2022

Environmental Data – Environmental indicators for Baden-Württemberg

LUBW

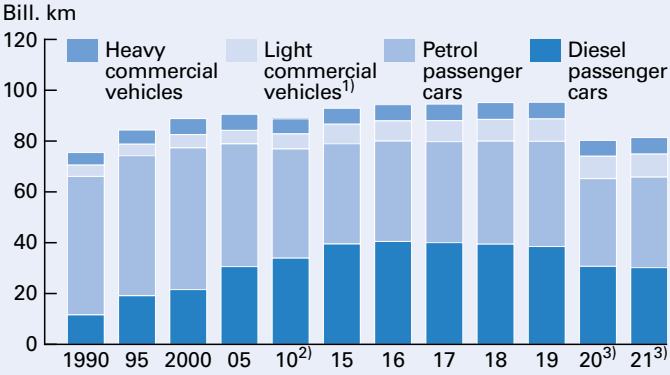
Baden-Württemberg
STATISTISCHES LANDESAMT

General data, traffic

	Unit	1991	2021
Population, economy			
Annual average population[1)]	Mill.	9,9	11,1[2)]
Gross domestic product at current prices[1)]	Mill. EUR	242 884	536 041
Employed persons in Germany[1)]	Mill.	5,2	6,3
		1991	**2021[3)]**
Stock of motor vehicles			
Stock of passenger cars	1 000	5 035	6 838[4)]
Petrol-engined passenger cars[5)]	1 000	4 308	4 517[4)]
Diesel-engined passenger cars	1 000	727	2 100[4)]
New car registrations	1 000	526	367
Hybrid, gas, electric and other forms of propulsion	1 000	–	173
Total annual mileage	Mill. km	76 692	81 369
Passenger traffic	Mill. km	69 401	67 450
Passenger cars	Mill. km	67 145	65 802
Freight traffic	Mill. km	7 291	13 919
Heavy commercial vehicles	Mill. km	5 083	6 496
Light commercial vehicles	Mill. km	2 209	7 422
		2004	**2020**
Local passenger transport services[6)]	Pkm/Inh.	1 089	780

1) www.vgrdl.de; calculation status November 2021/February 2022, population base census 2011. – 2) Population as of June 30. – 3) Excluding temporarily decommissioned vehicles. – 4) Value for 2022. – 5) Including gas and other forms of propulsion. – 6) 2004: Calculation based on 1987 census, 2020: Calculation based on 2011 census.

Annual mileage of road traffic



1) Incl. motorcycles and buses. – 2) Revised values. – 3) Corona-related decrease of the annual mileage.

Data sources: Traffic census results of the Landesstelle für Straßentechnik Baden-Württemberg (State Office for Road Technology Baden-Württemberg) and own model calculations.

Order: In order to reduce greenhouse gas emissions from traffic by 55 % by 2030 compared to 1990 with a traffic turnaround, motor vehicle traffic is to be reduced by a fifth by then.

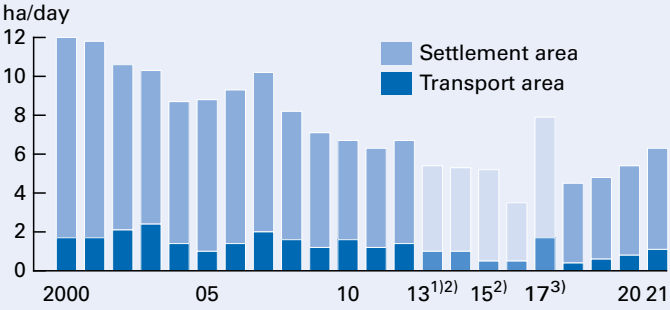
Trend: The annual mileage has increased up to 2019, but only weakly in recent years. As a result of the COVID-19 pandemic, passenger car traffic fell significantly by almost 19 % in 2020, while freight traffic with heavy commercial vehicles fell by only 5 %. The annual mileage of light commercial vehicles continues to increase steadily.

Land use, nature and landscape

	Unit	1996	2021
Total area (TA)[1)]	1 000 ha	3 575	3 575
Settlement and Traffic Area (SaT)[1)2)]	% of TA	*12,7*	*14,8*
Traffic	% of SaT	*41,2*	*37,8*
Residential area	% of SaT	*25,8*	*30,0*
Industrial and Commercial space	% of SaT	*11,5*	*14,2*
Sports, Leisure and Relaxing area, other	% of SaT	*21,5*	*18,1*
Increase in settlement and traffic area	ha/day	10,3	6,2
Forest[1)]	1 000 ha	1 341	1 353
Forest condition: Percentage of noticeably damaged trees	%	*35*	*42*
Agriculture[1)]	1 000 ha	1 696	1 606
Utilised agricultural area (UAA)	1 000 ha	1 475	1 404
Areas under organic farming[3)]	% of UAA	*3,0*	*14,5*
		1992	**2022**
Protected areas (partly overlapping)[4)]			
National park	% of TA	–	*0,3*
Nature reserves	% of TA	*1,4*	*2,5*
Protected forests	% of TA	*0,2*	*0,2*
FFH areas[5)]	% of TA	–	*12,1*
Bird reserves	% of TA	–	*11,2*
Biosphere areas	% of TA	–	*4,2*
Water protection areas	% of TA	*14,8*	*26,8*

1) As at December 31 of each year. – 2) Sum of settlements (without mining operations, open pit, mine, quarry) plus traffic. – 3) Source: Federal Ministry of Food and Agriculture. – 4) Data source: Landesanstalt für Umwelt LUBW. – 5) Protected areas according to the EU Fauna-Flora-Habitat Directive.

Chart of land consumption
– Increase in settlement and transport area (SaT)*) –



*) Sum of settlements (without mining operations, open pit, mine, quarry) plus traffic. As at December 31 of each year. – 1) 2013 and 2014 average of the two years. – 2) Years 2013 to 2016 not reliable due to incomplete surveys in the course of the conversion to ALKIS and later the conversion of the coordinate system. – 3) The year 2017 is not reliable in view of existing special effects due to subsequent changes and land readjustments.

Data source: Land survey.

Objective: Baden-Württemberg aims at a demand-oriented land designation and efficient, resource-saving use of land. A net-zero land consumption is targeted by 2035.

Trend: In 2021, 6.2 hectares of new settlement and transport area were developed every day. That is 15 percent more than in the previous year. The increase in settlement and transport area has continued for the third year.

Energy consumption and productivity

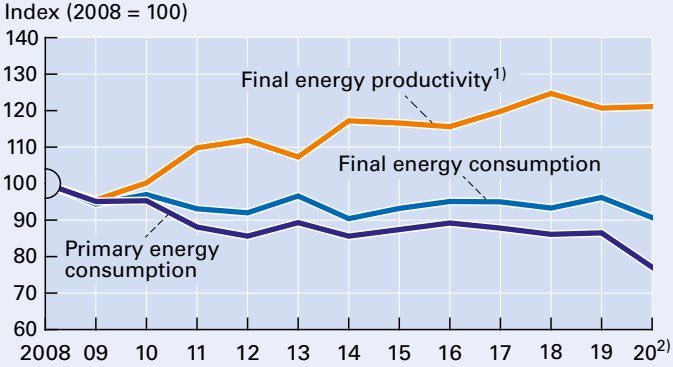
	Unit	1991	2020[1]
Primary energy consumption	TJ	1 514 777	1 278 975
Fossil energy sources	%	*72,6*	*66,1*
Nuclear energy	%	*24,5*	*9,5*
Renewable energy sources	%	*1,9*	*17,0*
Electricity and others	%	*1,0*	*7,4*
Final energy consumption	TJ	1 030 789	1 022 212
Final energy consumption of private households	TJ	303 043	343 915
per inhabitant[2]	GJ	30,6	31,0
Final energy productivity[3]	EUR/GJ	235,6	494,4
	2008 = 100	85,9	121,1

		1995	2020[1]
Total electricity consumption	Mill. kWh	66 493	65 760
Electricity consumption of households[4]	Mill. kWh	17 274	16 754
per inhabitant[2]	kWh	1 690	1 509

		1995	2021[5]
Electricity generation	Mill. kWh	64 773	50 590
Fossil fuels and others[6]	%	*33,9*	*42,2*
Nuclear energy	%	*58,1*	*22,0*
Renewable energy sources	%	*8,0*	*35,8*

1) Preliminary results. – 2) Annual average based on the 2011 census; VGRdL, calculation status November 2021/February 2022. – 3) Reference values for figures in EUR/GJ: gross domestic product at current prices; for figures index: gross domestic product price-adjusted, chain-linked; VGRdL, calculation status November 2021/February 2022; own calculations. – 4) From 2011, household customers in accordance with the Energy Industry Act (EnWG). – 5) Calculation status December 2022. – 6) Coal, natural gas, fuel oil, diesel oil, petroleum coke, liquid gas, refinery gas, pumped storage water without natural inflow, non-biogenic waste, other energy sources.

Energy consumption and final energy productivity



1) Ratio of gross domestic product to final energy consumption. – 2) Preliminary figures.

Data sources: Energy balances for Baden-Württemberg, as of July 2022; Working Group "Environmental and Economic Accounts of the Federal States".

Objective: The German sustainability strategy of 2021 formulates the goal of increasing final energy productivity by 2.1 % annually by the target year 2050, based on the year 2008.

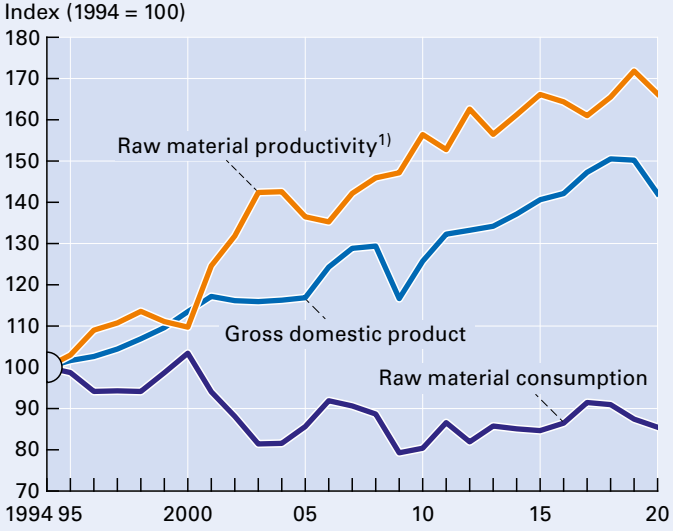
Trend: In Baden-Württemberg, the annual increase in final energy production has averaged 1.6 % since 2008, which is below the federal government's target. Nevertheless, the increase in final energy productivity shows that overall economic growth in Baden-Württemberg is increasingly decoupled from energy consumption.

Raw material consumption and productivity

	Unit	1994	2020
Consumption of non-renewable raw materials (raw material consumption)		156 928	133 656
Recycled raw material extraction in the country[1)]	1 000 t	138 908	108 594
Non-renewable resources	1 000 t	120 373	90 048
Energy sources	1 000 t	384	471
Mineral raw materials	1 000 t	119 989	89 576
Construction minerals	1 000 t	117 523	86 794
Biotic raw materials	1 000 t	18 535	18 547
Import of non-renewable goods from abroad[2)]	1 000 t	34 423	42 082
Other goods and additional estimates[2)]	1 000 t	–	1 600
Receipt minus dispatch from/to other federal state(s) (non-renewable goods)	1 000 t	2 132	– 74
Raw material productivity[3)]	EUR/t	1 674	3 781
	1994 = 100	100	167
Export of non-renewable goods abroad[2)]	1 000 t	18 802	25 589

1) Recalculated for methodical reasons. – 2) As of reporting year 2017, "Other goods and additional estimates" are reported separately. – 3) Reference value for figures in EUR/t: gross domestic product at current prices; for figures in index: gross domestic product price-adjusted, chain-linked; VGRdL, calculation status November 2021/February 2022.

Consumption and productivity of raw materials



1) Ratio of the gross domestic product (price-adjusted, chain-linked) to the consumption of non-renewable resources.

Data source: Working Group "Environmental and Economic Accounts of the Federal States".

Objective: With the German Sustainability Strategy, Germany has set itself the goal of maintaining the trend in total raw material productivity for the years 2000-2010 to 2030.

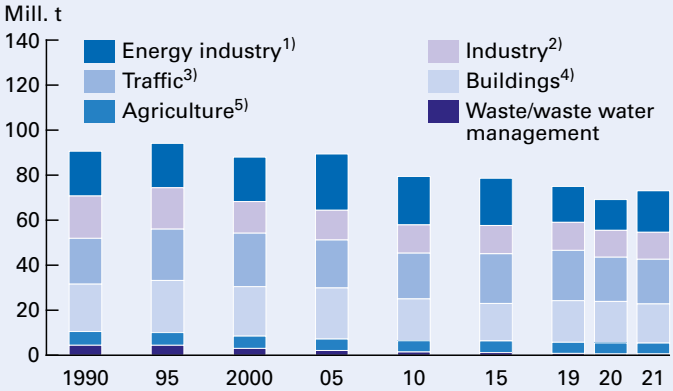
Trend: There has been no reduction in raw material consumption in Baden-Württemberg over the past 10 years, but raw material productivity has increased. In the first Corona year 2020, GDP slumped by more than 5 %, and raw material productivity and consumption each fell by around 3 %.

Greenhouse gas emissions

	Unit	2000	2021[1)]
Greenhouse gas emissions (GHG)[2)]	1 000 t CO_2-equivalents	88 015	73 062
	1990 = 100	97	81
per inhabitant	t	8,5	6,6
Nitrous oxide (N_2O)	% of GHG	*3,2*	*3,2*
	1990 = 100	91	76
Methane (CH_4)	% of GHG	*7,5*	*5,1*
	1990 = 100	78	44
Carbon dioxide (CO_2)	% of GHG	*87,4*	*89,6*
	1990 = 100	99	85
Fluorinated greenhouse gases (F-gases)[3)]	% of GHG	*1,9*	*2,0*
	1990=100	103	91
CO_2 emissions energy related[4)]	1 000 t	74 176	62 606
per inhabitant[5)]	t	7,2	5,6
CO_2 emissions from electricity generation[6)]	1 000 t	15 367	14 017

1) Estimated values for 2021. – 2) From firing systems (energy related), energy production and distribution, processes and product use, agriculture, waste and waste water management. Calculation status autumn 2021. – 3) Sum of fluorinated greenhouse gas emissions (HFC,PFC, SF_6 und NF_3). – 4) Direct emissions, not included up- and downstream processes, excluding international air traffic. – 5) Annual average, basic census 2011. – 6) Power plants for general supply and industrial thermal power plants.

Greenhouse gas emissions (CO_2, CH_4, N_2O, F-gases)
– in CO_2 equivalents –



1) Fuel input in energy industry, fugitive emissions. – 2) Fuel input in mining and manufactoring, industrial and construction machines, industrial processes and product use. – 3) Road transport and other transport. Excluding international air transport. – 4) Fuel input in households, commercial, institutional, small consumers, other fuel input like military. – 5) Livestock farming, manure management, agricultural soils, biogas plants, agricultural vehicles.

Data source: Working Group "Environmental and Economic Accounts of the Federal States"; Calculation status june 2022. Estimated values for 2021.

Objective: Baden-Württemberg should achieve net zero greenhouse gas emissions by 2040. In an intermediate step, a reduction of at least 65 % compared to total emissions in 1990 is to be achieved by 2030.

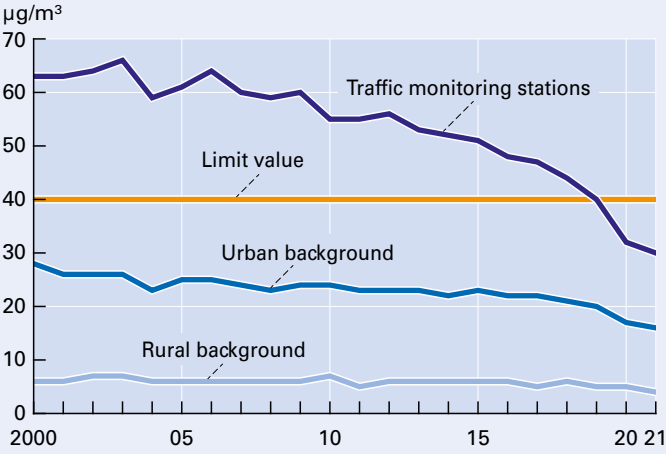
Trend: Due to the Covid-19 pandemic, greenhouse gas emissions were comparatively low in 2020. In 2021, there is again an increase of 5.7 percent, which is mainly due to energy-related CO_2 emissions.

Air quality, immissions

	Unit	2020	2021
Number of measuring points with limit value exceedances			
Particulate matter PM_{10} Annual average values[1)]			
Spot measuring points close to traffic[2)]	Stations	0 of 3	0 of 3
Traffic monitoring stations	Stations	0 of 8	0 of 8
Urban background	Stations	0 of 25	0 of 25
Rural background	Stations	0 of 2	0 of 2
Particulate matter PM_{10} Daily average values[3)]			
Spot measuring points close to traffic[2)]	Stations	0 of 3	0 of 3
Traffic monitoring stations	Stations	0 of 8	0 of 8
Urban background	Stations	0 of 25	0 of 25
Rural background	Stations	0 of 2	0 of 2
Nitrogen dioxide Annual average values[1)]			
Spot measuring points close to traffic[2)]	Stations	3 of 37	1 of 26
Traffic monitoring stations	Stations	0 of 8	0 of 8
Urban background	Stations	0 of 25	0 of 25
Rural background	Stations	0 of 2	0 of 2
Ozone 8-hour average value[4)]			
Urban background	Stations	21 of 25	7 of 25
Rural background	Stations	2 of 2	1 of 2

1) Limit value: 40 µg/m³. – 2) Number, location and measurement scope of the spot measuring points change annually. Consequently, the characteristics are not comparable with other years. – 3) The daily average value of 50 µg/m³ may be exceeded a maximum of 35 times per year. – 4) The target value of 120 µg/m³ may be exceeded a maximum of 25 times per year (averaged over three years). Ozone is not measured at stations close to traffic.

Nitrogen dioxide (NO_2) immissions
– Annual average values –



Data source: Landesanstalt für Umwelt LUBW.

Objective: To protect human health, the Ordinance on Air Quality Standards and Emission Ceilings (39th BImSchV) stipulates that the immission limit value for NO_2 (averaged over a calendar year) of 40 µg/m³ may not be exceeded.

Trend: Nitrogen dioxide pollution has decreased significantly in recent years. Particularly at the traffic measuring stations, significant decreases have been recorded since 2017. In 2021, with an annual mean concentration of 43 µg/m³, the immission limit value of 40 µg/m³ was only exceeded once. Nevertheless, the annual mean concentrations near traffic are still about twice as high as in the urban background.

Water supply

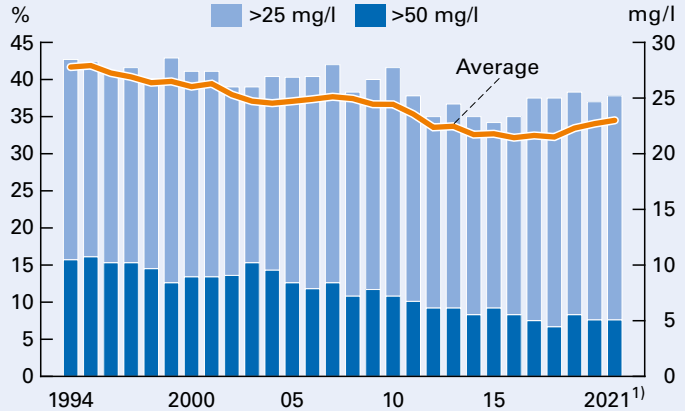
	Unit	1991	2019
Total water extraction	Mill. m^3	6 867,7	3 367,4
Ground and spring water	Mill. m^3	758,7	658,6
Surface water	Mill. m^3	6 109,0	2 708,8
Water demand of the economy as a whole	Mill. m^3	6 150,1	2 695,1
including			
for cooling[1)]	Mill. m^3	5 755,5	2 464,0
production water[2)]	Mill. m^3	375,7	198,6
Public drinking water supply			
Distribution to households and small businesses	Mill. m^3	506,5	502,1
Drinking water consumption per inhabitant and day	litres	140	125

Drinking water charges[3)]		1991	2022
Consumption-based charge	EUR/m^3	1,07	2,33
Yearly basic charge	EUR	19,80	52,97

Nitrate in groundwater		1994	2021[4)]
Measuring points >25 mg/l	%	*42,6*	*37,8*
Measuring points >50 mg/l	%	*15,7*	*7,6*
Average	mg/l	27,8	23,0

1) 1991 exclusively single use. – 2) Without service water. 1991 including for cooling in multiple and closed loop use. – 3) Weighted by population; including value added tax. – 4) Preliminary results.

Nitrate in groundwater
– Proportion of measuring points*) with contents higher than 25 mg/l or 50 mg/l and average value –



*) 120 area-representatively selected monitoring sites (EEA monitoring network) were examined. – 1) Preliminary results.

Data source: Landesanstalt für Umwelt LUBW.

Objective: In Baden-Württemberg, the objective is to maintain good groundwater status in accordance with the Water Framework Directive and the Groundwater Regulation. For this purpose, the nitrate concentration must not exceed 50 mg/l.

Trend: In 2021, the limit value of 50 mg/l nitrate was not complied with at 9 of 119 monitoring sites. In the long term, nitrate pollution of groundwater shows a declining trend. However, nitrate continues to be the main contaminant of the groundwater.

Waste water and sewage sludge

	Unit	1991	2019
Waste water treated in public waste water treatment plants (annual waste water volume)[1)]	Mill. m^3	1 393,8	1 520,1
with nitrification	%	*44,9*	*99,7*
with denitrification	%	*24,0*	*98,7*
with phosphate elimination	%	*41,2*	*96,7*
with elimination of trace substances[2)]	%	.	*8,8*
Length of the public waste water collecting system	km	50 560	80 613
Waste water discharges of the economy as a whole[3)]	Mill. m^3	6 070,0	2 604,9
Indirect discharges	Mill. m^3	102,9	64,9
Direct discharges	Mill. m^3	5 967,1	2 540,0
Cooling water[4)]	Mill. m^3	5 748,5	2 396,8

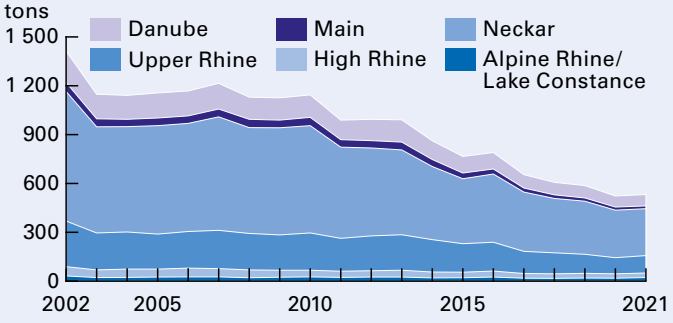
Waste water charges[5)]		1991	2022
Uniform rate[6)]	EUR/m^3	1,12	3,30
Split waste water charge			
Sewage water	EUR/m^3	.	2,00
Precipitation water	EUR/m^2	.	0,49

Municipal sewage sludge[7)]		1991	2021
Total sewage sludge production (dry matter)	1 000 t	385,6	227,8
incinerated (mono- and co-incineration)[8)]	%	*8,9*	*99,4*
utilized agriculturally	%	*17,8*	*0,2*
utilized for landscaping[9)]	%	*13,7*	*0,4*
landfilled	%	*59,6*	–

1) 1991 including public waste water treated in industrial waste water treatment plants. – 2) In the case of partial flow treatment, based on the annual waste water volume treated in the relevant waste water treatment plants. – 3) Including public waste water treated in industrial waste water treatment plants; 2019: 2.3 million m^3. Excluding waste water discharged to other companies. – 4) Excluding cooling water discharged into the company's own waste water treatment plants. – 5) Weighted by population. – 6) 1991: 1 111 municipalities, 2022: 28 municipalities. – 7) Data source: Survey of public waste water disposal. – 8) Including gasification and sewage sludge supplied to waste water treatment plants in other federal states. – 9) Recultivation, other material recycling.

Discharge of phosphorus into water bodies*)

– Annual load of total phosphorus discharged via municipal waste water treatment plants –



*) The entire catchment areas of the water processing areas are considered.

Data source: Landesanstalt für Umwelt LUBW.

Objective: Nutrient inputs from waste water treatment plants are to be reduced through targeted measures to optimize phosphorus elimination.

Trend: Despite the fact that phosphorus loads have already been halved since 2010, the requirements for waste water treatment plants have been further tightened in recent years. Especially in polluted or sensitive areas, the loads will continue to decrease in the future through the implementation of measures to reduce phosphorus discharges.

Generation and treatment of waste

	Unit	1996	2020
Total waste generation	1 000 t	45 931,9	50 560,6
Landfill rate	%	*24*	*12*
Municipal waste	1 000 t	5 679,2	6 126,4
Commercial and industrial waste	1 000 t	2 031,2	1 708,3
Sludges from treatment of urban waste water	1 000 t	355,8	226,7
Construction and demolition waste (major mineral waste)	1 000 t	37 225,4	40 841,9
Landfill rate	%	*23*	*15*
Hazardous waste	1 000 t	640,4	1 657,3

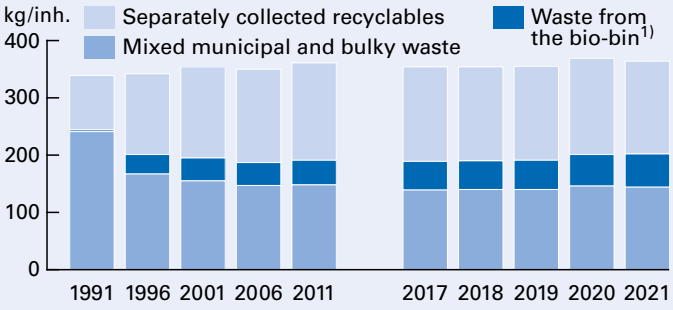
		1996	2021
Waste generated by households	1 000 t	3 538,2	4 040,4
per inhabitant	kg	342	364
Landfill rate	%	*36*	-
Mixed municipal and bulky waste per inhabitant	kg	167	144
Separately collected recyclables per inhabitant	kg	141	162
Waste from the bio-bin per inhabitant	kg	34	58

Waste treatment facilities (selected types)		1996	2020
Landfills	Number	605	302
Quantity of waste landfilled	1 000 t	10 822,5	6 534,8
Incineration plants[1)]	Number	8	41
Quantity of waste incinerated	1 000 t	574,7	4 189,5
Plants for biological treatment	Number	96	100
Quantity of waste treated	1 000 t	674,7	1 098,6
Sorting plants	Number	36	68
Quantity of waste treated	1 000 t	615,2	2 566,3

1) 2020: including combustion plants with energy recovery from waste.

Data source: Surveys of waste treatment according to §§ 3 to 5 of the Environmental Statistics Act and waste balance Baden-Württemberg.

Waste generated by households
– Risings per inhabitant –



Until 2011 population based on 1987 census, from 2011 population based on 2011 census. – 1) In some districts no separate collection of waste from the organic waste bin.

Data source: Waste balance Baden-Württemberg.

Objective: The objective is to further reduce the average household waste volume per inhabitant. At the same time, the aim is to increase the waste from the bio-bin and separately collected recyclables.

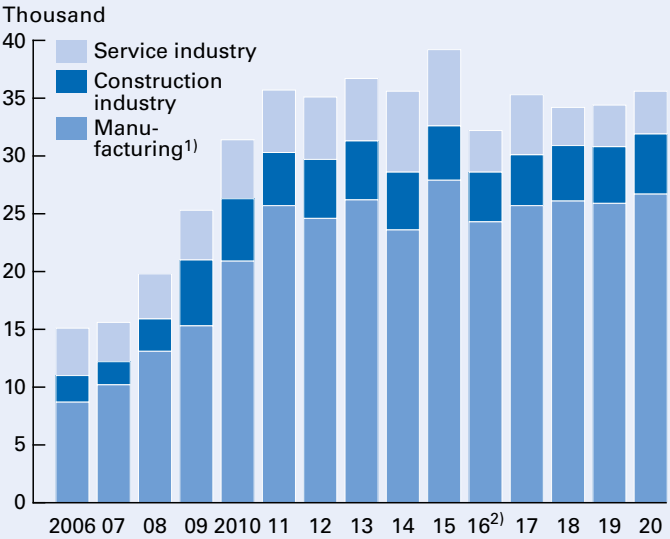
Trend: After a significant increase in the amount of waste in the first year of the Covid-19 pandemic in 2020, the amount of household waste per capita decreased slightly in the following year. In 2021, the amount of waste from the bio bin increased by around 5% compared to the previous year. This means that the trend of the last few years has continued since 2015.

Environmental economics

	Unit	1996	2020
Expenditure on environmental protection in total	Mill. EUR	4 454,4	7 892,8
GDP share	%	*1,7*	*1,6*
Public expenditure			
Waste management	Mill. EUR	1 401,2	2 099,1
Investments in tangible fixed assets	%	*19,3*	*10,5*
Current expenditure	%	*80,7*	*89,5*
Sewage disposal	Mill. EUR	1 572,8	2 123,5
Investments in tangible fixed assets	%	*56,0*	*41,1*
Current expenditure	%	*44,0*	*58,9*
Expenditure on environmental protection in the manufacturing sector[1)]	Mill. EUR	1 480,4	3 670,2
Investments[2)]	%	*14,5*	*20,0*
Current expenditure[3)]	%	*85,5*	*80,0*
		1997	**2020**
Turnover of goods and services for environmental protection[2)]	Mill. EUR	1 196,9	12 860,9
Environmental Management[4)]			
EMAS-registered companies and organizations	Number	353[5)]	323[6)]

1) For better comparability, excluding the economic sections wastewater and waste disposal and pollution abatement belonging to the manufacturing industry as of 2008 (WZ 2008). – 2) Since 2006 including the environmental section Climate Protection. – 3) Expenditure on the operation of own facilities and other expenses. – 4) Data source: EMAS registry from DIHK. – 5) Value for 2007. – 6) As of July 2022.

Employees in environmental protection within the economic sectors



1) Including mining and quarrying of stone and earth. – 2) From 2016 excluding smaller operations (approx. 300 units), due to changed legal situation.

Data source: Survey of goods and services for environmental protection.

Objective: The aim is to achieve a higher than average growth in the number of employees working in environmental protection.

Trend: The number of employees in the environmental sector has been around 35 thousand for the past 10 years, with fluctuations.

Contact:

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