



› INDICATORS AND GOALS

ENVIRONMENTAL INDICATORS

This chapter presents selected environmental data for the Volkswagen Group in aggregated form. The data are collected, checked and approved at the production locations in line with an internal standard (VW standard 98 000). In order to improve the accuracy and consistency of the resultant information, the collection of environmentally relevant consumption and emission data is subject to a continuous improvement process. This applies in particular to those items of information which have to be recorded with the assistance of specific calculation algorithms. Moreover, the values for December of the preceding year may include some estimated data, for example if they are based on bills from power suppliers or waste disposal providers which were not yet available at the time of compilation. In the next data collection round, these estimated data are then replaced with the values for December which have become available in the meantime.

In a similar way to corporate environmental strategy monitoring, the reported time series are relative to the 2010 baseline. The current reporting year and the corresponding preceding year complete the reporting period.

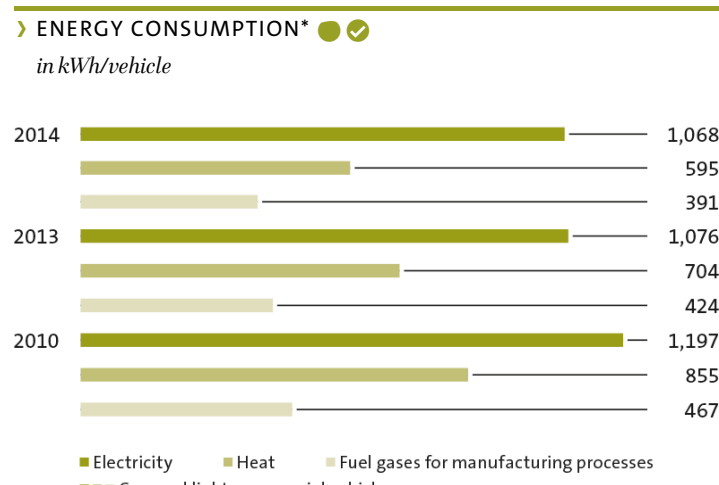
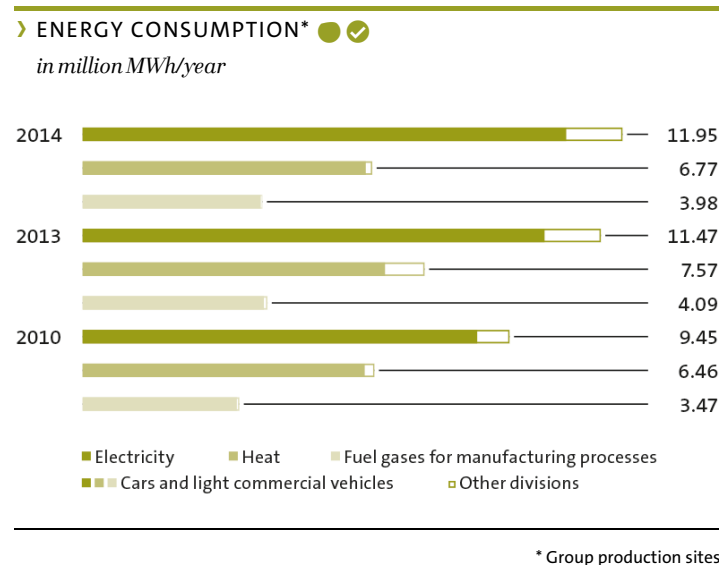
Overall, the environmental data are collected from production locations with some 550,000 employees (as at December 31, 2014), which equates to a proportion of around 97 percent. In addition, the production locations in Ningbo (Shanghai-Volkswagen Automotive Company Ltd.), Foshan (FAW-Volkswagen Automotive Company Ltd.) and Foshan (Volkswagen FAW Platform Company Ltd.) were included in the data collection for 2014.

The data in the “car and light commercial vehicle” category for the years 2010, 2013 and 2014 are recorded as in the Volkswagen Group’s Annual Report. The data for the brands Scania AB, MAN SE, Ducati Motor Holding S.p.A. and VW Kraftwerk GmbH are reported in the “Other divisions” category.

The respective proportions are indicated separately in the graphs. Unless indicated otherwise, all the Group’s production locations and the power stations and boiler plants operated by Volkswagen AG at

the Wolfsburg, Kassel and Hanover locations in Germany are included in both categories. The Volkswagen Group is essentially an automotive manufacturer which produces cars and light commercial vehicles as well as heavy-duty commercial vehicles and buses. MAN SE does, however, also manufacture marine engines or power station components. Due to this product diversity, the entirety of the environmental impact cannot simply be related to the volume of vehicles produced. Relative indicators are thus only stated for the “car and light commercial vehicle” category. The number of vehicles produced in 2014 totaled 10,014,282 cars and light commercial vehicles, as well as 198,280 heavy-duty commercial vehicles. The influence of increasing production volumes is reflected in an increase in absolute values for many indicators. However, thanks to increased efficiency, an improvement in specific values has been achieved for many indicators. A high level of capacity utilization of the production locations has also had a positive impact on specific indicators.

Weather conditions have an appreciable, but uncontrollable, impact on consumption of resources. This primarily relates to space heating demand, both for production for non-production sectors, since changing annual average temperatures have an impact on direct consumption of energy sources as well as on the amount of purchased energy. Various aspects thus exert an influence on the specific values. On the one hand, absolute consumption or emission values may change, while on the other hand rising or falling production volumes at the individual production locations also influence the indicators.



Over the reporting period shown, a continuous reduction in specific energy consumption per vehicle was achieved. As a result of higher production volumes, absolute energy consumption rose, but with a slight decline in the rate of increase compared to the previous year. The proportion of electrical energy has risen continuously over the reporting period, but measures to increase efficiency reduced the proportion per vehicle produced. Heat consumption is subdivided into heating demand for heating production and non-production sectors, and heating demand for industrial processes. Since space heating accounts for the greater proportion of total heating demand, weather conditions have a major impact on trends in overall heating demand.

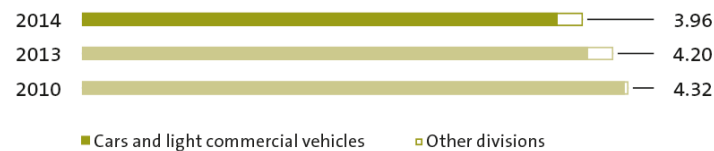
Accordingly, 2014's above-average temperatures had a positive influence on heat consumption.

In addition to this influence, measures to increase efficiency reduced the specific value per vehicle.

Fuel gases for production processes are mainly used for industrial processes during production. For example, they are used as combustion fuels for operating industrial afterburning facilities in paintshops or in annealing furnaces in component manufacture. Consumption of these fuel gases thus increases with rising production volumes. Thanks to implementation of the Group's resource conservation strategy, fuel gas consumption figures relative to production volume have been reduced.

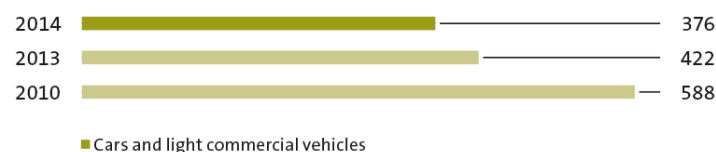
› DIRECT CO₂ -EMISSIONS SCOPE 1* ● ✓

in million tonnes/year



› DIRECT CO₂ -EMISSIONS SCOPE 1* ● ✓

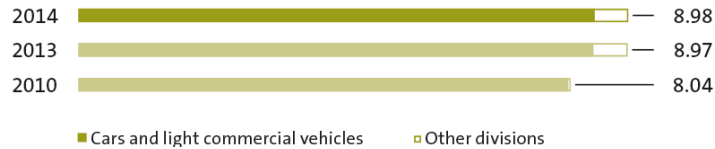
in kg/vehicle



Despite increased production volumes and the inclusion of new production locations, with a consequent increase in energy consumption, direct CO₂ emissions have been falling since 2010. Direct CO₂ emissions are associated with the combustion of fossil energy sources. A positive trend in CO₂ emission factors from in-house energy supplies has a positive impact on the trend in direct emissions of CO₂. Resource-optimized manufacturing processes have also played a part in this positive trend in direct CO₂ emissions.

> CO₂-EMISSIONS (SCOPES 1 & 2)* ● ✓

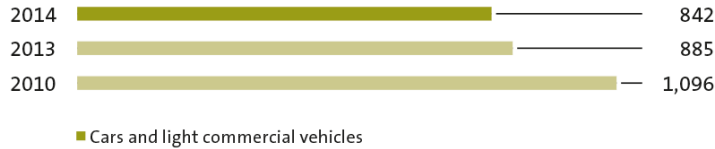
in million tonnes/year



* Group production sites

> CO₂-EMISSIONS (SCOPES 1 & 2)* ● ✓

in kg/vehicle



* Group production sites

Total CO₂ emissions have risen due to increased consumption of electrical energy, heat and fuel gases for production. The rise in total CO₂ emissions is, however, limited due to increased use of renewably generated energy and the associated improvement in CO₂ emission factors.

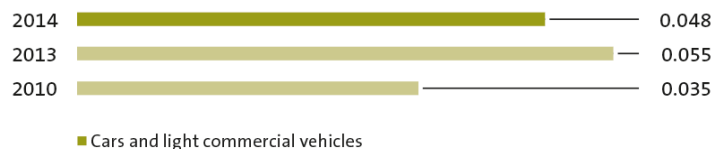
By using suitable CO₂ emission factors to evaluate energy and heat consumption figures for production locations, the CO₂ emissions arising from power and heat generation for Volkswagen AG's production locations in power stations and boiler plants operated by Volkswagen AG are included in the total volume of CO₂ emissions. The stated carbon dioxide emissions do not include the emissions arising from district heating and power supplied to third parties from power stations operated by Volkswagen AG. For 2014, these emissions amounted to 297,371 tonnes of carbon dioxide.

A continuous reduction in CO₂ emissions per vehicle produced was achieved over the stated reporting period.

The "Other divisions" category also includes CO₂ emissions from the manufacture of heavy-duty commercial vehicles, which account for around 75 percent of total CO₂ emissions in this category.

> CO₂ EQUIVALENTS* ●

in million tonnes/year



* Group production locations

> CO₂ EQUIVALENTS* ●

in kg/vehicle



CO₂ equivalents are calculated on the basis of the specific global warming potentials of individual, emitted refrigerants. Since such emissions do not occur continuously and are not dependent on a location's production volume, relatively large fluctuations may arise over a time series.

GROUP GHG EMISSIONS (SCOPE 3) (CARS AND LIGHT COMMERCIAL VEHICLES)

Show table

In line with the Scope 3 standard published in 2011 by the World Business Council for Sustainable Development and the World Resources Institute, Volkswagen reports CO₂ emissions for twelve out of a total of 15 Scope 3 categories. The calculations have revealed that the "purchased goods and services" and "use phase" emission categories account for more than 93% of all Scope 3 emissions. CO₂ emissions in the use phase are calculated on the basis of a Group fleet value representing the global vehicle population in the four major regions (EU28, USA, Brazil and China).

In view of the preponderance of these two categories, the relevant data were the subject of separate audits by external auditors from PricewaterhouseCoopers in compliance with audit standard ISAE 3000 "International Standard on Assurance Engagements".

CO₂ -EMISSIONS OF THE VOLKSWAGEN GROUP'S EUROPEAN (EU 28) NEW PASSENGER CAR FLEET

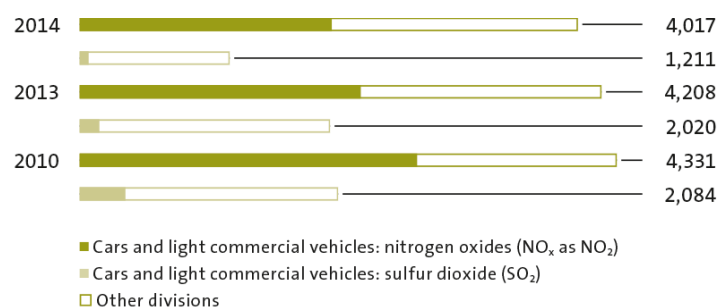
in g/km

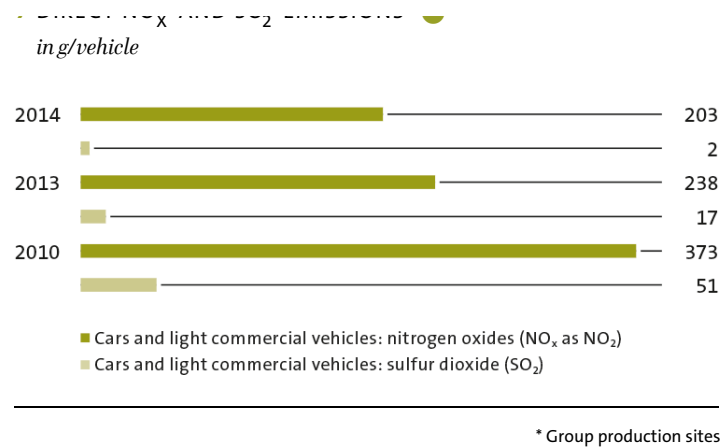


* Subject to official publication by the European Commission.
The ruling for 2014 was that 80% of the new car fleet must not exceed the prescribed level of 130 g CO₂ /km.
In the reporting year, this value for the Volkswagen Group was 115 g CO₂ /km.

DIRECT NO_x AND SO₂ EMISSIONS*

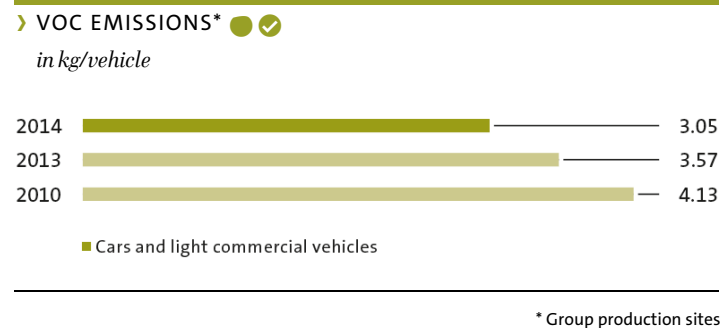
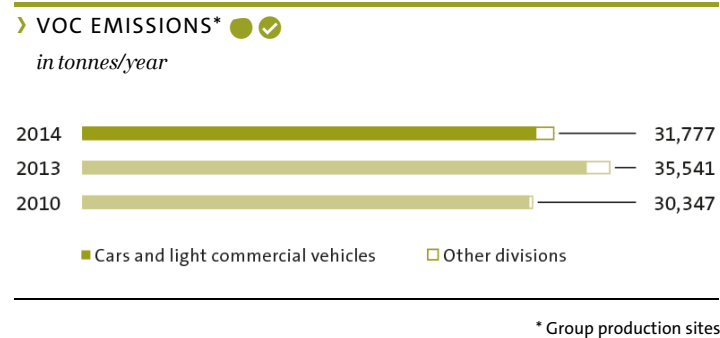
in tonnes/year





There was a clear decline in NO_x emissions in the 2010 to 2014 period.

The sharp decline in direct sulfur dioxide emissions in 2014 is the result of changes in ownership of a power generation plant.



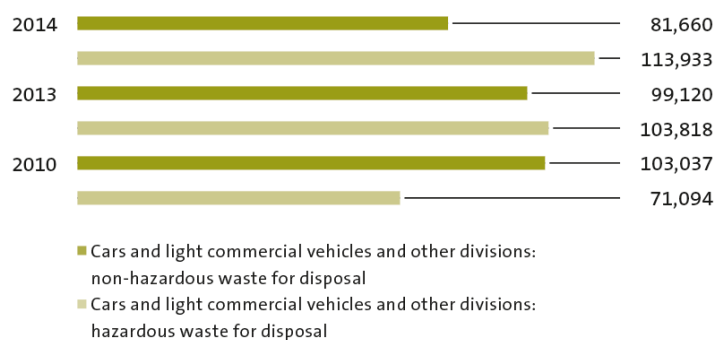
Coating processes account for the majority of VOC emissions. Modern paintshops use coating and process materials which contain less solvents. In addition, steps are taken during the coating process to collect or eliminate any solvents which are emitted. This is achieved, for example, by thermal afterburning of the exhaust air from the dryers, which are downstream of the actual coating process. Emissions into the environment are determined on the basis of both instrumental measurements and calculations.

The complexity of the overall coating process and new insights into determination methods may result in adjustments being made to previously determined emission values. The result is, however, always a higher degree of accuracy of the recorded environmental data.

Increased vehicle production volumes and an increase in the associated coating operations resulted in a slight rise in absolute VOC emissions over the entire reporting period. Due to the influencing factors described above, emissions per vehicle produced fell over the reporting period.

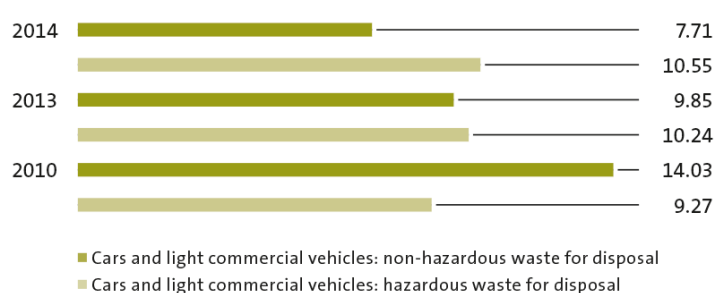
WASTE FOR DISPOSAL^{1, 2} ● ✓

in tonnes/year



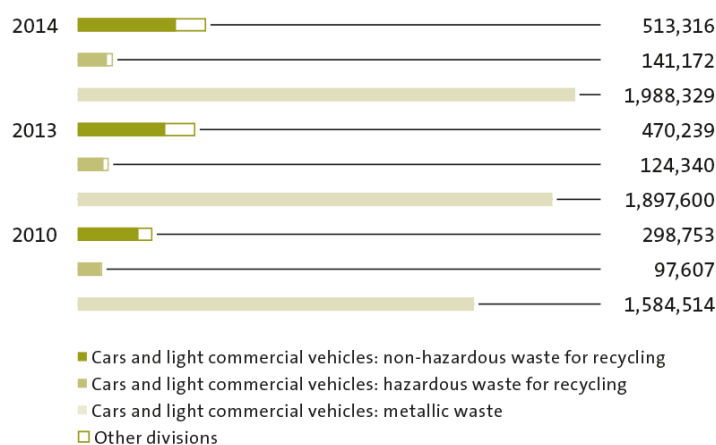
WASTE FOR DISPOSAL² ● ✓

in kg/vehicle



WASTE FOR RECYCLING^{1, 2} ●

in tonnes/year

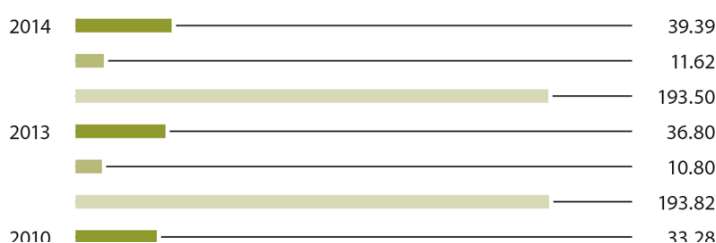


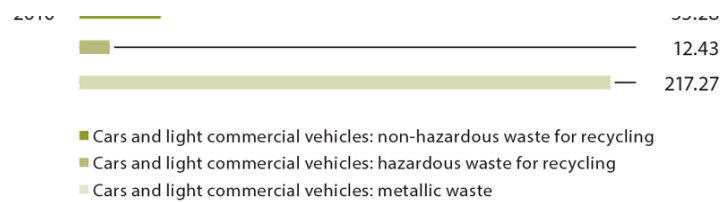
¹ In the bars showing "Non-hazardous waste for recycling", as well as "Hazardous waste for recycling" and "Metallic waste", the share accounted for by other Group divisions is shown. This is not depicted separately for the other fractions, however, on account of the low proportions.

² Group production sites

WASTE FOR RECYCLING² ●

in kg/vehicle

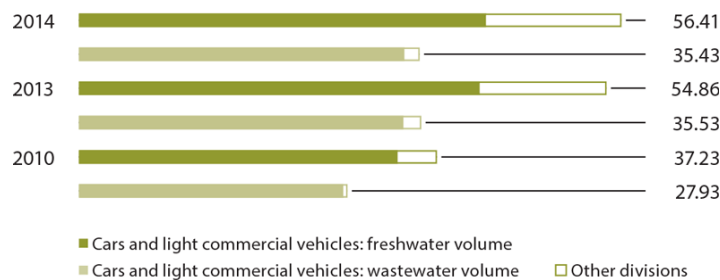




As a result of higher production volumes over the reporting period, larger volumes of hazardous and non-hazardous waste were also generated, while the proportion of waste for disposal has been reduced from around 31% in 2010 to around 23% in 2014. In contrast, the proportion of waste for recycling has been increased from around 69% in 2010 to around 77% in 2014. The increase in the proportion of recycled waste is also the result of the Group's waste strategy, the first stage of which targets higher recycling rates. The second stage of this strategy is in the introductory phase and targets the reduction of total volumes of hazardous and non-hazardous waste per vehicle. The absolute quantity of metallic "waste", which in the light of its high recycling rate can be considered to be a valuable material, has increased in absolute terms over the reporting period as a whole due to increased production volumes across the Group. The volume of metallic waste per vehicle, however, has been reduced by improvements in material utilization and resource-optimized manufacturing processes.

FRESHWATER AND WASTEWATER*

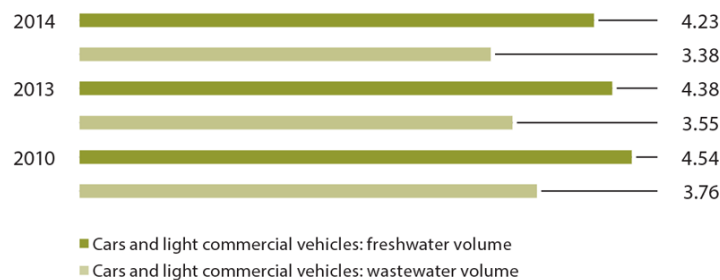
in million m³/year



* Group production sites

FRESHWATER AND WASTEWATER*

in m³/vehicle



* Group production sites

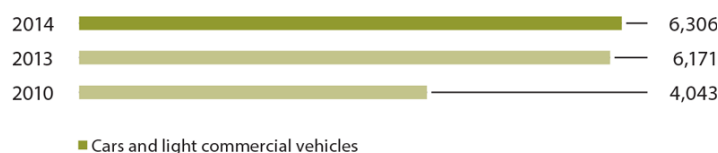
Given the increase in production volumes of cars and light commercial vehicles, consumption of freshwater has also risen continuously over the last five years. The construction of new locations has made a major contribution to the increase in consumption over this period. Despite the increased number of

Group locations, freshwater consumption per vehicle has been reduced by around 6.8% over the reporting period. This has been achieved by numerous recycling measures including reuse of used water in coating processes.

Wastewater volumes show a similar trend to freshwater. Thanks to the introduction of increasing numbers of waterless manufacturing processes and water recycling, wastewater volumes per car and light commercial vehicle produced have been reduced by around 10.1% over the reporting period. For instance, purified wastewater from an evaporator is reused for cleaning workshop floors.

› CHEMICAL OXYGEN DEMAND (COD)*

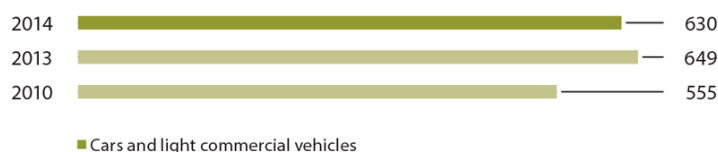
in tonnes/year



* Group production sites

› CHEMICAL OXYGEN DEMAND (COD)*

in g/vehicle



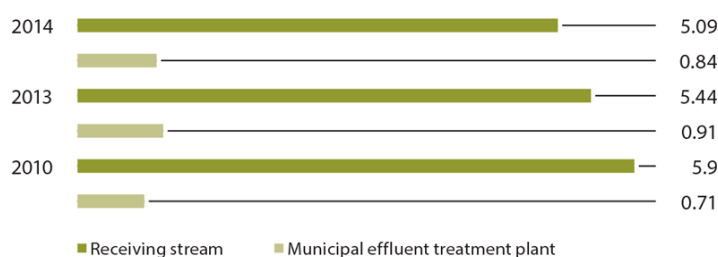
* Group production sites

Due to increased production across the Group, there was a rise in the wastewater parameter chemical oxygen demand, both in absolute terms and per vehicle produced. This parameter is an indicator of the level of contamination of wastewater.

Depending on where wastewater is purified, a distinction is drawn between locations which, as indirect dischargers, discharge wastewater into municipal sewers for further purification, and those locations which, as direct dischargers, carry out wastewater treatment in-house and discharge the purified wastewater directly into a body of water. In 2014, indirectly discharging locations accounted for 92% (2010: 91%; 2013: 92%) of the Group's total wastewater volumes (excluding MAN SE and Scania AB).

› WASTEWATER DISCHARGES

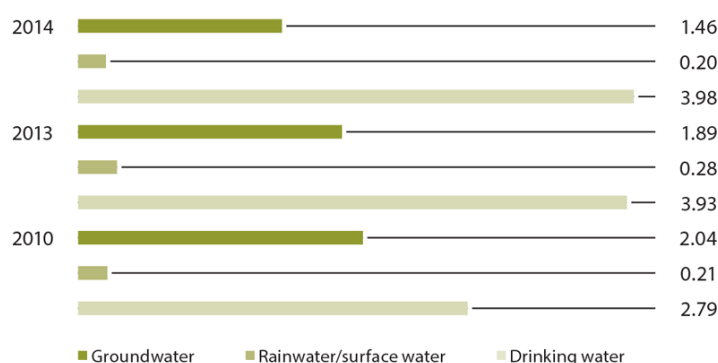
in million m³/year



Figures for sites of Volkswagen AG, Volkswagen Sachsen GmbH, Volkswagen Osnabrück

WATER WITHDRAWAL BY SOURCE

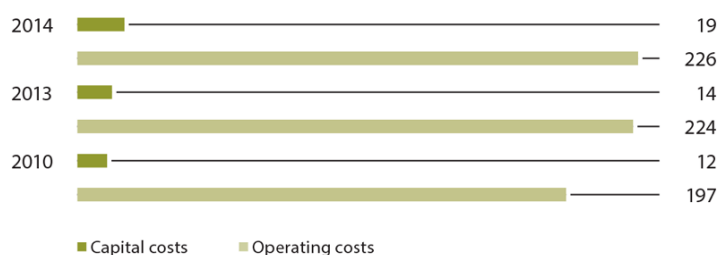
in million m³/year



Figures for sites of Volkswagen AG, Volkswagen Sachsen GmbH, Volkswagen Osnabrück GmbH (since 2012) and Volkswagen Hannover GmbH.

ENVIRONMENTAL PROTECTION COSTS*

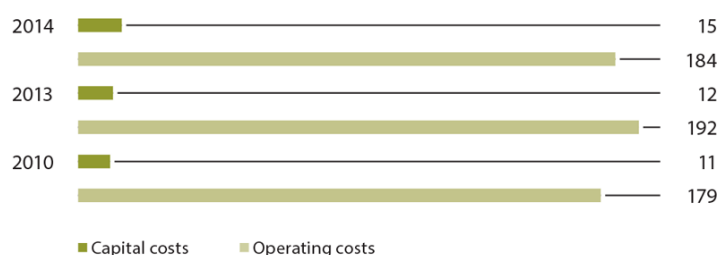
in million m³/year



* German production sites Volkswagen AG.

ENVIRONMENTAL PROTECTION COSTS*

in €/vehicle



* German production sites Volkswagen AG.

The environmental protection costs of Volkswagen AG's German locations are shown above.

Both capital and operating costs for environmental protection have risen over the reporting period. This is also reflected in the specific environmental costs per manufactured vehicle.

Volkswagen breaks down expenditure for environmental protection measures in "Capital expenditure and operating costs for production-related environmental protection". Of total capital expenditure, only those items which are solely or predominantly dedicated to environmental protection are counted as capital expenditure for environmental protection. A distinction is drawn between additive and integrated capital expenditure. Additive environmental protection measures are separate plants isolated

from the remainder of the production process. They may be located upstream or downstream of the manufacturing process. In contrast to additive environmental protection facilities, in integrated measures the environmental impact is mitigated while the product is being produced. The focus of environmental protection in 2014 was on water quality management.

The indicated operating costs solely concern production-related environmental protection measures which help to conserve the “environment” as a protected resource from harmful impact by avoiding, reducing or eliminating emissions from the Company’s activities. Operating costs include, for example, expenditure for the operation of plant and equipment that serves to protect the environment, as well as expenditure for measures not related to plant and equipment. The priorities in 2014 were water quality management, waste management and air pollution control.

› VOLKSWAGEN GROUP GERMANY PARTICULATE EMISSIONS
(TOTAL DUST)
in tonnes/year



› VOLKSWAGEN GROUP GERMANY PARTICULATE EMISSIONS
(TOTAL DUST)
in kg/vehicle



The development of particulate emissions in the passenger car and light commercial vehicle category at the Group’s production locations in Germany is related not least to the increase in unit output. In addition, at one production location temporary above-average emission values were determined which have since been reduced by means of appropriate measures.

› PLANTS IN THE VICINITY OF PROTECTED SITES

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The locations stated here are the Volkswagen brand’s production locations in Germany and the rest of Europe which are located in the vicinity of protected sites pursuant to Council Directive 92/43/EEC of May 21, 1992 on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive).

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