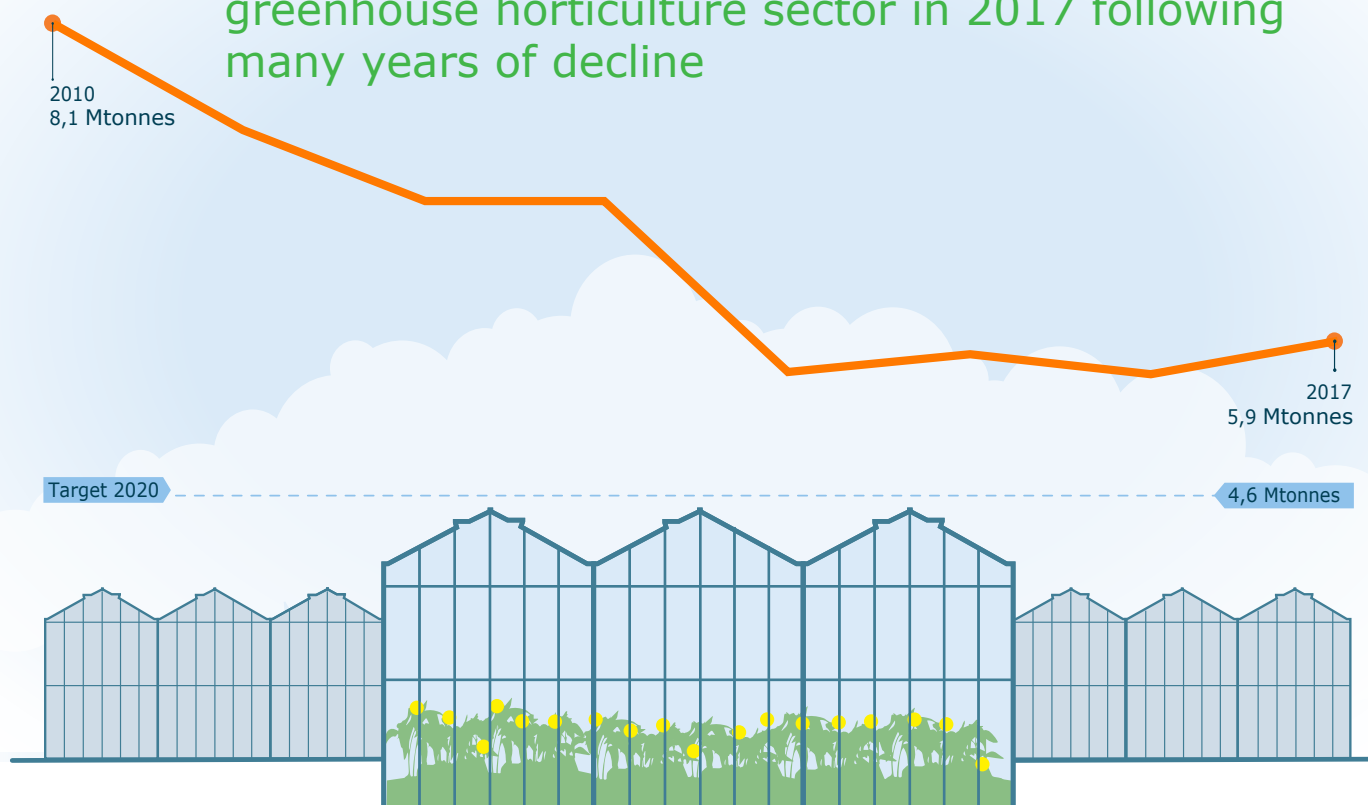


## Slightly increase in CO<sub>2</sub> emissions from the greenhouse horticulture sector in 2017 following many years of decline

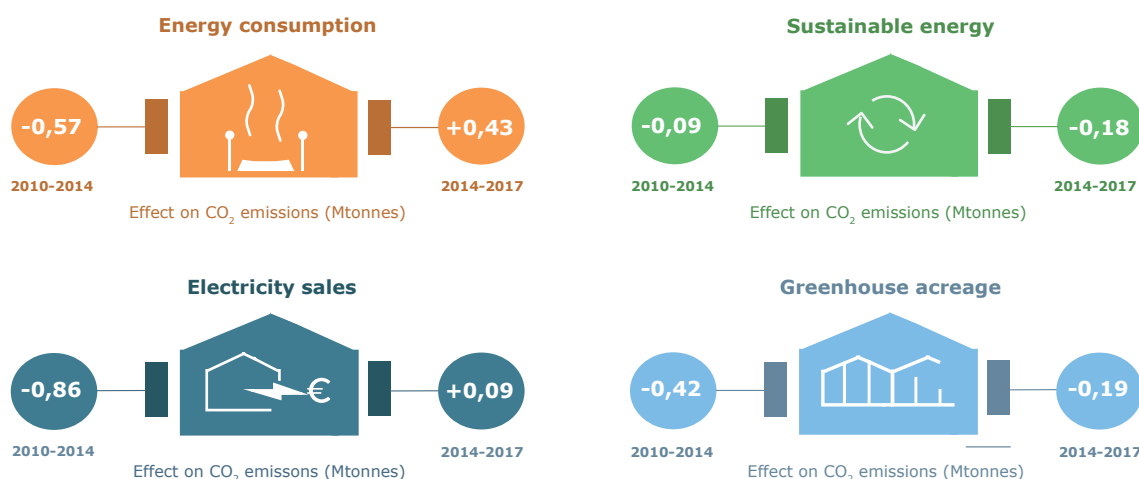


The CO<sub>2</sub> emissions from the greenhouse horticulture sector in the Netherlands increased by 0.2 megatonnes to 5.9 megatonnes in 2017, 1.3 megatonnes above the goal of 4.6 megatonnes for 2020. After correction for outside temperature, CO<sub>2</sub> emissions fell slightly in 2015 and 2016 and increased slightly in 2017. It is not possible to determine whether or not this is a trend change on the basis of results for one year.

CO<sub>2</sub> emissions fell considerably in the 2010-2014 period, while in the 2014-2017 period, CO<sub>2</sub> emissions were more or less stable after correction for outside temperature. CO<sub>2</sub> emissions in 2017 were 1.1 megatonnes (14%) lower than in 1990. The greenhouse horticulture sector is therefore ahead of national development. This is clear from the Greenhouse Horticulture Energy Monitor of Wageningen Economic Research.

### Different causes in two periods

The fall in the 2010-2014 period can largely be attributed to a reduction in acreage, fewer electricity sales and lower energy consumption per m<sup>2</sup> of greenhouse. Electricity consumption per m<sup>2</sup> increased due to more assimilation light, while heat consumption fell due to energy-saving measures. In the 2014-2017 period, CO<sub>2</sub> emissions fell primarily due to a reduction in acreage and more sustainable energy. More electricity sales and an increase in energy consumption per m<sup>2</sup> caused CO<sub>2</sub> emissions to increase.



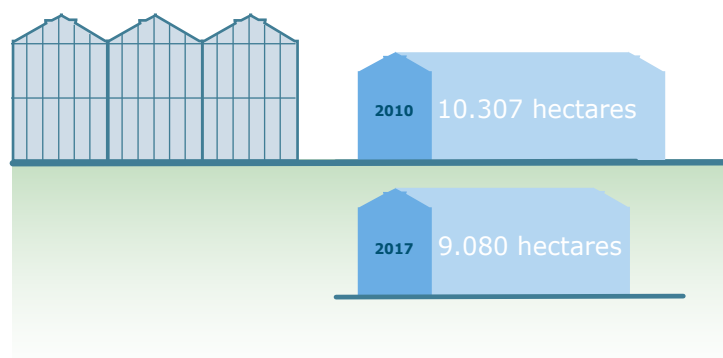
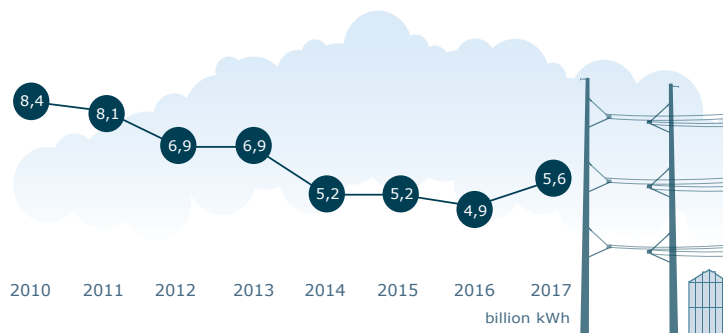
## Energy consumption in cultivation

In greenhouses, energy is required primarily for heating (warmth) and lighting (electricity). In the 2010-2014 period, energy consumption per m<sup>2</sup> fell and increased in the 2014-2017 period. As a result, CO<sub>2</sub> emissions firstly fell by 0.57 megatonnes and then increased by 0.43 megatonnes. In the 2010-2014 period, electricity consumption per m<sup>2</sup> increased, while heat consumption per m<sup>2</sup> fell. In the 2014-2017 period, both electricity consumption per m<sup>2</sup> and heat consumption per m<sup>2</sup> increased. Both can be attributed to the market demand for more energy-intensive greenhouse horticulture products cultivated with assimilation lighting during the winter period, combined with improved economic growth.



## Electricity sales

The Dutch greenhouse horticulture sector generates heat and electricity on a large scale using gas-fuelled co-generation plants. For this form of electricity generation, the heat that is released is used to heat the greenhouses. Besides the use of electricity within the greenhouses, a large proportion of the electricity is sold. Due to a decrease in the electricity price, sales in the 2010-2014 period fell by 3.2 billion kWh and, thanks to an improved electricity price driven by increased market demand, increased by 0.3 billion kWh in the 2014-2017 period. This corresponds to a 0.86-megatonne fall in CO<sub>2</sub> emissions and a 0.09-megatonne increase in CO<sub>2</sub> emissions respectively. The increase in sales occurred primarily in 2017.



## Use of sustainable energy

In the 2010-2017 period, the use of sustainable energy in Dutch greenhouse horticulture increased by 180%. As a result, CO<sub>2</sub> emissions fell by 0.26 megatonnes. This increase was noted in geothermal energy and purchasing of sustainable electricity. Sustainable energy concerns, in order of level of use: geothermal heat (44%), purchasing of sustainable electricity (29%), solar energy (12%), biofuels (11%), purchasing of sustainable heat (4%) and purchasing of sustainable gas (1%). Purchasing of sustainable electricity doubled in 2017.

## Greenhouse acreage

The overall greenhouse acreage declined by 1,223 hectares in the 2010-2017 period, with an 819-hectare fall in the 2010-2014 subperiod and a 408-hectares fall in the 2014-2017 subperiod. The total decline of around 9% led to a reduction in CO<sub>2</sub> emissions of 0.62 megatonnes.