sangha Biodigester PoA

Project number: CDM PoA 9507 **Special features:** PoA, Gold Standard

Number of CERs cancelled: 11,738 for 2016 & 10,000 for 2017



Efficient cooking stoves

The use of charcoal and wood for cooking and heating is widespread and often the only source of energy. However, this leads to a high deforestation rate. Burning in traditional stoves is inefficient. They do not fully convert large quantities of wood and charcoal into heat energy. This is associated with further problems: As the wood burns, ashes and the harmful gas carbon monoxide are produced. They lead to respiratory, heart, circulatory and eye diseases such as pneumonia, chronic obstructive pulmonary disease and lung cancer. Air pollution in living spaces is a serious threat because many houses do not have adequate ventilation. Furthermore, the physically demanding and time-consuming collection of firewood is typically carried out by women.



The new stoves burn the wood more cleanly, so that women and children are no longer exposed to the constant smoke and soot. In addition to the improved health situation, normal cooking habits are maintained as the stoves workday and night. Households also save a considerable amount of money, as the efficient stoves make them independent of rising charcoal and wood prices and increased transport and production costs. The savings enable households to cover other financial expenses.

The project activities promote the sale and installation of energy-efficient cooking stoves because of the effective transfer of heat and the efficient burning of wood compared to traditional fireplaces. In addition, they reduce the demand for wood or charcoal, thus lowering the pressure on forest resources. Thus, the projects counteract problems such as soil erosion, destruction of natural habitats and loss of biodiversity.

PROJECTS

Country: Rwanda

Project name: Improved Cook Stoves programme for Rwanda

Project number: CDM PoA 6207

Special features: PoA, LDC, Gold Standard

Number of CERs cancelled: 40,000 for 2015; 32,000 for 2016; 40,000 for 2017;

40,000 for 2018, 80,000 for 2019 & 40,000 for 2020

Country: Zambia

Project name: Improved Cookstoves Program for Zambia

Project number: CDM PoA 8060 Special features: PoA, LDC

Number of CERs cancelled: 25,994 for 2015; 40,000 for 2017; 40,000 for 2018,

42,467 for 2019 & 25,000 for 2020

Country: Nigeria

Project name: Improved Cooking Stoves for Nigeria Programme of Activities

Project number: CDM PoA 5067 **Special features:** PoA, Gold Standard

Number of CERs cancelled: 5,800 for 2015; 30,000 for 2016; 5,040 for 2017,

10,992 for 2019 & 12,000 for 2020

Country: Malawi

Project name: Improved Cookstoves Program for Malawi and cross-border regions

of Mozambique

Project number: CDM PoA 9558 **Special features:** PoA, LDC

Number of CERs cancelled: 30,129 for 2018 & 12,657 for 2019

Country: Kenya

Project name: PoA for the Reduction of emission from non-renewable fuel from

cooking at household level

Project number: CDM PoA 7359

Special features: PoA

Number of CERs cancelled: 40,000 for 2017

Country: Ethiopia

Project name: Energy Efficient Stoves Program (EESP)

Project number: CDM PoA 9769 **Special features:** PoA, LDC

Number of CERs cancelled: 40,000 for 2018



Renewable energy

Renewable energy includes wind and solar energy, biomass, geothermal energy and hydropower.

They can make a significant contribution to climate protection. They also contribute to security of supply and to avoiding conflicts over raw materials. The basic principle of renewable energy is that on the one hand, processes occurring in nature are used. On the other hand, electricity, heat and fuels are also generated from renewable raw materials. The use of renewable energy depends on simplified integration and its environmentally compatible pattern. In future, the growing energy demand should no longer be covered by coal for example. In some rural regions, decentralised generation plants using renewable fuels are still not widespread although the environmental condi-



tions are very favourable for the use of wind or solar power for example. High capital requirements and unfavourable financing conditions therefore make it difficult for private operators in these regions to invest in the relevant technology and thus help renewable energy to achieve a breakthrough.

Climate protection projects in the field of renewable energy usually rely on the use of wind and solar power and support the operators of decentralised energy generation plants. The construction and operation of plants create new jobs for the local population. The projects improve the regional and national energy supply and reduce dependence on fossil fuels. The projects also substitute electricity from conventional power plants and avoid emissions of nitrogen, soot and sulphur dioxide. They also help to achieve a breakthrough in technologies for generating energy from renewable sources and make an important contribution to energy transition in rural areas.

PROJECT

Country: South Africa

Project name: South Africa Renewable Energy Programme (SA-REP)

Project number: CDM PoA 7570

Special features: PoA

Number of CERs cancelled: 33,030 for 2015 & 40,000 for 2016



Biomass for electricity generation

A large part of the rural population derives their living from agriculture and livestock breeding. Smallholder families produce hardly more than they need in order to survive. In these projects, small farmers can supply a power plant with their crop residues. They sell the previously worthless waste (for example plant residues such as mustard husks and stalks left over from processing into mustard oil) to the plant operator. This provides them with additional income. So that the farmers, who often have no means of transport, do not have to transport the fuel over long distances to the power plants themselves, collection centres are set up in the immediate vicinity of the plant. The sacks of plant residues delivered are weighed, the farmers are paid directly and the combustible material



is then transported to the plant. These storage facilities also ensure that there is sufficient crop residue outside the harvest season to generate electricity all year round. The crop residues are burned and heat a boiler to produce steam. This steam drives the turbines and generators to produce electricity which is fed into the regional power grid.

PROJECT

Country: India

Project name: Electricity generation from mustard crop residues: Tonk, India

Project number: CDM 1774 **Special features:** Gold Standard

Number of CERs cancelled: 40,000 for 2014 & 18,021 for 2020



Drinking water

Water is the most important support for life which cannot be replaced. Apart from being used for drinking and cooking, water is also indispensable for daily personal hygiene and cleaning. Therefore, particularly high demands are placed on the quality of drinking water. Pathogens that get into drinking water can quickly infect a large number of people. This risk must therefore be kept very low.

Increasing weather extremes, flooding, droughts and water shortages are already visible as consequences of climate change. Not only agriculture and food security are affected, but also the entire health situation of the population. In some rural areas, infections – such as gastro-intestinal infections – are a serious threat,



especially in children. They are caused by poor water quality, lack of sanitary facilities and inadequate hygiene. Water is usually boiled to rid it of viruses and bacteria and make it drinkable. Drinking water projects make water safe for consumption using a chlorine solution. The water required is usually treated with chlorine directly at the point of supply. This technology eliminates the need to boil water before consumption. CO_2 emissions are reduced because forest areas no longer have to be felled for fuel. In addition, the time-consuming and costly procurement of firewood and charcoal is eliminated. Families then have more time and money to meet other basic needs. Not only does the use of chlorine prevent gastrointestinal infections, but it also helps to reduce diseases of the eyes and respiratory tract caused by smoke from the open stoves. Comprehensive health and hygiene training courses are often offered to accompany projects.

PROJECT

Country: Uganda

Project name: International Water Purification Programme

Project number: CDM PoA 5962

Special features: PoA, LDC, partially Gold Standard **Number of CERs cancelled:** 12,525 for 2015 & 41,391 for 2019



Small run-of-river power plants

Hydroelectric power as a renewable energy source is still important worldwide. It contributes considerably to the reduction of CO₂ emissions and thus to climate protection. At the same time, it reduces the need for conventional primary energy sources, serves to improve supply security and reduces dependence on fossil and nuclear fuels.

In run-of-river power plants, no water is stored during normal operation and the water is passed through turbines. The water is then returned to the river so that the inflow to the power plant and the outflow from the power plant are the same. In run-of-river power plants, electricity is usually generated continuously, even if water flow fluctuates. Therefore, these



plants are mostly used to cover the base load. Capacity can be reduced by high or low water, nevertheless, the turbines are usually well utilised so that electricity can be generated cost-effectively due to low operating costs.

The energy generated is fed into the national power grid. Even in the dry season, water flow is guaranteed in order to keep the impact on water use for the surrounding villages as small as possible. No people have been resettled and no village has been directly negatively affected by the projects.

PROJECTS

Country: Lao People's Democratic Republic Project name: Xenamnoy-6 Hydropower project

Project number: CDM 10138

Special features: LDC, Gold Standard **Number of CERs cancelled:** 13,000 for 2017

Country: Lao People's Democratic Republic Project name: Nam Long Hydropower project

Project number: CDM 9991

Special features: LDC, Gold Standard **Number of CERs cancelled:** 29,681 for 2018

Country: India

Project name: Baragran Hydro Electric Project, 3.0 MW (being expanded to 4.9 MW)

Project number:CDM 1253Special features:Gold StandardNumber of CERs cancelled:9,548 for 2018



Landfill gas for electricity generation

The population living in (large) cities often suffers particularly badly from air pollution, landfills and ever increasing problems with drinking water supply. Projects to generate power from waste or landfill gas are often located in urban areas. Landfill projects comply with modern principles of waste management so that the overall environmental compatibility of waste disposal is increased. Odour nuisance for local residents is also significantly reduced by extracting and burning landfill gases. The electricity produced is fed into the local grid and jobs are also created for the local population.



PROJECT

Country: Mexico

Project name: Monterrey I LFG to Energy Project

Project number: CDM 4598 **Number of CERs cancelled:** 28,921 for 2014



Drinking water and efficient cooking stoves

Some projects combine modern water filters and efficient cooker systems. Traditionally, meals are prepared over an open fire and the resulting high exhaust emissions are a considerable burden on the climate and the health of local people. New cookers ensure a much more efficient combustion process.

They have efficient thermal insulation, optimise heat transfer to the cooking pot and consume significantly less fuel than traditional fireplaces. Furthermore, the cookers reduce harmful flue gases associated with the development of numerous respiratory, cardiovascular and eye diseases. The water filters clean water without heat, electricity or chemicals, which elimi-



nates the need for boiling the water. Together with the efficient cookers, a large amount of firewood or charcoal is saved. This reduces CO_2 emissions and deforestation. Other positive effects on the environment include reducing soil erosion, conserving water resources and maintaining habitats for animals and plants.

PROJECT

Country: Rwanda

Project name: DelAgua Public Health Program in Eastern Africa

Project number: CDM PoA 9626

Special features: PoA, LDC, Gold Standard

Number of CERs cancelled: 24,281 for 2015



Wind power for electricity generation

The supply for sparsely populated rural regions, especially a broad-based supply of other renewable energy sources, continues to be considered a challenge. Wind energy is the supporting pillar of energy transition which has developed rapidly in recent years. Wind as an energy source is available free of charge and without any restriction. Wind turbines use wind as a "raw material". The turbine rotor first converts the kinetic energy of wind into mechanical rotational energy. A generator then converts this into electrical energy. High to medium wind speeds and the size of the rotor surface are the key elements for producing a high electricity yield. Wind blows stronger and more evenly at greater heights from the ground, so the higher the wind turbine and the longer



the rotor blades, the better the turbine can exploit wind energy supply.

These projects usually feed the electricity generated into the national grid. This not only stabilises the grid, but also significantly improves the local availability of electricity in rural areas.

PROJECT

Country: Costa Rica

Project name: Los Santos Windpower Project

Project number: CDM 6275

Special features: partly Gold Standard **Number of CERs cancelled:** 19,117 for 2014

General information...

... on the voluntary offsetting of greenhouse gas emissions through emission reduction projects is available on the DEHSt website:

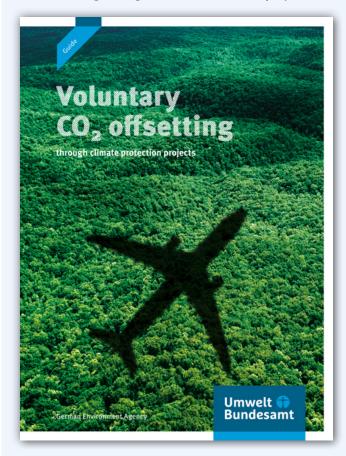


www.dehst.de/Carbon-Offsetting



www.dehst.de/Business-tripsof-German-government

or in the Guidance "Voluntary CO₂ offsetting through emission reduction projects":





www.umweltbundesamt.de/ publikationen/voluntary-co2offsetting-through-climate-protection