2020

Environmental Data – Environmental indicators for Baden-Württemberg

LUBW

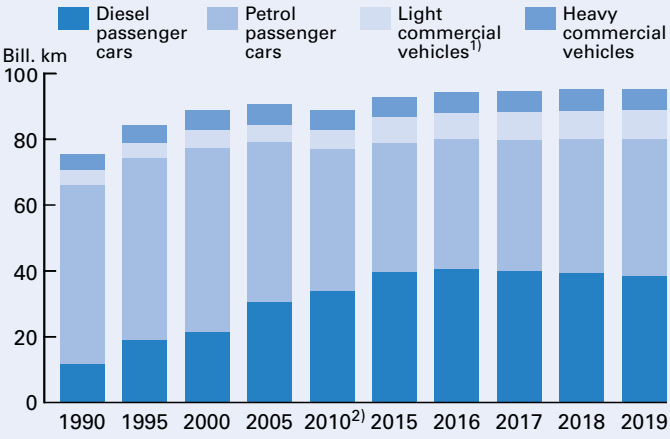
Baden-Württemberg
STATISTISCHES LANDESAMT

General data, traffic

	Unit	1991	2019
Population, economy			
Annual average population[1)]	Mill.	9,9	11,1[2)]
Gross domestic product at current prices[1)]	Mill. EUR	241 787	524 325
Employed persons in Germany[1)]	Mill.	5,2	6,4
		1991	**2019[3)]**
Stock of motor vehicles			
Stock of passenger cars	1 000	5 035	6 723[4)]
Petrol-engined passenger cars[5)]	1 000	4 308	4 408[4)]
Diesel-engined passenger cars	1 000	727	2 191[4)]
New car registrations	1 000	526	519
Hybrid, gas, electric and other forms of propulsion	1 000	–	52
Total annual mileage	Mill. km	76 692	95 270
Passenger traffic	Mill. km	69 401	81 761
Passenger cars	Mill. km	67 145	79 898
Freight traffic	Mill. km	7 291	13 509
Heavy commercial vehicles	Mill. km	5 083	6 561
Light commercial vehicles	Mill. km	2 209	6 948
		2004	**2018**
Local passenger transport services[6)]	Pkm/E	1 089	1 185

1) www.vgrdl.de; calculation status August 2019/February 2020, population base census 2011. – 2) Population as of June 30 – 3) Excluding temporarily decommissioned vehicles. – 4) Value for 2020. – 5) Including gas and other forms of propulsion. – 6) 2004: Calculation based on 1987 census, 2018: Calculation based on 2011 census.

Annual mileage of road traffic



1) Incl. Motorcycles and buses. – 2) Revised values.

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

Objective: Avoiding motorized traffic is a key aspect of sustainable mobility – in addition to shifting to the ecologically most sensible mode of transport, improving the networking of traffic flows and making motorized transport more environmentally friendly.

Trend: In the last three years, the total annual mileage has risen only slightly, with only light commercial vehicles showing a stronger increase of 3,7%. In passenger car traffic – which accounts for 84 % of the total mileage – there is a shift from diesel passenger cars to cars with petrol engines.

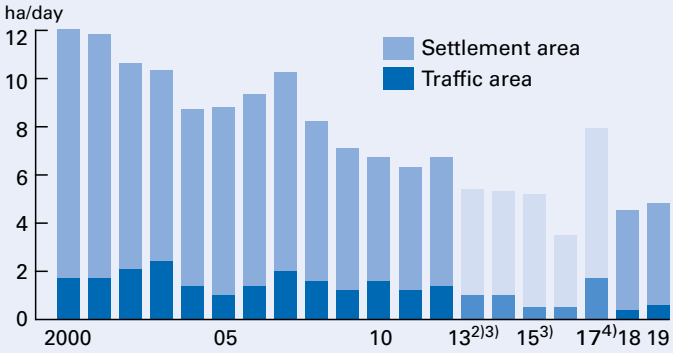
Land use, nature and landscape

	Unit	1996	2019
Total area (TA)[1]	1 000 ha	3 575	3 575
Settlement and Traffic Area (SaT)[1)2)]	% of TA	*12,7*	*14,6*
Traffic	% of SaT	*41,2*	*37,9*
Residential area	% of SaT	*25,8*	*29,8*
Industrial and Commercial space	% of SaT	*11,5*	*14,1*
Sports, Leisure and Relaxing area, other	% of SaT	*21,5*	*18,2*
Increase in settlement and traffic area	ha/day	10,3	4,8
Forest[1)]	1 000 ha	1 341	1 353
Forest condition: Percentage of noticeably damaged trees	%	*35*	*43*
Agriculture[1)]	1 000 ha	1 696	1 612
Utilised agricultural area (UAA)	1 000 ha	1 475	1 419
Areas under organic farming[3)]	% of UAA	*3,0*	*13,2*
		1992	**2019**
Protected areas (partly overlapping)			
National park	% of TA	–	*0,3*
Nature reserves	% of TA	*1,4*	*2,5*
Protected forests	% of TA	*0,2*	*0,2*
FFH areas[4)]	% of TA	–	*12,1*
Bird reserves	% of TA	–	*11,1*
Biosphere areas	% of TA	–	*4,2*
Water protection areas	% of TA	*14,8*	*26,7*

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) Protected areas according to the EU Fauna-Flora-Habitat Directive.

Chart of land consumption

– Increase in settlement and traffic area (SaT)[1)] –



1) Sum of settlements (without mining operations, open pit, mine, quarry) plus traffic. As at December 31 of each year. – 2) 2013 and 2014 average of the two years. – 3) 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. – 4) The year 2017 is not comparable 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. The use of inner-city, developed areas (inner development) has priority over outer development.

Trend: In a longer-term view, overall land use is on the decline. However, with land consumption increasing by 0,3 hectares to 4,8 hectares per day in 2019, the value is slightly above the previous year's value.

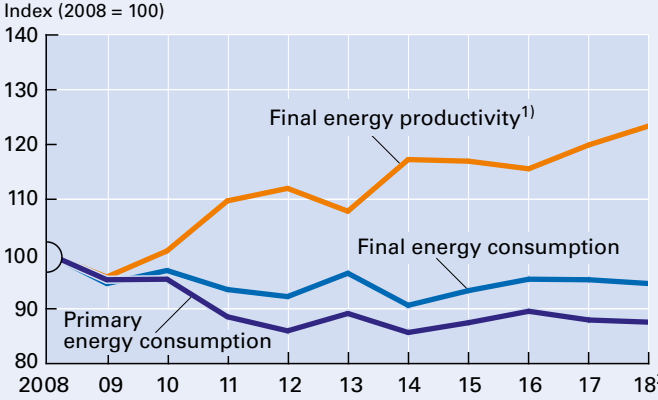
Energy consumption and productivity

	Unit	1991	2018[1]
Primary energy consumption	TJ	1 514 777	1 418 872
Fossil energy sources	%	*72,6*	*66,6*
Nuclear energy	%	*24,5*	*15,9*
Renewable energy sources	%	*1,9*	*13,9*
Electricity and others	%	*1,0*	*3,5*
Final energy consumption	TJ	1 030 789	1 038 648
Final energy consumption of private households	TJ	303 043	288 195
per inhabitant[2]	GJ	30,6	26,1
Final energy productivity[3]	EUR/GJ	.	494,3
	2008 = 100	83,9	123,4

		1995	2018[1]
Total electricity consumption	Mill. kWh	66 493	71 402
Electricity consumption of households[4]	Mill. kWh	17 274	15 848
per inhabitant[2]	kWh	1 690	1 435
Electricity generation	Mill. kWh	64 773	62 250
Fossil fuels and others[5]	%	*33,9*	*39,3*
Nuclear energy	%	*58,1*	*33,2*
Renewable energy sources	%	*8,0*	*27,4*

1) Preliminary results. – 2) Annual average based on the 2011 census; VGRdL, calculation status August 2019/February 2020. – 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 each August 2019/February 2020; own calculations. – 4) From 2011, household customers in accordance with the Energy Industry Act (EnWG). – 5) 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; national accounts of the federal states.

Objective: The German sustainability strategy of 2016 formulates the goal of increasing energy productivity by 2,1 % per year between 2008 and 2050.

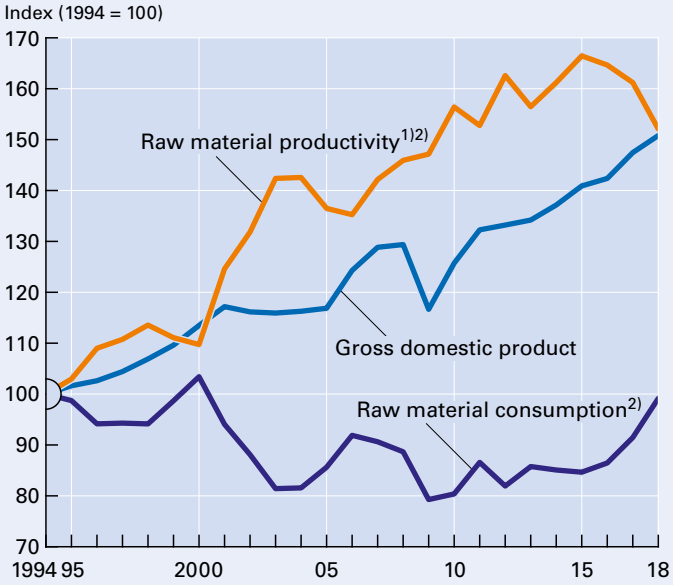
Trend: In Baden-Württemberg, final energy productivity has risen by more than 23 % since 2008, this corresponds to an average annual increase of 2,1 %.

Raw material consumption and productivity

	Unit	1994	2018
Consumption of non-renewable raw materials (raw material consumption)[1)]		156 928	155 602
Recycled raw material extraction in the country	1 000 t	140 829	128 583
Non-renewable resources	1 000 t	120 373	106 398
Energy sources	1 000 t	384	495
Mineral raw materials	1 000 t	119 989	105 903
Construction minerals	1 000 t	115 175	101 706
Import of non-renewable goods from abroad[1)2)]	1 000 t	34 423	45 453
Other goods and additional estimates[1)2)]	1 000 t	–	2 535
Receipt minus dispatch from/to other federal state(s) (non-renewable goods)	1 000 t	2 132	1 216
Raw material productivity	EUR/t	.	3 300
	1994 = 100	100	152
Export of non-renewable goods abroad[1)2)]	1 000 t	18 802	27 446

1) 2018: provisional data. – 2) As of reporting year 2017, „Other goods and additional estimates“ are reported separately.

Consumption and productivity of raw materials



1) Ratio of the gross domestic product to the consumption of non-renewable resources. – 2) 2018 provisionally.

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: In 2018, with increasing raw material consumption, a loss in raw material productivity can be observed for the third year in a row. This is mainly due to the increased extraction of construction minerals since 2016.
Compared to 1994, the productivity of raw materials in Baden-Württemberg has increased by 52 %.

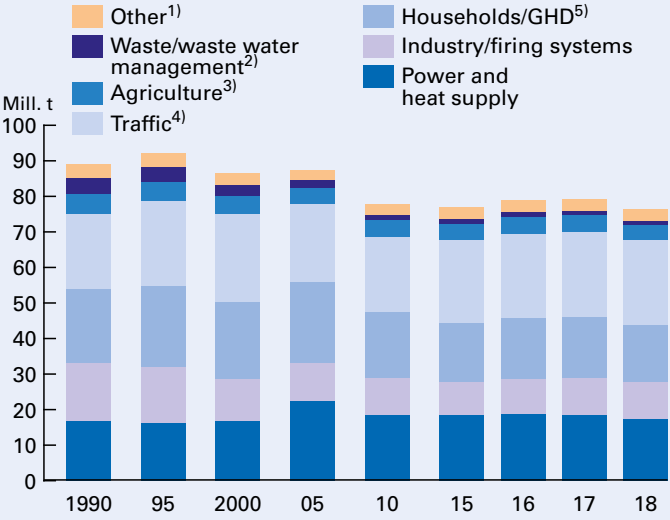
Greenhouse gas emissions

	Unit	2000	2018
Greenhouse gas emissions (GHG)[1]	1 000 t CO_2-equivalents	86 499	76 476
	1990 = 100	97	86
per inhabitant	t	8,3	6,9
Nitrous oxide (N_2O)	% of GHG	*3,4*	*3,2*
	1990 = 100	98	82
Methane (CH_4)	% of GHG	*7,8*	*5,4*
	1990 = 100	77	47
Carbon dioxide (CO_2)	% of GHG	*88,8*	*91,3*
	1990 = 100	99	90
CO_2 emissions energy related[2]	1 000 t	74 165	66 763
per inhabitant[3]	t	7,2	6,0
CO_2 emissions from electricity generation[4]	1 000 t	15 367	15 676

1) Calculation status autumn 2020. – 2) Excluding international air traffic. – 3) Annual average, basic census 2011. – 4) Power plants for general supply and industrial thermal power plants.

Greenhouse gas emissions (CO_2, CH_4, N_2O)

– in CO_2-equivalents –



1) Processes, product use, fugitive emissions from energy sources. – 2) Domestic waste landfills, composting, mechanical-biological plants, fermentation and biogas plants, municipal and industrial sewage treatment plants, septic tanks. – 3) Agriculture without land use, land use change and forestry. – 4) Road transport, other transport (excluding international air transport), off-road transport. – 5) commercial, institutional, other small consumers.

Data source: Working Group "Federal Environmental and Economic Survey"; Calculation status autumn 2020.

Objective: By 2050, Baden-Württemberg aims to reduce greenhouse gas emissions by 90 % compared to 1990. As intermediate targets, 25 % fewer greenhouse gases are to be emitted by 2020 than in 1990 and at least 42 % fewer greenhouse gases by 2030.

Trend: In 2018, almost 76.5 million tonnes of greenhouse gases were emitted in Baden-Württemberg, which is 3.5 % or 2.8 million tonnes less than in the previous year, but only 14 % less than in 1990. In order to achieve the state government's reduction targets, further measures are needed, especially those that are effective in the long term.

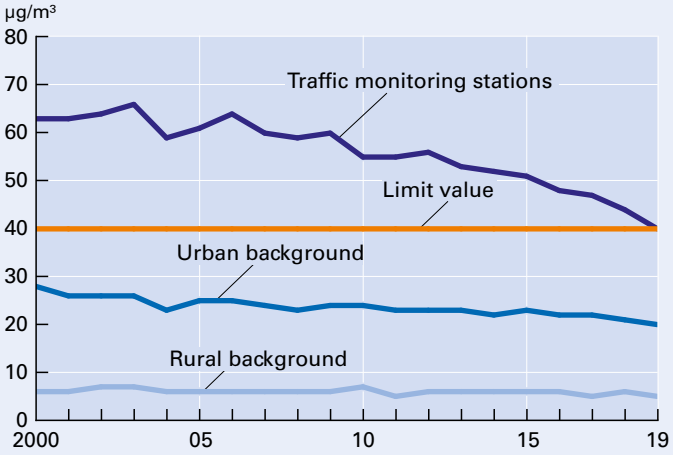
Air quality, immissions

	Unit	2018	2019
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 7	0 of 6
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 7	0 of 6
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	10 of 30	2 of 25
Traffic monitoring stations	Stations	5 of 8	4 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	20 of 25	21 of 25
Rural background	Stations	2 of 2	2 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: 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: The nitrogen dioxide concentrations are strongly influenced by the volume of traffic. At four of the eight traffic measuring stations in the Baden-Württemberg air monitoring network, the annual average values are above the immission limit value of 40 µg/m³. Overall, there is a clear decrease in immission from nitrogen dioxide in the vicinity of traffic and a slight decrease in the urban background.

Water supply

	Unit	1991	2016
Total water extraction	Mill. m^3	6 867,7	4 027,7
Ground and spring water	Mill. m^3	758,7	626,6
Surface water	Mill. m^3	6 109,0	3 401,1
Water demand of the economy as a whole including	Mill. m^3	6 150,1	3 373,7
for cooling[1)]	Mill. m^3	5 755,5	3 156,9
production water[2)]	Mill. m^3	375,7	186,6
Public drinking water supply			
Distribution to households and small businesses	Mill. m^3	506,5	473,2
Drinking water consumption per inhabitant and day	litres	140	119

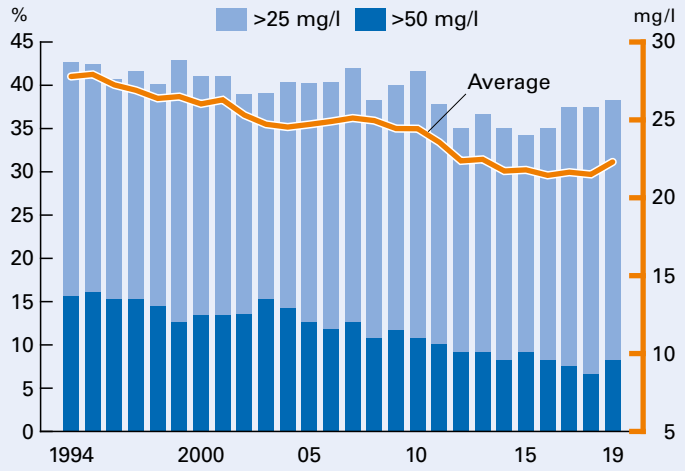
		1991	2020
Drinking water charges[3)]			
Consumption-based charge	EUR/m^3	1,07	2,23
Monthly basic charge	EUR	1,65	4,02

		1994	2019
Nitrate in groundwater			
Measuring points >25 mg/l	%	*42,6*	*38,3*
Measuring points >50 mg/l	%	*15,7*	*8,3*
Average	mg/l	27,8	22,3

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.

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.

Datenquelle: 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: At just 8,3 % of the 120 monitoring sites considered, the threshold value of 50 mg/l is exceeded. 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	2016
Public waste water treated in central waste water treatment plants[1]	Mill. m³	1 393,8	1 624,1
with nitrification	%	*44,9*	*99,7*
with denitrification	%	*24,0*	*98,3*
with phosphate elimination	%	*41,2*	*95,6*
Length of the public waste water collecting system	km	50 560	78 744
Waste water discharges of the economy as a whole[2]	Mill. m³	6 070,0	3 291,4
Indirect discharges	Mill. m³	102,9	66,8
Direct discharges	Mill. m³	5 967,1	3 224,5
Cooling water[3]	Mill. m³	5 748,5	3 081,1

Waste water charges[4]		1991	2020
Uniform rate[5]	EUR/m³	1,12	3,14
Split waste water charge			
Sewage water	EUR/m³	.	1,95
Precipitation water	EUR/m³	.	0,48

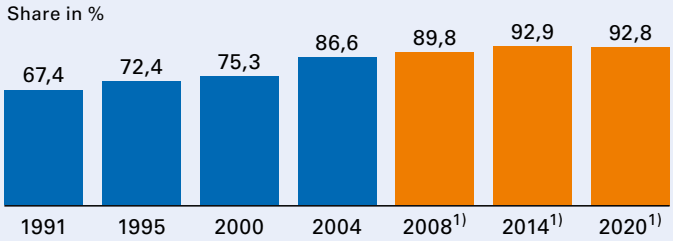
Biological water quality (macrozoobenthos – saprobity)		1991	2020
Percentage of investigated and assessed sites in watercourses with status classification good or better	%	*67,4*	*92,8*

Municipal sewage sludge[6]		1991	2019
Total sewage sludge production (dry matter)	1 000 t	385,6	229,3
incinerated (mono- and co-incineration)[7]	%	*8,9*	*99,1*
utilized agriculturally	%	*17,8*	*0,6*
utilized for landscaping[8]	%	*13,7*	*0,3*
landfilled	%	*59,6*	–

1) Including public waste water treated in industrial waste water treatment plants. – 2) Public waste water treated in industrial waste water treatment plants rose by 2.2 million m³ in 2016. – 3) Excluding cooling water discharged into the company's own wastewater treatment plants. – 4) Weighted by population. – 5) 1991: 1 111 municipalities, 2020: 29 municipalities. – 6) Source: Survey of public waste water disposal. – 7) Including gasification and sewage sludge supplied to waste water treatment plants in other federal states. – 8) Recultivation, other material recycling.

Chart of biological water quality (macrozoobenthos – saprobity)

– Percentage of investigated sites in watercourses that have achieved the status classification good or better –



1) Significant change in methodology, now Biological Monitoring according to Water Framework Directive module Saprobity.

Data source: LUBW.

Objective: The aim is to achieve at least a good status classification according to the EU Water Framework Directive (2000/60/EC).

Trend: More than 90 % of the test sites have achieved at least good saprobic status due to improved wastewater treatment and rainwater treatment.

Generation and treatment of waste

	Unit	1996	2018
Total waste generation	1 000 t	45 931,9	50 590,1
Landfill rate	%	*24*	*12*
Municipal waste	1 000 t	5 679,2	5 952,6
Commercial and industrial waste	1 000 t	2 031,2	2 454,6
Sludges from treatment of urban waste water	1 000 t	355,8	230,7
Construction and demolition waste (major mineral waste)	1 000 t	37 225,4	40 025,7
Landfill rate	%	*23*	*15*
Hazardous waste	1 000 t	640,4	1 926,5

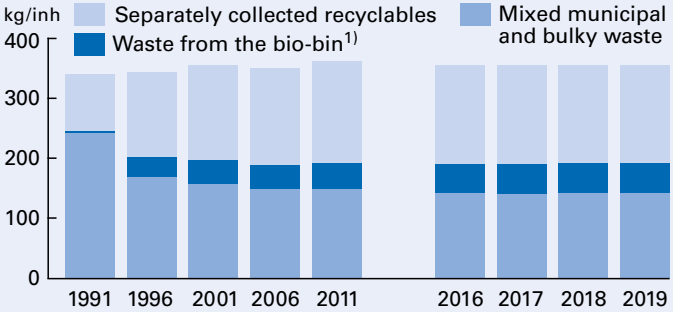
		1996	2019
Waste generated by households	1 000 t	3 538,2	3 932,2
per inhabitant	kg	342	355
Landfill rate	%	*36*	–
Mixed municipal and bulky waste per inhabitant	kg	167	140
Separately collected recyclables per inhabitant	kg	141	164
Waste from the bio-bin per inhabitant	kg	34	51

Waste treatment facilities[1] (selected types)			
Landfills	Number	605	309
Quantity of waste landfilled	1 000 t	10 822,5	6 352,4
Incineration plants[2]	Number	8	41
Quantity of waste incinerated	1 000 t	574,7	4 127,0
Plants for biological treatment	Number	96	98
Quantity of waste treated	1 000 t	674,7	1 123,4
Sorting plants	Number	36	69
Quantity of waste treated	1 000 t	615,2	2 552,3

1) 2019: provisional data. – 2) 2019: 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



From 2011: Population based on data from the 2011 Census. – 1) No year-round or area-wide coverage.

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.

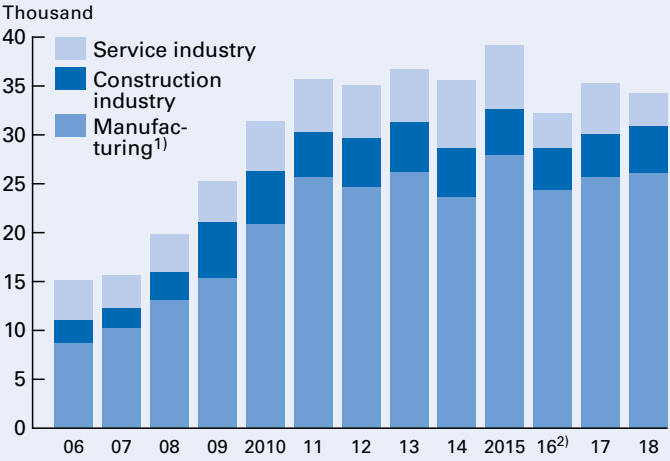
Trend: The total volume of waste has remained almost constant for years. With a slight increase in the number of separately collected domestic bio-waste by 1,2 kilograms per inhabitant compared to the previous year, the growth continues.

Environmental economics

	Unit	1996	2018
Expenditure on environmental protection in total	Mill. EUR	4 454,4	6 489,1
GDP share	%	*1,7*	*1,3*
Public expenditure			
Waste management	Mill. EUR	1 401,2	1 818,8
Investments in tangible fixed assets	%	*19,3*	*5,5*
Current expenditure	%	*80,7*	*94,5*
Sewage disposal	Mill. EUR	1 572,8	1 991,5
Investments in tangible fixed assets	%	*56,0*	*40,9*
Current expenditure	%	*44,0*	*59,1*
Expenditure on environmental protection in the manufacturing sector[1]	Mill. EUR	1 480,4	2 678,8
Investments[2]	%	*14,5*	*24,7*
Current expenditure[3]	%	*85,5*	*75,3*
		1997	**2018**
Turnover of goods, construction and services for environmental protection[2]	Mill. EUR	1 196,9	11 803,7
Environmental Management			
EMAS-registered companies and organizations	Number	353[4]	355[5]

1) For better comparability, data on the manufacturing sector also from 2008 excluding the economic sections wastewater and waste disposal and pollution abatement (WZ 2008). – 2) Since 2006 including the environmental section Climate Protection. – 3) Expenditure on the operation of own facilities and other expenses. – 4) Value for 2007 – 5) As of October 27, 2020.

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, construction 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: In 2018, the number of employees in the environmental sector was almost 3 % lower than in the previous year. This decrease is due to a significant reduction in the number of employees in the service sector by almost 37 %. The number of employees in manufacturing rose by about 6 % and in the construction sector by about 3 %.

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