

Environment

Our responsibility to minimize environmental impacts from our operations includes minimizing greenhouse gas emissions from energy use and other air emissions, reducing waste and conserving water resources. This commitment is formalized in our Health, Safety and Environment (HSE) policy.

Syngenta has a robust proprietary environmental management system which is aligned with other recognized management systems such as ISO and EMAS. In addition, a number of our manufacturing sites have gained ISO certification to meet customer requirements.

We allocate considerable resources to environmental management, training, communications and monitoring. Performance data is collected by group and regional HSE managers and reviewed annually by the Executive Committee as well as the Corporate Responsibility Committee on board level, and quarterly by the Compliance and Risk Management Committee.

In 2010, we undertook a thorough review and overhaul of our environmental reporting system. All sites continue to measure and monitor their performance. To ensure that our global reporting system is of highest data quality and captures all significant impacts, all substantial sites are included and some smaller sites with very low impacts have been replaced. These changes collectively represent one percent of Syngenta's total energy use.

The change in reporting has improved the accuracy of our data by removing errors and instances of 'double-counting' and replacing estimates with more actual measurements. The new simplified system is designed to improve consistency of reporting across the business and its added flexibility will help us to adapt to reporting requirements as they evolve in the future. In many cases, the adjustments have resulted in substantial changes to our performance data. In the long run, we believe the updated system will improve our understanding of our performance and enable us to identify opportunities to reduce our environmental impact.

Improving energy efficiency

Syngenta is committed to reducing the energy consumption of our operations through efficiency improvements and behavior changes.

We cut our total energy use by almost four percent in 2010 to 8,031 TJ through a continued drive to improve energy efficiency across the business and decreased production at some sites. 22 of our manufacturing sites (representing 86 percent of our total energy use) have set new energy reduction targets. Energy from renewable sources made up 18 percent of our total electricity use and seven percent of total energy use.

The systems we have established to monitor energy consumption and related emissions help us better understand our energy use and identify opportunities for improved efficiency with the help of independent energy consultants. Our energy-saving initiatives include coolers that shut down when the outside temperature drops and sensors that automatically switch off lights in unoccupied offices. At our Seneffe site in Belgium, for example, we have installed a new, more energy efficient boiler.

Employees play an important role in reducing energy use and we conduct regular awareness campaigns to educate them about ways to conserve energy at work and at home. Local teams select the best way to improve energy efficiency at individual sites.

Energy	2010	2009	2008
Energy (TJ)	8,031	8,334	8,653
MJ/\$EBIT	4.08	4.36	4.19
Gas (TJ)	3,851	3,675	4,074
Electricity (TJ)	1,963	2,096	2,262
Steam (TJ)	935	1,153	1,076
Others (TJ)	652	775	940
Oil (TJ)	631	635	301
Number of sites setting energy targets	22	19	20

Greenhouse gas emissions

By controlling greenhouse gas emissions from our operations, we aim to grow our business while reducing our impact on climate change.

Syngenta has set a target to reduce emissions relative to earnings before interest and tax (EBIT) by 40 percent by 2012 compared with 2006. To achieve this, we are setting local targets and implementing a range of programs to improve energy efficiency and reduce direct emissions from our manufacturing sites. We made notable progress towards our goal in 2010, reducing our total greenhouse gas emissions by 10 percent from the previous year. Normalized emissions were 0.66 kgCO₂e/

\$EBIT, a 29 percent reduction from the 2006 baseline of 0.93.

Scope 1 emissions include those resulting from our own operations and company vehicles. These remained relatively constant in 2010, despite a three percent reduction in absolute emissions. Efforts to reduce emissions include using waste corn cobs for fuel at our Lopburi site in Thailand which reduces the use of liquid gas. Emissions from company vehicles increased by almost five percent during 2010 as a result of our growing US fleet and improved data collection practices. For example, we can record emissions from our use of rental cars more accurately because we now receive more precise information from rental car companies.

Scope 2 emissions – from the energy we purchase to run our business – decreased by 28 percent in 2010 because we used less electricity and steam, we updated our emission factors and we closed our Cold Creek production site in the US, which accounts for 23kt.

Scope 3 emissions, which include business travel and distribution, declined three percent. This was largely due to a 20 percent reduction in travel-related emissions compared with 2009 as a result of our company policy encouraging employees to limit business travel whenever possible.

We face the challenge of moving raw materials to our factories and products to our customers while reducing the emissions associated with transport. Wherever possible, we shift distribution away from the road to other lower-carbon modes of transport. The CO₂e emissions generated from rail transport, for example, are nearly 90 percent lower than transporting by truck. In 2010, seven percent (in tonnes) of the shipments controlled by Syngenta were transported by rail and 17 percent (in tonnes) by sea.

Our outsourced activities also result in greenhouse gas emissions. We report these in accordance with the Greenhouse Gas Protocol and Syngenta also works with our suppliers to reduce their emissions.

Greenhouse gases	2010	2009	2008
Total CO ₂ e emissions (000's tonnes)	1,304	1,452	1,542
kg/\$EBIT	0.66	0.76	0.75
Within direct control:			
CO ₂ e emissions from own operations (000's tonnes)	616	641	701
kg/\$EBIT	0.31	0.34	0.34
of which: CO ₂ (000's tonnes)	329	426	467
kg/\$EBIT	0.17	0.22	0.23
CO ₂ emissions from company vehicles (000's tonnes)	68	65	54
kg/\$EBIT	0.035	0.034	0.026
Within indirect control:			
CO ₂ e emissions from purchased energy (000's tonnes)	301	418	426
CO ₂ emissions from business (000's tonnes)	20	25	32
CO ₂ emissions from distribution (000's tonnes)	299	303	329

Climate change and carbon footprint

Value chain emissions:

Total greenhouse gas emissions in 2010 within Syngenta's control were ≈ 1.30 million tonnes CO₂e, or 0.66 kg/\$EBIT



1 mainly driven by increasing and protecting yield and enabling no tillage

We consider the carbon impacts of each stage of our products' lifecycle, including the activities outside our direct control. The diagram above illustrates the carbon footprint of our operations and products from supply chain to production and use by farmers. We distinguish between direct emissions from our own operations and indirect emissions from purchased electricity, business travel, and products distribution. Because we can only estimate the impact of emissions outside our control – from our suppliers and on customers' farms – we present their footprint as an indication of the relative positive or negative impacts. Based on these figures and estimates, we believe the overall carbon impact of our products is positive.

As part of ongoing environmental management programs, and in response to an increasing number of requests from customers and external agencies for carbon footprint information about its products, Syngenta initiated a program of work on carbon footprinting together with ERM (Environmental Resources Management). Using the Publicly Available Specification (PAS) 2050 for product and service carbon footprinting ERM analyzed and verified the efficiency potentials for Syngenta's crop protection portfolio, considering that this is the most carbon intense part of the company. ERM confirmed that the challenge for Syngenta in reducing its carbon footprint is that a considerable proportion of the footprint is outside Syngenta's operational control. Waste minimization, and maximizing the efficiency of material use, will reduce the upstream footprint. Beyond Syngenta's own efficiency initiatives, significant opportunities for reductions can be found through engaging with suppliers to identify low carbon options, as well as securing the benefits of supplier carbon management initiatives.

Other emissions to air

In addition to greenhouse gas emissions, our manufacturing sites also release nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulates and volatile organic compounds (VOCs), which can contribute to local air pollution. Syngenta aims to limit these emissions and improve air quality through local programs.

Reported totals of these emissions have increased substantially in 2010. While variations in our production processes may have contributed to slight increases, these significant changes are primarily as a result of improvements to our methodology for measuring and reporting emissions to air. Our new methodology replaces estimates with real measurements and uses more accurate emission factors.

Other air emissions ¹	2010	2009	2008
Total other air emissions (tonnes)	1,269	980	1,100
g/\$EBIT	0.64	0.51	0.53
NO _x (tonnes)	404	416	644
g/\$EBIT	0.21	0.22	0.31
Non-halogenated VOCs (tonnes)	440	415	308
g/\$EBIT	0.22	0.22	0.15
Halogenated VOCs (tonnes)	48	49	23
g/\$EBIT	0.02	0.03	0.01
Particulates (tonnes)	123	63	82
g/\$EBIT	0.06	0.03	0.04
SO ₂ (tonnes)	208	20	20
g/\$EBIT	0.11	0.01	0.01
NH ₃ (tonnes)	23	7	8
g/\$EBIT	0.01	0.004	0.004
HCl (tonnes)	23	10	15
g/\$EBIT	0.01	0.005	0.007

¹ Starting 2010, all "other air emissions" numbers are based on measurements

Water

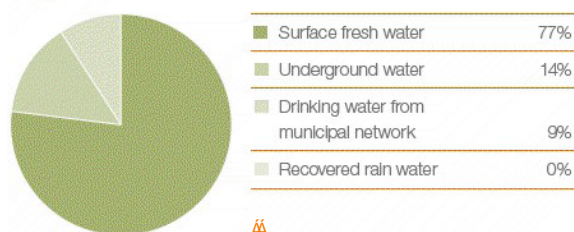
Water is essential to our operations, used as renewable energy for cooling (65 percent), in manufacturing processes (21 percent), for irrigation and for hygiene purposes. We understand that water is an extremely valuable and increasingly scarce resource in many regions. The majority (77 percent) of the water we use is drawn from fresh surface sources.

The biggest contribution we can make in reducing global water use is by helping growers conserve water through product innovation (see [increasing resource efficiency](#)). However, we also aim to minimize water use at our own operations by carefully monitoring consumption (using direct measurements where meters are available) to help us identify opportunities to reduce water use.

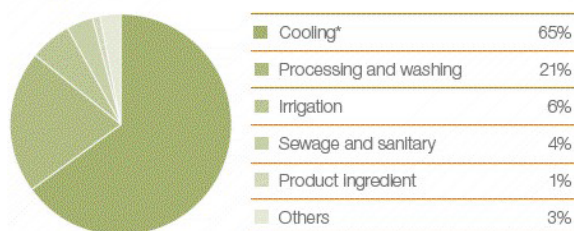
Ongoing efforts to conserve water helped us reduce total water use by 10 percent in 2010. Our local approach ensures that the programs we implement will have the maximum relevance and effect. For example, at our Huddersfield site in the UK, we increased our focus on efficient water use and repaired leaks to save 1.4 million cubic meters in 2010. A program at our Monthey site in Switzerland identified ways to decrease the use of cooling water, contributing to a reduction of 2.1 million cubic meters in 2010. Other initiatives to save water include recycling condensation from air conditioning units and installing low-flush toilets.

Water	2010	2009	2008
Water consumption (million cubic meters)	28.8	32.0	31.1
liters/\$EBIT	14.6	16.7	15.1
Cooling (million cubic meters)	18.6	21.0	19.5
Processing, washing and irrigating (million cubic meters)	8.0	7.1	8.1
Others (million cubic meters)	0.9	2.0	1.5
Product ingredient (million cubic meters)	0.2	0.2	0.3
Sewage and sanitary (million cubic meters)	1.1	1.7	1.7

Origin of water



Usage of water



* 64% cooling water which does not come into contact with any process chemical during use

Waste water

We treat all contaminated water before discharging it, either through on- or off-site waste water treatment plants. Cooling water, which does not come into contact with any process chemicals during use, is released directly into local water sources. In 2010, total wastewater decreased by 12 percent due to variations in our manufacturing processes, changes in reporting classifications, and efforts made by our sites to reduce the quantity of contaminated washing water.

Waste water	2010	2009	2008
Total industrial waste water discharge (million cubic meters)	8.8	10	10.6
liters/\$EBIT	4.5	5.2	5.1
of which:			
Total Organic Carbon (TOC) (tonnes)	769	783	725
Chemical Oxygen Demand (COD) (tonnes)	2,336	2,677	2,358
Biological Oxygen Demand (BOD) (tonnes)	240	234	225
Total suspended solids (TSS) (tonnes)	393	303	262
Soluble salts (000's tonnes)	114	123	132
Direct discharge of uncontaminated cooling water (million cubic meters)	18.5	20.8	19.3

Waste water discharge



* Incinerated water, sanitary water directly released, water used for fire exercises, evaporated water in process equipment

Waste

While some waste is unavoidable, we strive to minimize the amount of waste from our operations and in 2010, 19 of our manufacturing sites (representing 88 percent of our total hazardous waste) set waste reduction targets.

We have improved our reporting processes to clarify how we classify and measure different types of waste. Some notable increases and decreases in reported totals can be attributed to this change in reporting. Growth in our manufacturing operations in Grangemouth (UK) and Nantong (China) also contributed to a 14 percent increase in the total volume of hazardous waste produced in 2010. Chemical waste accounts for the greatest proportion of this output (61 percent). We have almost halved the proportion of hazardous waste sent to landfill by increasing the proportion that we recycled, reused or incinerated. To ensure safe disposal, incineration is always conducted under controlled high-temperature conditions. Treated seeds are often used as fuel in cement kilns or as a component in alcohol production.

Non-hazardous waste – including plant waste – increased eight percent to 134,000 tonnes in 2010 as a result of changes to our waste management processes, the incineration of obsolete seed stocks in North America, and the inclusion of newly acquired seed companies in the scope of our data. These companies produce large volumes of compost as a result of their operations. As a result of demolition work at some of our sites, the proportion of non-hazardous waste sent to landfill almost doubled compared with 2009.

Waste (Hazardous)	2010	2009	2008
Hazardous waste (000's tonnes)	198.7	173.9	153.3
kg/\$EBIT	0.10	0.09	0.07
of which: recycled/re-used (000's tonnes)	64.0	51.4	47.5
incinerated (000's tonnes)	124.0	97.1	84.3
landfill (000's tonnes)	0.4	0.7	1.5
other (000's tonnes)	10.3	24.7	20.0
Hazardous waste by type:			
Chemical	61%	59%	57%
Solvents	31%	30%	32%
Other	8%	11%	11%
Waste (Non-hazardous)			
2010	2009	2008	
Non-hazardous waste (000's tonnes)	133.7	124.0	120.2
kg/\$EBIT	0.07	0.06	0.06
of which: recycled/re-used (000's tonnes)	76.6	66.4	72.1
incinerated (000's tonnes)	18.0	25.2	19.3
landfill (000's tonnes)	28.7	15.5	22.8
other (000's tonnes)	10.4	16.9	6.0
Non-hazardous waste by type:			
Plant & seed waste from seeds sites	51%	63%	53%
Inerts	22%	9%	14%
Packaging materials	6%	7%	7%
Household	3%	7%	5%
Others	18%	14%	21%