Environmental data

2011

STAATSMINISTERIUM
FÜR UMWELT UND
LANDWIRTSCHAFT

Freistaat
SACHSEN

Foreword

Dear Reader

As every year, the current environmental data provides you with a brief overview of the performance achieved by the forward-looking and sustainable environmental policy pursued by the Free State of Saxony. The charts give you visual information on Saxony's focal environmental areas such as renewable energies, climate protection, soil, air, nature, environmental economy and their development. Saxony's environmental data is explained in more detail in the Environmental Report which is published just once in each legislative period. The next report for Saxony will be published in 2012.

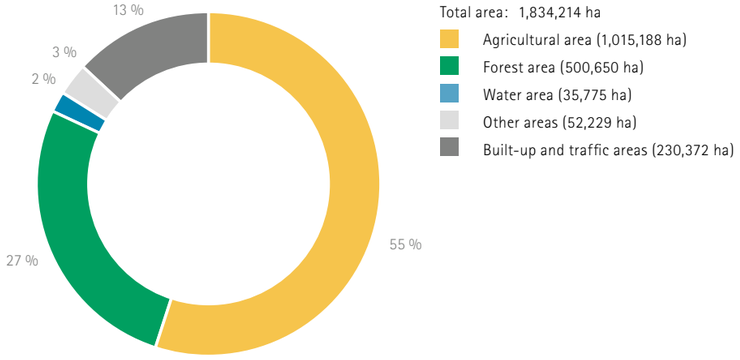
Frank Kupfer
Saxon State Minister of the Environment and Agriculture

Land use

Saxony is the sixth largest of the German federal states in terms of territory, with highly varied landscapes and a valuable natural and cultural heritage. As is the case everywhere in Central Europe, agriculture is the dominant use made of the land.

Data source: Statistical Office of the Free State of Saxony, 2011.
Data as of: 27.10.2011, land area status as of: 01.01.2011

Land use



Total area: 1,834,214 ha

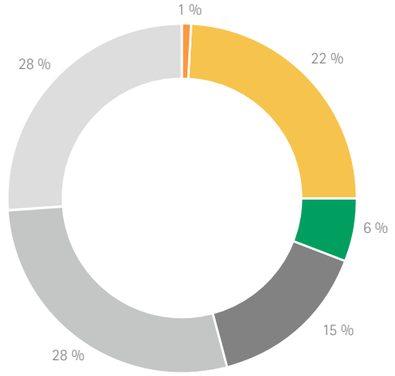
- Agricultural area (1,015,188 ha)
- Forest area (500,650 ha)
- Water area (35,775 ha)
- Other areas (52,229 ha)
- Built-up and traffic areas (230,372 ha)

Economic structure

The Free State of Saxony has undergone a profound structural change over the past 20 years. Today the state presents itself as a modern location for business and industry and its added value mainly originates from the service sector. Nevertheless, Saxony can rely on a comparatively strong manufacturing sector as well as on competitive agriculture and forestry industries.

Data source: Statistical Office of the Free State of Saxony, 2011.
Calculated as of: August 2010 / February 2011

Economic structure (share of gross value added)



Total gross value added in 2010:
EUR 85.15 billion

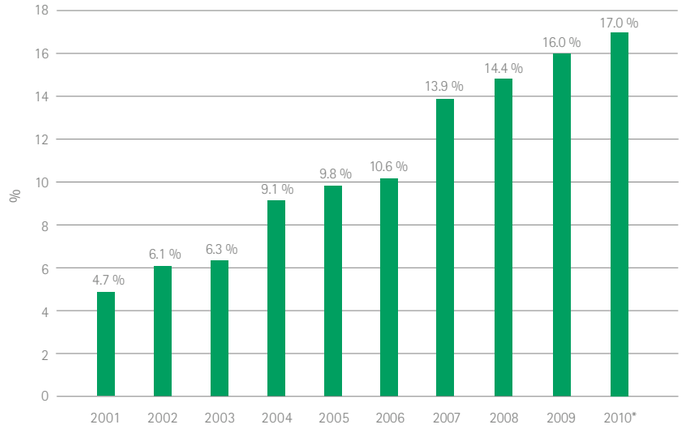
- Agriculture, forestry and fishing (EUR 829,414,000)
- Manufacturing sector (without construction) (EUR 18,870,855,000)
- Construction (EUR 5,460,223,000)
- Trade and commerce, hospitality industry, transports and communication (EUR 12,889,394,000)
- Banking and insurance, real estate and housing, services for businesses (EUR 23,644,320,000)
- Public services, education, health care, private households (EUR 23,454,107,000)

Electricity generation

Apart from improving the efficient use and saving of energy, Saxony relies on the continuing development of renewable energies in planning its future energy supply strategies. 17 percent of Saxony's final energy consumption (net) was covered by wind power, biomass, solar power, hydro power as well as sewage gas and landfill gas in 2010. The share of renewable energies thus increased by one percent compared with 2009. Saxony's generation portfolio is characterised by a highly diversified share and expansion potential of the individual energy sources. Wind power with 957 MW plays a pioneering role in terms of the installed electric power and also covers the largest share of electricity generation from renewable energies. Biomass ranks second in this respect.

Data source: Saxon State Office for Environment, Agriculture and Geology, Saxon State Ministry of Economic Affairs, Labour and Transport – Saxon Energy Reports 2011, *SAENA prognostic value

Share of renewable energies in energy consumption

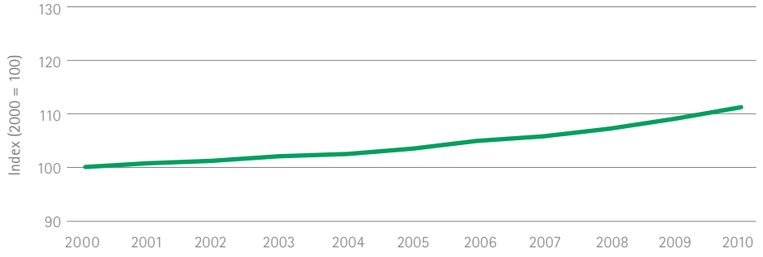


Soil sealing

For many years there has been a persistent trend towards covering Saxony's surface area with extensive impermeable surfaces. The Free State of Saxony has identified the problem and set up an action programme with a whole range of measures aimed at reducing the creation of new impermeable areas while at the same time taking the space needs of industry, trade and traffic into account.

Data source: Statistical Office of the Free State of Saxony, 2011; Evaluation by the Saxon State Office for Environment, Agriculture and Geology, 2011

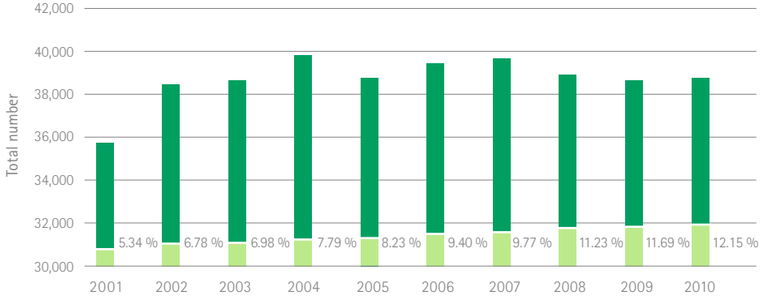
Development of built-up and traffic areas in Saxony



Rehabilitation of contaminated sites

There has been a positive trend in the rehabilitation of contaminated sites over the past few years, both in terms of number and percentage area. This is due to two reasons: first, areas suspected of being contaminated, but found not to be so, have been removed from the contaminated site register, and second, steady progress has been made in decontamination. Saxon companies with specialised know-how in the rehabilitation of contaminated sites are among the world leaders in this technology.

Number and area share of rehabilitated contaminated sites



Total number of sites

Area share of rehabilitated sites

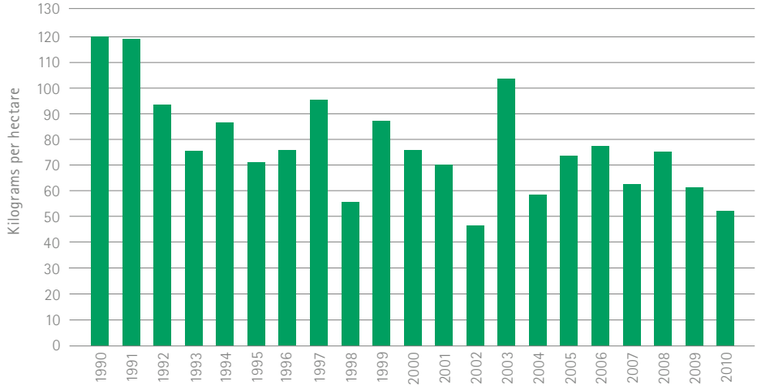
Data source: Saxon State Office for Environment, Agriculture and Geology, 2011

Residual nitrate

The nitrate nitrogen content of agricultural soil at the end of the vegetation period in late autumn provides an indication of the potential risk of nitrate nitrogen losses from fields during the winter leaching period. This content should be as low as possible so as to avoid ground water pollution. Despite substantial climate-related variations, the residual nitrate amounts decreased considerably compared with the high values of the years 1990 and 1991.

Data source: Saxon State Ministry of the Environment and Agriculture, 2011

Residual nitrate in the soil



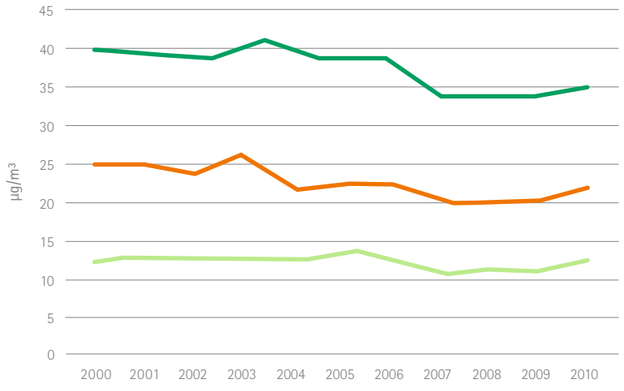
NO_2

The closing down and upgrading of large combustion plants greatly contributed to the reduction in nitrogen dioxide emissions up to 2010. Between 1995 and 2010, nitrogen dioxide pollution decreased by around 20 percent in roadside locations and 25 percent in rural areas.

- Roadside locations
- Urban areas
- Rural areas

Data source: Saxon State Office for Environment, Agriculture and Geology, 2011

Mean annual NO_2 concentrations by area type



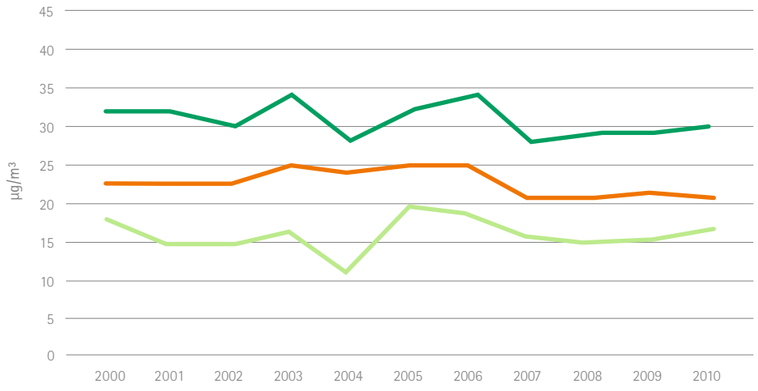
Particulate matter

Combustion processes and road traffic are the most important sources of particulate matter (PM10). Airborne particulate matter can be transported in the atmosphere over large distances so that the concentration measured in Saxony is not only caused by Saxon sources. The data concerning the area-related annual mean values does not show any clear trend. The fluctuations over the past few years can be attributed to changing meteorological conditions.

- Urban areas / roadside locations
- Urban areas / background locations
- Rural areas

Data source: Saxon State Office for Environment, Agriculture and Geology, 2011

Mean annual PM10 concentrations by area type

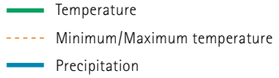


Climate

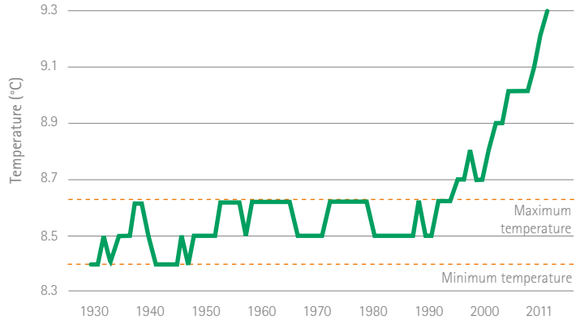
The data from the climate reference station in Görlitz shows the current trend towards less precipitation during vegetation period 1 (from April to June) in Saxony. The general climate situation has already changed noticeably in regions with high temperatures and light soils.
The chart from the Dresden measuring station is a representative example for climatic development in Saxony. Its curve shows the 30-year air temperature averages for the period from 1900 to 2011. Between 1900 and 1990, the mean temperature value varied over a range of about 0.25 degrees. From 1990 onwards, the temperature curve has been rising very steeply beyond this range of variation.

The mean value of the period between 1981 and 2011 is already 0.6 degrees above the variation range measured before 1990.
The precipitation and temperature data from the meteorological stations in Saxony prove that climate change is a reality in Saxony. In response to this development, the Saxon state government has drawn up its climate and energy action plan, setting emission targets that are clearly above European and German climate protection goals.

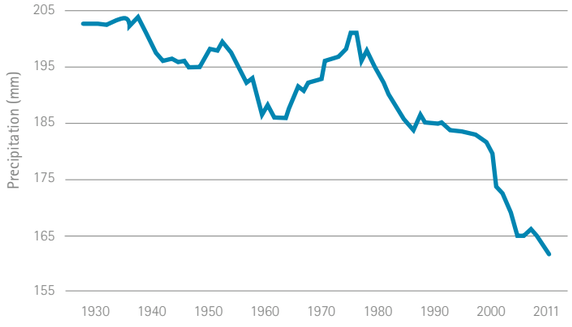
Data source: Saxon State Office for Environment, Agriculture and Geology, German National Meteorological Service – DWD, 2011



Air temperature trend for the Dresden region
(curve of 30-year moving averages for the periods 1901-1930 to 1982-2011)



Precipitation trend over vegetation period 1 (April to June) Climate reference station in Görlitz
(curve of 30-year moving averages for the periods 1901-1930 to 1982-2011)

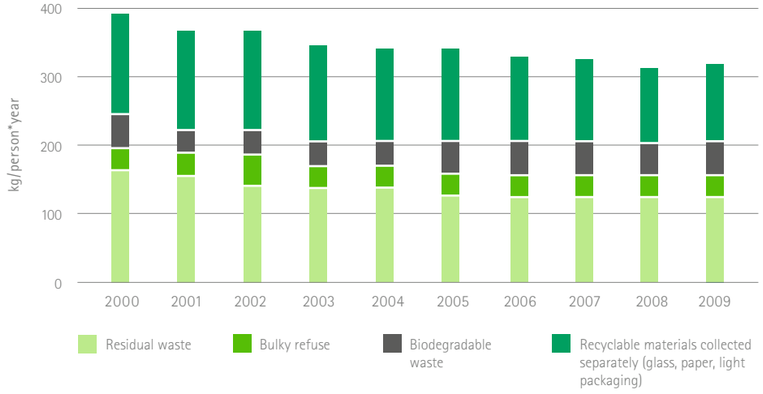


Household waste

Against the background of finite raw material and energy resources, waste prevention is the top priority for modern waste management systems. The steady reduction in household waste is a strong indication of the continued improvements being made in Saxony.

Data source: Saxon State Office for Environment, Agriculture and Geology, 2010

Waste generated by households per person and year

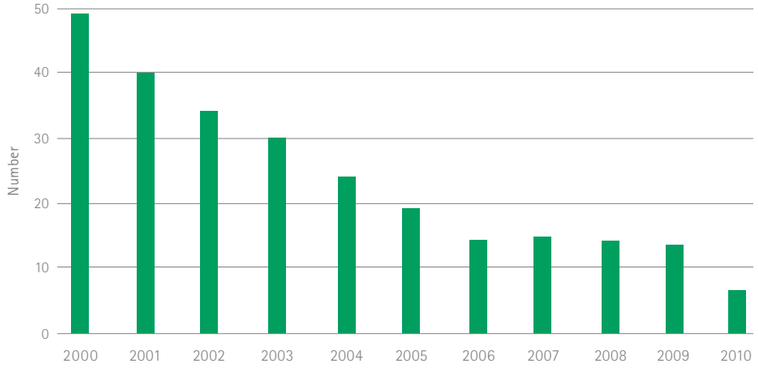


Landfill waste

The number of landfill sites operated in Saxony has decreased significantly over the past 10 years. This is mainly due to a huge increase in waste recycling. Dumping untreated waste on landfill sites has been forbidden since the middle of 2005.

Data source: Statistical Office of the Free State of Saxony, 2011

Number of landfill sites in Saxony

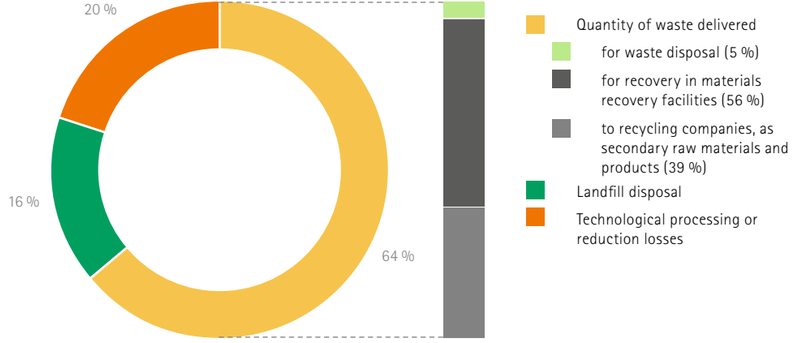


Waste disposal

Most of the waste in Saxony is taken to processing facilities such as sorting plants, shredding and scrapping plants or biological treatment plants with the aim of recovering useful materials. All non-recoverable residues from these processes have to be disposed of. The chart shows the individual shares in percent of the total amount of waste delivered.

Data source: Statistical Office of the Free State of Saxony, 2010

Waste disposal in 2009

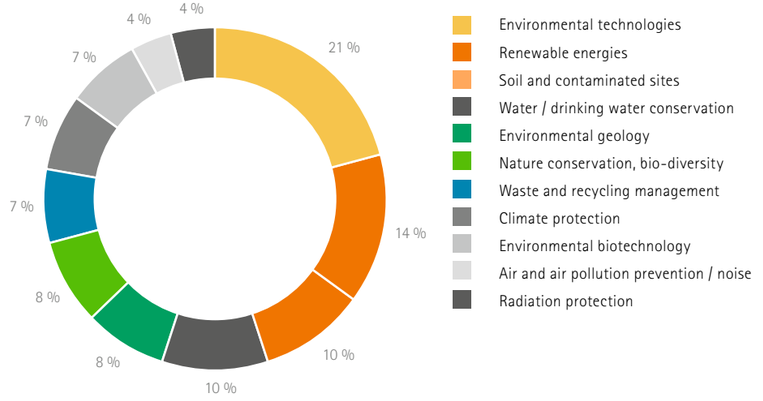


Environmental research

The Free State of Saxony has a high level of expertise in the field of applied environmental research. 26 public research institutions explore all important aspects of the environment and develop product or process innovations, often in cooperation with private companies. Most of the institutions have acquired know-how in more than one field of environmental research. Public research in the Free State of Saxony focuses on such areas as environmental technologies, renewable energies, soil and contaminated sites as well as hydrology and sewage.

Data source: Saxony Economic Development Corporation, 2011, "Environmental research in Saxony" plus amendments

Share of environmental research institutions in Saxony

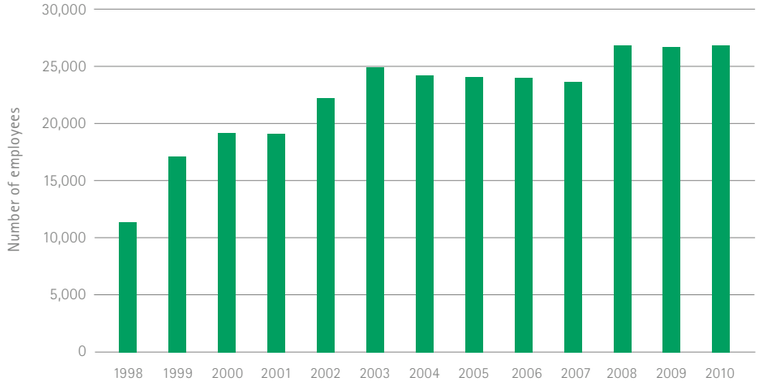


EMAS-certified companies

Saxony has managed to raise the number of jobs in EMAS-certified companies significantly and thus allow for more and better integration of environmental considerations in operational processes. Apart from contributing to a reduction in environmental pollution, environmental management systems can be beneficial in many ways including cost cutting, enhanced predictability of legal decisions and improved operational management.

Data source: Chamber of Industry and Commerce – IHK Dresden, Chamber of Trade – HWK Leipzig: for Saxony, Statistical Office of the Free State of Saxony, Rb 214 Microcensus

Employees in EMAS-certified companies



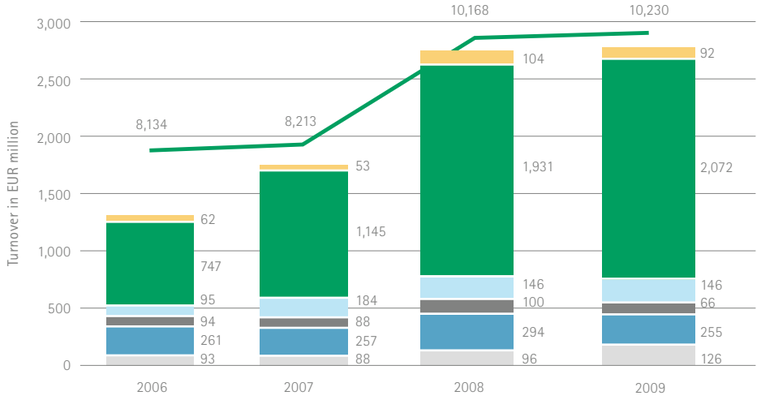
Environmental sector

The Free State of Saxony has a strong environmental sector which has shown a marked growth in turnover and employee numbers over the past few years. The green-tech industry's share of Saxon gross domestic product is expected to almost double by 2020 compared with 2007. For methodological reasons, the figures for the turnover in climate protection are not comparable to those for renewable energies.

- Other
- Climate protection
- Air pollution prevention
- Noise abatement
- Water conservation
- Waste management
- Number of employees

Data source: Statistical Office of the Free State of Saxony, August 2011

Turnover and employees

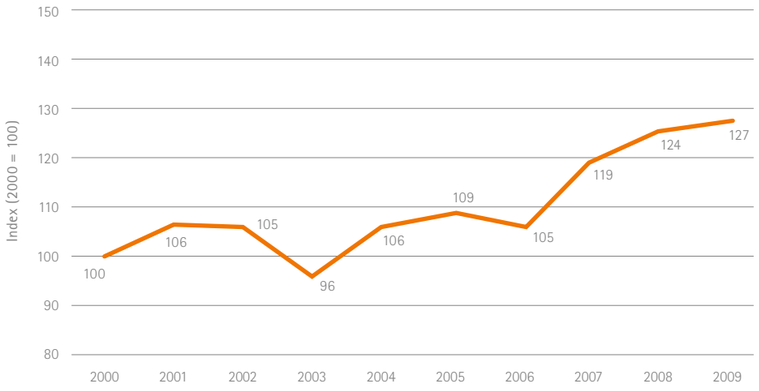


Raw materials productivity

In times of resource shortages, it is important to decouple raw materials use from overall economic growth. Increasing values indicate a positive trend. Over the past few years, Saxony has achieved a double-digit increase in natural resource productivity, a rate above the average for Germany as a whole.

Data source: Saxon State Office for Environment, Agriculture and Geology, based on environmental-economic accounts of the German states as of autumn 2011

Raw materials productivity

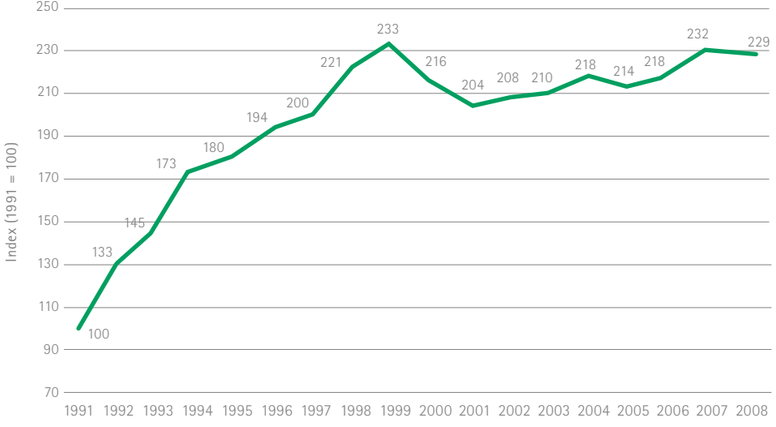


Energy productivity

Energy productivity is a clear indicator of the efficient conversion of primary energy into final energy and of the efficient use of final energy for the production of goods and services. The energy productivity curve has been rising steadily for years. The decline in 2000 was due to the increased primary energy consumption of new power plants. However, the additional amount of high-efficiency energy provided by these plants is not reused in the territory but exported as electricity and thus has no effect on Saxony's gross domestic product. The increase in energy productivity is among the best in the whole of Germany.

Data source: Environmental-economic accounts of the German states as of October 2011. Note: GDP by direct energy consumption; price-adjusted, chain-weighted GDP

Energy productivity

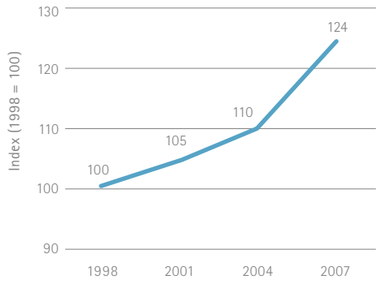


Water productivity

Water productivity indicates the value obtained by the economy per cubic metre of water used (EURO GDP per m³ of water used) and is essentially determined by the economic structure and its share of water-intensive economic activities or production areas. A comparatively high water productivity means that a country's economic and industrial structure is less water-intensive. The change in water productivity is influenced by both "real" productivity increases and decreases as well as by changes in economic and industrial structures. The data shows that the Free State of Saxony is on its way towards more sustainable production. Water productivity data is not collected every year.

Data source: Environmental-economic accounts of the German states as of October 2011. Note: GDP by direct energy consumption; price-adjusted, chain-weighted GDP

Water productivity

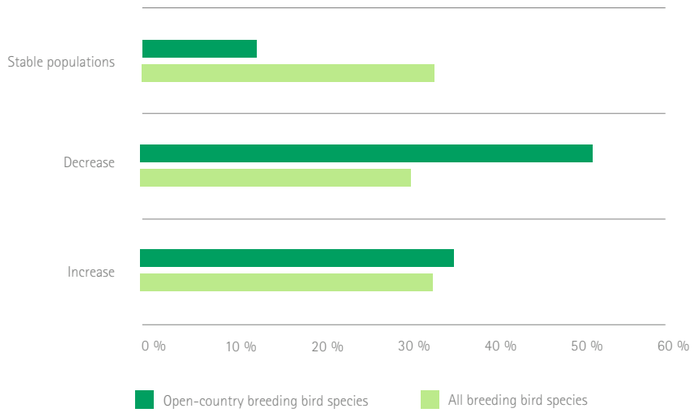


Breeding bird species

Breeding birds are particularly well-suited as an indicator of the condition and development of nature and landscape. Birds have been counted in regular censuses since the 1950s. Around 190 species of birds presently breed in Saxony, about 50 of which are open-country species. In the mid-2000s about one third of all breeding bird species experienced substantial decreases in population size compared with the mid-1990s. There is a slightly positive trend for forest and wetland bird species on the one hand but substantial reductions in open-country dwellers such as the partridge, ortolan and whinchat on the other. These endangered species are the focus of attention in Saxony.

Data source: Saxon State Office for Environment, Agriculture and Geology, 2008

Trends of breeding bird populations in Saxony from the mid-1990s to mid-2000s



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