



Calculation & Assumptions

The Climate Balance – Background Paper 2

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Conscious Consumption

Calculations and Assumptions: Nutrition

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.

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Action	Assumptions / Calculations / Data Sources	Notes / Interpretations
 <p>Predominantly Regional and Seasonal Diet</p>	<p>Assumption: Changing from average eating habits (German average: 1.3 kg meat/sausage/fish per week, 2.4 kg milk per week, paying little attention to origin and season) to predominantly seasonal and regional diet (still including animal products).</p> <p>Calculation: Per capita emissions from average diet per year: 1,580 kg CO₂-eq Per capita emissions from predominantly seasonal and regional diet per year: 1,560 kg CO₂-eq Savings: 1,580 kg CO₂-eq - 1560 kg CO₂-eq = 20 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>	<p>Note: Organic foods are not considered in the CO₂ calculator.</p>
 <p>Vegan Diet</p>	<p>Assumption: Changing from average eating habits (German average: 1.3 kg meat/sausage/fish per week, 2.4 kg milk per week, paying little attention to origin and season) to vegan diet (still paying a little attention to origin and season).</p> <p>Calculation: Per capita emissions from average diet per year: 1,580 kg CO₂-eq Per capita emissions from vegan diet per year: 640 kg CO₂-eq Savings: 1,580 kg CO₂-eq - 640 kg CO₂-eq = 940 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>	<p>Interpretation: The vegan diet does not include the component of regionality and seasonality. If people who eat vegan also eat predominantly regional and seasonal, this results in a further climate protection effect.</p> <p>Note: Organic foods are not considered in the CO₂ calculator.</p>

Fact check on the myth

Claim:

Vegan diet is unhealthy and leads to nutrient deficiency.

Fact:




For the healthy adult general population, in addition to other diets, a vegan diet can also be a health-promoting diet, provided that a vitamin B12 supplement is taken, a balanced, well-planned food selection is made, and a sufficient supply of potentially critical nutrients is ensured.

Source: [Vegane Ernährung](#)

Calculations and Assumptions: Nutrition

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Action	Assumptions / Calculations / Data Sources	Notes / Interpretations
 <p>Vegetarian Diet</p>	<p>Assumption: Changing from average habits (German average: 1.3 kg meat/sausage/fish per week, 2.4 kg milk per week, paying little attention to origin and season) to vegetarian diet (still 2.4 kg milk per week and paying a little attention to origin and season).</p> <p>Calculation: Per capita emissions from average diet per year: 1,580 kg CO₂-eq Per capita emissions from vegetarian diet per year: 1,020 kg CO₂-eq Savings: 1,580 kg CO₂-eq - 1020 kg CO₂-eq = 560 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>	<p>Interpretation: The vegetarian diet does not include the component of regionality and seasonality. If people who eat vegetarian also eat predominantly regional and seasonal, this results in a further climate protection effect. Note: Organic foods are not considered in the CO₂ calculator.</p>
 <p>Oat Milk instead of Cow Milk</p>	<p>Assumption: On average, 49.9 kilograms of milk are consumed per capita per year.</p> <p>Calculation: 1 liter of cow's milk = 1.1 - 1.7 kg CO₂-eq 1 liter of oat milk = 0.3 kg CO₂-eq Per capita emissions from cow's milk consumption per year: 49.9 x 1.3 kg CO₂-eq = 64.9 kg CO₂-eq Per capita emissions from oat milk consumption per year: 49.9 x 0.3 kg CO₂-eq = 15 kg CO₂-eq</p> <p>Savings: 64.9 kg CO₂-eq - 15 kg CO₂-eq = 49.9 kg CO₂-eq</p> <p>Data source: Ökologische Fußabdrücke von Lebensmitteln und Gerichten in Deutschland (ifeu / 2020)</p>	
 <p>Inspiring flatmates or Family for Oat Milk</p>	<p>Assumption: On average, 49.9 kilograms of milk are consumed per capita per year. 4 people switch from cow's milk to oat milk.</p> <p>Calculation: 1 liter of cow's milk = 1.1 - 1.7 kg CO₂-eq 1 liter of oat milk = 0.3 kg CO₂-eq Per capita emissions from cow's milk consumption per year: 49.9 x 1.3 kg CO₂-eq = 64.9 kg CO₂-eq Per capita emissions from oat milk consumption per year: 49.9 x 0.3 kg CO₂-eq = 15 kg CO₂-eq Savings: 64.9 kg CO₂-eq - 15 kg CO₂-eq = 49.9 kg CO₂-eq Savings from four people: 50 kg CO₂-eq x 4 = 200 kg CO₂-eq</p> <p>Data source: Ökologische Fußabdrücke von Lebensmitteln und Gerichten in Deutschland (ifeu / 2020)</p>	

Calculations and Assumptions: Nutrition

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.

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Action	Assumptions / Calculations / Data Sources
<p>Not buying strawberries in winter</p> 	<p>Assumption: A person buys a punnet of 250 grams of strawberries every week for three months, i.e., a total of 12 punnets.</p> <p>Calculation: 1 kg of strawberries = 3.4 kg CO₂-eq 12 x 250 g of strawberries = 3 kg 3 kg x 3.4 kg CO₂-eq = 10.2 kg CO₂-eq</p> <p>Data source: Ökologische Fußabdrücke von Lebensmitteln und Gerichten in Deutschland (ifeu / 2020)</p>
<p>Daily 1 Liter of tap water instead of bottled water</p> 	<p>Assumption: The German Nutrition Society (DGE) recommends around 1.5 liters every day, preferably water or other calorie-free drinks such as unsweetened tea. Mineral water from the bottle is the Germans' favorite drink and is the most bought or most consumed drink in the population in Germany.</p> <p>Calculation: 1 liter of bottled water = 202.74 g CO₂-eq x 365 = 74000.1 g CO₂-eq 1 liter of tap water = 0.35 g CO₂-eq x 365 = 127.75 g CO₂-eq 74.0001 kg CO₂-eq - 0.12775 kg CO₂-eq = 73.87235 kg CO₂-eq/year</p> <p>Data source:</p> <ul style="list-style-type: none"> • Vergleich des CO₂-Fußabdrucks von Mineral- und Trinkwasser (GUT Zertifizierungsgesellschaft für Managementsysteme mbH / 2020) • Gut essen und trinken (DGE / 2024) • Ranking der meistgekauften bzw. meistkonsumierten Getränke in der Bevölkerung in Deutschland in den Jahren 2019 bis 2023 (Statista / 2023)

Fact check on the myth

Claim:

Drinking water is a health concern.

Fact:

Drinking water in Germany is of consistently high quality and one of the best-controlled foods. Drinking tap water generates less than one percent of the environmental pollution of mineral water. Tap water from the tap is the cheapest and most environmentally friendly drink.




Source: Umweltbundesamt (UBA)

Links: [Ratgeber: Trinkwasser aus dem Hahn](#), [UBA-Umwelttipp: Trinkwasser](#)

Calculations and Assumptions: Mobility

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Action	Assumptions / Calculations / Data Sources
 <p>One week vacation: 4-star hotel instead of cruise ship</p>	<p>Assumption: First option: 6 nights on a lake cruise ship. Second option: 6 nights in a 4-star hotel. The means of transport for arrival and departure are not considered.</p> <p>Calculation: Per capita emissions for cruise travel: 740 kg CO₂-eq/year Per capita emissions for hotel accommodation: 90 kg CO₂-eq/year Savings: 740 kg CO₂-eq - 90 kg CO₂-eq = 640 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner: Fahrten und Reisen & Beherbergung (2024)</p>
 <p>Rügen instead of Mallorca: car instead of plane</p>	<p>Assumption: First option: by plane from Berlin to Palma de Mallorca. The flight (economy, not compensated) takes two hours and 40 minutes, for the outbound and return journey together, i.e., about 5 hours. Second option: by car from Berlin to Binz on Rügen. You travel as a group in the car. One way is 313 kilometers long, so the entire journey is 626 kilometers.</p> <p>Calculation: Per capita emissions by car: 120 kg CO₂-eq/year Per capita emissions by plane: 660 kg CO₂-eq/year Savings: 660 kg CO₂-eq - 120 kg CO₂-eq = 540 kg CO₂-eq</p> <p>Datenquelle: UBA-CO₂-Rechner (2024)</p>
 <p>Carpooling to work instead of alone</p>	<p>Assumption: Car ride to work on four weekdays, i.e., on 184 days a year. (1 day per week home office for full-time employment, 24 vacation days). Average length of the commute: 17.2 kilometers there and 17.2 kilometers back, i.e., about 34.4 kilometers per day. In the carpool, two people sit in the car.</p> <p>Calculation: Distance traveled per year: 34.4 km x 184 = 6,330 km Trip by car: 1,250 kg CO₂-eq per person Savings: 1,250 kg CO₂-eq / 2 = 625 kg CO₂-eq per person = 1,250 kg CO₂-eq for two people</p> <p>Data sources:</p> <ul style="list-style-type: none"> • UBA-CO₂-Rechner (2024) • Bundesinstitut für Bau-, Stadt- und Raumforschung (2023) • ifo Institut (2023)

Calculations and Assumptions: Mobility

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Action	Assumptions / Calculations / Data Sources
Bringing children to school by bike instead of car 	<p>Assumption: In total, children and adolescents travel an average of 0.8 kilometers per day on foot and 1.1 kilometers by bicycle. The average is 0.95 kilometers. The schoolchild is driven four times a day: there and back for bringing, there and back for picking up, i.e., 3.8 km. On 190 days a year, i.e., the school days.</p> <p>Calculation: Distance traveled per year: 3.8 km x 190 = 722 km According to the CO₂ calculator, the personal annual mileage of 722 km corresponds to a per capita consumption of 140 kg CO₂-eq.</p> <p>Data sources:</p> <ul style="list-style-type: none"> • UBA-CO₂-Rechner (2024) • Mobilität in Deutschland (Bundesministerium für Digitales und Verkehr / 2017) • AdiMon-Themenblatt: Aktive Wege (Robert Koch-Institut / 2020)
Taking public transport instead of car to work 	<p>Assumption: Trip to work on four weekdays, i.e., on 184 days a year (with 24 vacation days). Average length of the commute: 17.2 kilometers there and 17.2 kilometers back, i.e., about 34.4 kilometers per day.</p> <p>Calculation: Distance traveled per year: 34.4 km x 184 = 6,330 km Trip by car: 1,250 kg CO₂-eq Trip by public transport: 310 kg CO₂-eq Savings: 1,250 kg CO₂-eq – 310 kg CO₂-eq = 940 kg CO₂-eq</p> <p>Data sources:</p> <ul style="list-style-type: none"> • UBA-CO₂-Rechner (2024) • Bundesinstitut für Bau-, Stadt- und Raumforschung (2023)

Fact check on the myth

Claim:

Parent taxis are safer for children.

Fact:

Children should be introduced to road traffic early and age-appropriately and complete the school route independently. However, they do not develop risk awareness and understanding of road traffic if they are regularly driven to school by their parents. If the offspring, on the other hand, safely manage the school route themselves, this is also a contribution to more road safety for the children.

Source: ADAC

Link: [Elterntaxi: Besser nicht mit dem Auto zur Schule](#)


Calculations and Assumptions:

Mobility

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Action	Assumptions / Calculations / Data sources
 <p>E-car instead of combustion engine</p>	<p>Assumption: The average mileage of car owners in Germany is 12,440 kilometers. The emissions are based on values for the average electricity mix in Germany.</p> <p>Calculation: Petrol car: 0.165 kg CO₂-eq x 12,440 = 2,052.6 kg CO₂-eq Electric car: 0.079 kg CO₂-eq x 12,440 = 982.76 kg CO₂-eq Savings: 2,052.6 kg CO₂-eq - 982.76 kg CO₂-eq = 1,069.84 CO₂-eq</p> <p>Data sources:</p> <ul style="list-style-type: none"> • Vergleich der durchschnittlichen Emissionen einzelner Verkehrsmittel im Personenverkehr (Umweltbundesamt / 2022) • Durchschnittliche Fahrleistung von Pkw-Haltern in Deutschland bis 2023 (Statista / 2023)

Fact check on the myth

Claim:

Electric cars are more harmful to the environment than combustion engines.

Fact:

Vehicles impact the environment and climate not only during operation but also during manufacturing and disposal. According to a recent study commissioned by the German Environment Agency (UBA), electric cars registered in 2020 are about 40 percent more climate-friendly than gasoline-powered cars. With a rapid expansion of renewable electricity generation, this climate advantage for cars registered in 2030 increases to approximately 55 percent.

Source: Umweltbundesamt (UBA)




Link: [Klimavorteil für E-Autos bestätigt, Analyse der Umweltbilanz von Kraftfahrzeugen mit alternativen Antrieben oder Kraftstoffen auf dem Weg zu einem treibhausgasneutralen Verkehrs Forschungsberichts](#)

Calculations and Assumptions:

Housing

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Action	Assumptions / Calculations / Data sources
 <p>Insulating the house</p>	<p>Assumption: The facade of a single-family house with 110 square meters of living space and an annual consumption of heating energy (gas) of 17,000 kWh is insulated. Three people live in the household.</p> <p>Calculation: Energy savings through facade insulation: 19% Energy savings: 17,000 kWh x 19 / 100 = 3,230 kWh Emissions per kilowatt hour heated with natural gas: 0.25 kg CO₂-eq Total emissions savings: 3,230 x 0.25 kg CO₂-eq = 810 kg CO₂-eq Emissions savings per year and per capita: 810 kg CO₂-eq / 3 = 270 kg CO₂-eq</p> <p>Data sources: ModernisierungsCheck (CO₂online gGmbH)</p>
 <p>Installing a water-saving showerhead</p>	<p>Assumption: A person showers five times a week. The water temperature (38 degrees) and the shower duration (8 minutes) are average. The apartment has a gas central heating system. Calculation once with a high water flow through the showerhead (15 liters) and once with an economical water flow (6 liters).</p> <p>Calculation: Emissions per year and per capita with high water flow: 510.5 kg CO₂-eq Emissions per year and per capita with economical water flow: 204 kg CO₂-eq Emissions savings per year and per capita: 510.5 kg CO₂-eq - 204 kg CO₂-eq = 306.5 kg CO₂-eq</p> <p>Data source: Duschrechner Verbraucherzentrale NRW (2024)</p>
 <p>Installing water-saving showerheads for yourself and your parents</p>	<p>Assumption: See above, but multiplied by 4, since a total of 4 people for two 2-person households.</p> <p>Calculation: 306.5 kg CO₂-eq x 4 = 1,224 kg CO₂-eq</p> <p>Data source: Duschrechner Verbraucherzentrale NRW (2024)</p>

Calculations and Assumptions

Housing

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Action	Assumption / Calculation / Data sources	Notes / Interpretations
 Washing hands with cold water	<p>Assumption: A person in Germany washes their hands 14 times a day for 20 seconds, using 2 liters of water per wash. They live in a two-person household in an apartment building. Hot water is heated using electricity.</p> <p>Calculation: Hot water: 14 times/day x 2 liters x 365 days = 10,220 liters/year Energy consumption for heating water with electricity: 0.031 kWh/liter Emissions per kilowatt-hour of the German electricity mix: 0.445 kg CO₂-eq Total energy savings: 10,220 liters/year x 0.031 kWh/liter = 316.82 kWh/year Emission savings per capita: 316.82 kWh x 0.445 CO₂-eq/kWh = 141 kg CO₂-eq</p> <p>Data sources:</p> <ul style="list-style-type: none"> • Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 - 2023 (Umweltbundesamt / 2024) • Infektionsschutz durch Hygiene (BZgA/ 2018) • Wassermengenregler (Wikipedia / 2024) 	<p>Note: 0.031 kWh/liter corresponds to the energy required to heat one liter by 27 Kelvin (from 10°C to 37°C), including slight distribution losses.</p>
 Watering plants with cooking water instead of pouring it away	<p>Assumption: Three liters of tap water are saved per week by using cooking water instead of fresh tap water. Over a year, this amounts to saving 156 liters of water.</p> <p>Calculation: CO₂ footprint per liter of water: 0.00035 kg CO₂-eq Savings: 0.00035 kg CO₂-eq x 156 = 0.055 kg CO₂-eq</p> <p>Datenquelle: Vergleich des CO₂-Fußabdrucks von Mineral- und Trinkwasser (GUT Zertifizierungsgesellschaft für Managementsysteme mbH / 2020)</p>	

Fact check on the myth

Claim:

Hands must be washed with warm water to remove dirt, viruses, and germs.

Fact:

Washing hands with cold water is just as effective as washing with warm water for removing dirt, viruses, and germs, provided that soap is used and hands are washed thoroughly. The temperature of the water does not significantly impact hygiene.



Quelle: Bundeszentrale für gesundheitliche Aufklärung (BZgA)

Links: [Händewaschen: www.infektionsschutz.de](#)

Calculations and Assumptions: Housing

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Action	Assumptions / Calculations / Data sources
 <p>Washing laundry at 30°C instead of 60°C</p>	<p>Assumption: In the normal program (60°C), the washing machine consumes 1.01 kilowatt-hours per cycle. For a 30°C wash, it consumes 0.33 kilowatt-hours. A washing machine in a single-person household runs twice a week for 48 weeks a year, i.e., 96 times (adjusted for periods such as vacations).</p> <p>Calculation: Consumption for 60°C wash per year: 1.01 kWh x 96 = 96.96 kWh Consumption for 30°C wash per year: 0.33 kWh x 96 = 31.68 kWh Electricity savings: 96.96 kWh - 31.68 kWh = 65.28 kWh Emissions per kilowatt-hour of the German electricity mix: 0.445 kg CO₂-eq Emission savings per year: 65.28 x 0.445 kg CO₂-eq = 29 kg CO₂-eq</p> <p>Data sources:</p> <ul style="list-style-type: none"> • Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 - 2023 (Umweltbundesamt / 2024) • Online-Wasch-Rechner (Forum Waschen / 2024)
 <p>Shower half as long</p>	<p>Assumption: A person showers an average of five times a week. The water temperature (38°C) and shower duration (8 minutes) are average. The apartment has a gas central heating system. The showerhead has an average water flow rate (10 liters per minute).</p> <p>Calculation: Emissions per year and per capita with an 8-minute shower: 681 kg CO₂-eq Emissions per year and per capita with a 4-minute shower: 340 kg CO₂-eq Emission savings per year and per capita: 681 kg CO₂-eq - 340 kg CO₂-eq = 341 kg CO₂-eq</p> <p>Datenquelle: Duschrechner Verbraucherzentrale NRW (2024)</p>

Fact check on the myth

Claim:

At 30 degrees Celsius, laundry does not get properly clean.

Fact:

Modern detergents wash well even at low wash temperatures of 30 degrees Celsius. Therefore, high wash temperatures are usually not necessary to remove dirt and stains from textiles. Lightly and normally soiled colored laundry is usually cleaned at 20 to 30 degrees Celsius, and white laundry is usually cleaned at 40 degrees Celsius.



Quelle: Umweltbundesamt (UBA)

Links: [Themenseite: Waschtemperaturen](#), [UBA-Umwelttipp: Wäsche waschen, Waschmittel](#)

Calculations and Assumptions: Housing

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Action	Assumptions / Calculations / Data source
 <p>Sorting waste correctly</p>	<p>Assumption: The total contribution of packaging recycling from lightweight packaging, glass, and paper, cardboard and carton (PPK) to climate protection is 1.95 million tons of CO₂ equivalents. There are 83.2 million people in Germany. (Reference year 2020)</p> <p>Calculation: $1,950,000,000 \text{ kg CO}_2\text{-eq} / 83,200,000 = 23.4 \text{ kg CO}_2\text{-eq}$</p> <p>Data source: <ul style="list-style-type: none"> • Ökobilanz zu den Leistungen der dualen Systeme im Bereich des Verpackungsrecyclings (Öko-Institut / 2022) • Einwohnerzahl Deutschlands (Statistisches Bundesamt / 2023) </p>
 <p>Using a dishwasher instead of washing by hand</p>	<p>Assumption: An average 2-person household washes dishes by hand in the sink twice a day and then switches to a dishwasher, which is used once a day (around 330 times a year).</p> <p>Calculation: Hot water consumption by hand: 15 liters per wash x 2 times/day x 330 days = 9,900 liters/year Energy consumption by hand: 9,900 liters/year x 0.0675 kWh/liter = 668 kWh/year Emissions by hand: 668 kWh/year x 0.25 kg CO₂-eq = 167 kg CO₂-eq/year Hot water consumption with dishwasher: 10 liters per Eco wash cycle x 330 days = 3,300 liters/year Energy consumption with dishwasher: 3,300 liters/year x 0.031 = 102 kWh/year Emissions with dishwasher: 102 kWh x 0.445 kg CO₂-eq/kWh = 46 kg CO₂-eq Savings: 167 kg CO₂-eq - 46 kg CO₂-eq = 121 kg CO₂-eq Per person: 60 kg CO₂-eq</p> <p>Datenquelle: Stromspiegel (CO₂online gGmbH / 2024)</p>

Fact check on the myth

Claim:

Waste separation is pointless because in the end, all the waste is dumped together again.

Fact:

Sorting waste is very important and does not fail to have an effect. Efficient recycling is only possible if packaging is disposed of separately from residual waste and can be separated by type. Consumers in households, therefore, make a decisive contribution to recycling in Germany and can help to steadily increase the recycling rate by separating correctly.



Quelle: „Mülltrennung wirkt“, eine Initiative der dualen Systeme
Link: [Ist Mülltrennung sinnvoll?](#)

Calculations and Assumptions:

Electricity:

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Action	Assumptions / Calculations/ Data sources
Switching to green electricity 	<p>Assumption: A single-person household in a 47-square-meter apartment consumes an average of 1,700 kWh of electricity.</p> <p>Calculation: Emissions when using conventional electricity: 760 kg CO₂-eq Emissions when using green electricity: 50 kg CO₂-eq Savings in emissions per capita per year: 760 kg CO₂-eq – 50 kg CO₂-eq = 710 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>
Inspiring the neighbor`s family to use green electricity 	<p>Assumption: A 3-person household in an apartment building consumes an average of 3,600 kilowatt-hours (electricity consumption with electric water heating). The household switches from conventional electricity to green electricity.</p> <p>Calculation: Emissions when using conventional electricity: 530 kg CO₂-eq Emissions when using green electricity: 40 kg CO₂-eq Savings in emissions per capita per year: 530 kg CO₂-eq – 40 kg CO₂-eq = 490 kg CO₂-eq Total savings: 490 kg CO₂-eq x 3 = 1,470 kg CO₂-eq</p> <p>Data sources: UBA-CO₂-Rechner (2024) Stromspiegel (CO₂online gGmbH / 2024)</p>

Fact check on the myth

Claim:

Green electricity providers are greenwashing.

Fact:

When choosing a green electricity tariff, you should use products with a trustworthy environmental label. The "Grüner Strom" label and the ok-power label guarantee that new plants are promoted through the green electricity purchase.



Source: Umweltbundesamt (UBA)

Link: [UBA-Umwelttipp: Ökostrom](#)

Calculations and Assumptions: Electricity:

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Action	Assumptions / Calculations / Data sources
 <p>Replacing 5 incandescent bulbs with LEDs</p>	<p>Assumption: In a 2-person household in an apartment building, five 60-watt incandescent bulbs are replaced with 8-watt LEDs. The lighting duration is three hours a day for 336 days a year (deductions, for example, due to vacation).</p> <p>Calculation: Emissions per kilowatt-hour of the German electricity mix: 0.445 kg CO₂-eq Electricity consumption five 60-watt incandescent bulbs per year: $5 \times 336 \times 3 \text{h} \times 0.06 \text{ kW} = 302.4 \text{ kWh}$ Electricity consumption five 8-watt LEDs: $5 \times 336 \times 3 \text{h} \times 0.008 \text{ kW} = 40.3 \text{ kWh}$ Savings in electricity consumption: $302.4 \text{ kWh} - 40.3 \text{ kWh} = 262.1 \text{ kWh}$ Savings in emissions per year: $262.1 \text{ kWh} \times 0.445 \text{ kg CO}_2\text{-eq} / \text{kWh} = 116.6 \text{ kg CO}_2\text{-eq}$ Savings in emissions per year and per capita: $116.6 \text{ kg CO}_2\text{-eq} / 2 = 58 \text{ kg CO}_2$</p> <p>Data sources: Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 - 2023 (Umweltbundesamt / 2024)</p>
 <p>Always unplugging the cell phone charger</p>	<p>Assumption: A charging cable is in standby mode 22 hours a day, i.e. 8,030 hours a year. In idle mode, devices may consume a maximum of 0.1 watts.</p> <p>Calculation: Electricity consumption per year: $8030 \text{ h} \times 0.1 \text{ W} / 1000 = 0.8 \text{ kWh}$ Emissions per kilowatt-hour of the German electricity mix: 0.445 kg CO₂-eq Emissions of the charging cable in standby mode per year: $0.8 \times 0.445 \text{ kg CO}_2\text{-eq} = 0.36 \text{ kg CO}_2\text{-eq}$</p> <p>Data sources: • Ökodesign-Richtlinie Verordnung (EU) 2019/1782 (2019) • Entwicklung der spezifischen Treibhausgas-Emissionen des deutschen Strommix in den Jahren 1990 - 2023 (Umweltbundesamt / 2024)</p>

Fact check on the myth

Claim:

Old incandescent bulbs are better and cheaper than LEDs.

Fact:

Although LEDs are more expensive to purchase than conventional light bulbs, they consume over 80 percent less electricity than incandescent bulbs. In addition, most LEDs last an average of between 20,000 and 25,000 hours - and could therefore emit light continuously for over 2 years.

Because LED lamps have the longest lifespan, require the least amount of electricity for the same light output, and contain no mercury, they are the most environmentally friendly and climate-friendly choice in the light bulb aisle. According to Stiftung Warentest, they burden the environment about three to five times less than, for example, halogen lamps.



Source: CO₂online gGmbH

Link: [Energiesparlampe oder LEDs: Vergleich & Tipps](#)

Calculations and Assumptions: Conscious Consumption

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.




The round symbol in the left column indicates whether it is a measure that reduces your own **CO₂ footprint** or increases your **ecological handprint**.

Action	Assumptions / Calculations / Data sources	Notes / Interpretations
 <p>Spend half as much money (on products and services)</p>	<p>Assumption: The average household income (net) of a 2-person household is between 2,601 and 3,600 euros per month. If the net income is halved to 1,301 to 1,700 euros, it is assumed that consumer spending on products and services will also be reduced by about half.</p> <p>Calculation: Emissions per person with a household income (net) of 2,601 to 3,600 €: 2,570 kg CO₂-eq Emissions per person with a household income (net) of 1,301 to 1,700 €: 1,280 kg CO₂-eq Savings in emissions with income reduced by half: 2,570 kg CO₂-eq - 1,280 kg CO₂-eq = 1,290 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>	
 <p>Stop using to-go cups</p>	<p>Assumption: On average, a person uses 34 to-go cups per year.</p> <p>Calculation: Emissions of an average to-go cup: 0.019 kg CO₂-eq Savings in emissions by not using to-go cups: 0.019 kg CO₂-eq x 34 = 0.646 kg CO₂-eq</p> <p>Data source: Untersuchung der ökologischen Bedeutung von Einweggetränkebechern im Außer-Haus-Verzehr und mögliche Maßnahmen zur Verringerung des Verbrauchs (Umweltbundesamt / 2019)</p>	<p>Interpretation: Despite the small emission savings effect, disposable cups for hot drinks have an ecological relevance: In Germany alone, they cause around 28,000 tons of waste every year. This means that resources flow into the production of a product that is disposed of again after a single use - also including resources. It is therefore advisable to avoid to-go cups despite the low CO₂ savings - this should just not be considered a climate protection measure.</p>

Calculations and Assumptions: Conscious Consumption

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.


The round symbol in the left column indicates whether it is a measure that reduces your own **CO₂ footprint** or increases your **ecological handprint**.

Action	Assumptions / Calculations / Data sources
<p>Streaming 2.5 hours less per day (Music, Video & Games)</p> 	<p>Assumption: On average, young people use music streaming services for 115 minutes a day, watch videos on YouTube for 91 minutes, and play digital games for an average of 92 minutes a day. This corresponds to a weekly consumption of 14 hours of music streaming, 10 hours of YouTube watching, and 10 hours of online gaming. It is assumed that occasionally (approx. 25% of streaming time) streaming occurs on the mobile network.</p> <p>Calculation: 14 h music + 10 h gaming + 10 h video (high quality) per week = 34.09 kg CO₂-eq per year 7 h music + 5 h gaming + 5 h video (high quality) per week = 17.05 kg CO₂-eq per year</p> <p>Data sources:</p> <ul style="list-style-type: none"> • UBA-CO₂-Rechner (2024) • Jugend, Information, Medien (mpfs / 2023)
<p>Buying clothes secondhand instead of new</p> 	<p>Assumption: On average, 35 items of clothing are purchased per year, most frequently pants and T-shirts (shoes not included).</p> <p><u>New purchase (calculated per year):</u> 3 jeans (20 kg CO₂-eq / piece) 4 light pants, skirts (10 kg CO₂-eq / piece) 12 shirts, T-shirts, blouses (5 kg CO₂-eq / piece) 3 sweaters, vests (10 kg CO₂-eq / piece) 1 jacket, winter coat (20 kg CO₂-eq / piece) 12 underwear, pairs of socks etc. (5 kg CO₂-eq / piece)</p> <p><u>Secondhand:</u> 0.6 kg CO₂-eq / piece</p> <p>Calculation: Sum new purchase = 270 kg CO₂-eq per year Sum secondhand = 21 kg CO₂-eq per year</p> <p>Datenquellen:</p> <ul style="list-style-type: none"> • UBA-CO₂-Rechner (2024) • Die Rolle der Langlebigkeit und der Nutzungsdauer für einen nachhaltigen Umgang mit Bekleidung (Umweltbundesamt / 2022)
<p>Organizing a clothes swap party at school</p> 	<p>Assumption: 100 students swap 1 shirt at the party. It is avoided that 100 tops (shirts, T-shirts, blouses) are bought new.</p> <p>Calculation: 5 kg CO₂-eq x 100 = 500 kg CO₂-eq</p> <p>Data source: UBA-CO₂-Rechner (2024)</p>

Calculations and Assumptions: Conscious Consumption

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.


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Action	Assumptions / Calculations / Data sources	Notes / Interpretations
<p>Buying in store instead of ordering online</p> 	<p>Assumption: On average, German online shoppers order products online 1.7 times a month - i.e. 20.4 times a year.</p> <p><u>Online ordering process:</u> Online retail: 32.5 g CO₂-eq (average) Stationary retail: 0 g CO₂-eq (average)</p> <p><u>Warehouses / distribution centers:</u> Online retail: 70 g CO₂-eq (average) Stationary retail: 300 g CO₂-eq (assumed minimum value / emission depending on size, turnover, product range, technical equipment)</p> <p><u>Transport on the last mile:</u> Online retail: 300 g CO₂-eq (average) Stationary retail: 0 g CO₂-eq (on foot, by bicycle)</p> <p><u>Shipping packaging:</u> Online retail: 510 g CO₂-eq (average) Stationary retail: 40 g CO₂-eq (paper bag, 100% PCR)</p> <p>Calculation: Sum of processes in online retail: 0.9125 kg CO₂-eq x 20.4 = 18.615 kg CO₂-eq Sum of processes in stationary retail: 0.340 kg CO₂-eq x 20.4 = 6.936 kg CO₂-eq Savings: 18.615 kg CO₂-eq - 6.936 kg CO₂-eq = 11.679 kg CO₂-eq</p> <p>Data source:</p> <ul style="list-style-type: none"> • Die Ökologisierung des Onlinehandels (Umweltbundesamt / 2020) • Wie oft im Monat bestellst Du Produkte online? (Statista / 2023) 	<p>Interpretation: The most important levers for climate protection in stationary retail are the energy consumption on site and the choice of transport of the customers. Environmentally harmful factors in online retail, on the other hand, are the shipping packaging waste and the delivery section to the front door, the so-called "last mile".</p> <p>Link: Klimabilanz von Online- und Ladenkauf: Das Produkt entscheidet (Umweltbundesamt)</p>

Calculations and Assumptions: Conscious Consumption

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.

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Action	Assumptions / Calculations / Data sources
 <p>Buying a refurbished instead of a new smartphone</p>	<p>Assumption: The purchase of a smartphone is a one-time action. As a rule, the smartphone is changed a maximum of once a year.</p> <p>Calculation: Based on the calculation model (Excel document), the average of the "saved CO₂ emissions vs. new" of all models was calculated. Result = 70.5 kg CO₂-eq</p> <p>Data source: Rechenmodell der Produktfußabdrücke von Smartphones (refurbed und Fraunhofer Research GmbH / 2023)</p>

Fact check on the myth

Claim:

Refurbished products are inferior to new electronic devices in terms of performance and functionality.

Fact:

Many newly purchased consumer goods lose significant monetary value after a short period of use. Therefore, a lot of money can be saved by choosing used products - whether for vehicles, clothing, books, toys or furniture. It is also generally cheaper to buy used electronic devices rather than new ones. So-called refurbished devices offer you security: their functionality has been checked and they are sold with a guarantee.



Source: Umweltbundesamt (UBA)

Link: [UBA-Umwelttipp: Secondhand, teilen, tauschen, leihen](#)

Calculations and Assumptions: Conscious Consumption

The calculated savings always apply to a period of one year. It is broken down to the emission of **CO₂ equivalents** (CO₂-eq) per person.

The round symbol in the left column indicates whether it is a measure that reduces your own **CO₂ footprint** or increases your **ecological handprint**.

Action	Assumptions / Calculations / Data sources	Notes / Interpretations
<p>Completely avoiding plastic packaging</p> 	<p>Assumption: In 2021, private end consumers used 2,047.1 kilotonnes of plastic packaging. Within the packaging industry, plastic (disposable) packaging generates CO₂ emissions of around 2 kg CO₂ per kilogram of packaging weight. (Reference year 2020) At the end of 2021, approximately 83.2 million people lived in Germany.</p> <p>Calculation: 2,047,100,000 kg CO₂-eq x 2 kg CO₂-eq = 4,094,200,000 kg CO₂-eq 4,094,200,000 kg CO₂-eq / 83,200,000 = 49.2 kg CO₂-eq</p> <p>Data sources:</p> <ul style="list-style-type: none"> • Aufkommen und Verwertung von Verpackungsabfällen in Deutschland im Jahr 2021 (Umweltbundesamt / 2021) • Einwohnerzahl Deutschlands (Statistisches Bundesamt / 2022) • CO₂-Ausstoß in der Verpackungsindustrie nach Materialart 2020 (Statista / 2021) 	<p>Interpretation: Avoiding plastic without substitution by other materials is unrealistic in most cases (e.g. beverages, other liquid or pasty products, products with special hygiene requirements). Other types of packaging such as glass or aluminum have, in some cases, significantly higher CO₂ balances. A problem with avoiding packaging is also that product losses occur due to spoilage or damage. This would probably result in a significantly higher CO₂ consumption than can be saved by avoiding the packaging. Of course, it makes sense to consciously deal with waste and unnecessary packaging and return it to recycling.</p>
<p>Switching to a sustainable Bank</p> 	<p>Assumption: A person deposits 2,000 euros in the current account of a sustainable bank. Every euro in a sustainable current account or savings book avoids CO₂ because it is used by the bank for climate protection projects. The money invested indirectly contributes to the realization of environmental protection investments by the bank granting loans for, e.g. the construction of passive houses and energy-efficient renovations, projects in organic farming or the expansion of renewable energies.</p> <p>Calculation: Savings through €2,000: 420 kg CO₂-eq</p> <p>Datenquelle: UBA-CO₂-Rechner (2024)</p>	