

INDICATOR REPORT 2012 IN BRIEF

1 Sectors

Households

Due to the mild winter of 2011, the heating demand of households were 33 % lower compared to 2010. This led to lower energy consumption (-19 %) and lower emissions of greenhouse gases (-22 %) in 2011. Between 2000 and 2011 the total energy consumption of households has decreased from 230 PJ to 205 PJ (-11 %), but the fluctuations between the years can be explained by the (winter) climate. Flanders is looking to achieve a significant decrease in the energy consumption of its building stock through measures such as roof or attic insulation and the replacement of single glazing and inefficient heating systems. In 2011, 24 % of dwellings had no roof or attic insulation, 8 % of dwellings had only single glazing, and 31 % of gas boilers and 69 % of oil-fired boilers still had poor efficiency.

The decrease in the emissions of PAHs (polycyclic aromatic hydrocarbons) and dioxins in 2011 can be ascribed to the lower heating demand resulting from the mild winter. Of the total household emissions of dioxins in Flanders, 24 % comes from building heating and 76 % from illegal waste incineration in the open air (2011 figures).

On average, each inhabitant of Flanders produced less than 150 kg residual waste in 2011. The results per municipality ranged between 73 and 299 kg residual waste collected per capita.

Industry

Over the past decade, the environmental impact of industry decreased while activities increased (the gross added-value of industry was 10 % higher in 2011 than in 2000). In the period 2008-2010, industrial activity fluctuated due to the financial-economic crisis, and this is reflected in the figures for the environmental impact.

In 2011, energy consumption was still 4 % higher than in 2000. This is due mainly to the increasing use of energy sources as raw material (so-called non-energetic energy consumption), which was 21 % higher in 2011 than in 2000. The specific energy consumption for heating and heating processes (energetic energy consumption) fell by 6 % over the same period. During the period 2000-2011, emissions of various air pollutants also decreased: PM_{2.5} by 11 %, acidifying substances by 47 %, ozone precursors by 39 %, CO₂ by 10 % and greenhouse gases by 20 %. Discharges containing oxygen-binding substances and nutrients to surface water almost halved during that period: for example, chemical oxygen demand (COD) fell by 44 % and nitrogen by 45 %. The discharge of heavy metals in waste water decreased by between 41 and 78 %.

These trends can be ascribed to the use of less environmentally-polluting fuels, end-of-pipe technique, improved processes, organisational and structural company changes, the use of combined heat and power (CHP) and energy savings, whether as the result of sectoral environmental policy agreements or stricter emissions thresholds.

Energy

Gross domestic energy consumption in Flanders (GDEC) in 2011 was 1 % above the level for 2000. In 2010, there was a noticeable increase (+9 % compared to 2009) due to increasing commercial activity after the financial-economic crisis, and exceptionally cold winter months. In 2011, energy consumption by all sectors fell due to lower heating requirements, improved energy efficiency and/or a lower activity level.

Between 2003 and 2009, structural changes and improved energy efficiency delivered a significant reduction in the energy intensity of Flanders. The financial-economic crisis of 2008-2009 slowed this trend but thanks to a mild winter and lower non-nuclear power production, 2011 again saw a generally downward trend. A reduction in energy intensity is also helping Flanders to meet its targets for

renewable energy and to reduce its greenhouse gas emissions. After Finland, Flanders has the highest energy intensity of the EU 15.

During the period 2000-2011, the energy sector was able to reduce emissions of most air pollutants: ozone precursors (-66 %), acidifying substances (-75 %), heavy metals (-76 %) and PM_{2.5} (-89 %). The decrease in the emissions of greenhouse gases only started in 2008 (-20 % in the period 2000-2011). In 2011, the environmental impact fell by more than the reduction in the activity level of the energy sector.

The share of green energy in the total net electricity production increased from 0.4 % in 2000 to 8.0 % in 2011. Compared to gross domestic electricity consumption, domestic green power accounts for a share of 6.9 %. In 2010, this share was 5.3 %. Together with the share of power generated by CHPs of 19.7 %, the Pact 2020 target of 25 % environmentally friendly produced power was reached in 2010.

Agriculture

In the period 2000-2008, agriculture improved its eco-efficiency by reducing environmental pressure while the final production value remained constant. The environmental pressure then increased for a number of environmental themes, such as greenhouse gases, particulate matter and energy consumption, due to greater numbers of livestock since 2008 and greater energy consumption for greenhouse horticulture. Acidifying emissions and phosphorous discharges into surface water remained steady during the period 2008-2011. Therefore the environmental pressure from eutrophication is still high.

On 8 % of the agricultural area, cultivation is more environmentally friendly than legally required, including the organic agricultural area. The organic agricultural area also includes the agricultural area being converted to organic cultivation and in 2011 reached its highest level since 1994 at 0.7 % of the total agricultural area. The European average (EU-27) is 5.3 % (2010 figure).

Transport

The environmental performance of the new Flemish vehicle fleet improved during 2008-2011. Encouraged by federal incentives, in 2011 the target 2015 for CO₂ emissions from new passenger cars was already achieved in Flanders. However, the subsidies also encourage the purchase of diesel vehicles (because diesel vehicles emit on averages less CO₂ than petrol vehicles). This led to increased emissions of nitrous oxides and particulate matter. In 2012, the federal subsidies were abolished for budgetary reasons. In Belgium, average CO₂ emissions from new company cars in 2011 were still higher than for new private vehicles. Company cars also use diesel more often.

Further tax reforms taking into account all emitted pollutants therefore seem appropriate. In March 2012, Flanders took a first step by reforming the traffic registration tax taking into account the emissions of both CO₂ and other pollutants.

Trade & services

The importance of the trade & services sector increased over the period 2005-2011. The gross value added increased by 11 % and the number of persons employed by 9 %. The environmental pressure was decoupled from activities. In 2011, the NMVOC emissions were at the same level as in 2005, emissions of ozone-depleting substances fell by 71 % and emissions of greenhouse gases by 17 %. The decrease in both the energy consumption and the greenhouse gases emission in 2011 can largely be explained by the mild winter in 2011.

2 Environmental themes

Dispersion of VOCs

Volatile organic compounds (VOCs) play a role in photochemical air pollution as a precursor. NMVOC emissions in Flanders are falling continuously. The emissions target for 2015 for stationary sources of the MINA plan 4 (2011-2015) have been achieved since 2009. Emissions from non-stationary sources need to decrease further to meet the target on time.

The average benzene concentration in the ambient air is well below the European Air Quality Directive target for 2010.

Dispersion of POPs

Emissions of dioxins and polycyclic aromatic hydrocarbons (PAHs) from the heating of dwellings with solid fuels (wood and coal) and the illegal incineration of waste need continued attention. Awareness raising (e.g. LNE campaign '*Stook slim*'), product standardisation for stoves and the banning of strongly polluting devices are important measures here.

Half of PAH emissions are caused by transport. Since 2000, PAH emissions from transport increased by half, mainly from growing transport flows and the increasing use of diesel and catalytic converters.

Many PAHs – benzo(a)pyrene being the best known – are mutagenic and carcinogenic. The target value of 1.0 ng B(a)P/m³ has been achieved everywhere in Flanders.

The quality of watercourse sediments has improved in recent years in terms of concentrations of polychlorobiphenyl (PCB) and organochloride pesticides, but 22 % of all measurement locations are still contaminated or heavily contaminated. For PAHs, the contamination of watercourse sediments has not improved and 42 % of the measurement locations are contaminated or heavily contaminated.

Dispersion of heavy metals

Emissions of heavy metals into the air have decreased since 2000. However, the trends in 2010 and 2011 are not clear. Between 2003 and 2011, there was a change for the better in the concentrations of heavy metals in the air at most measurement stations. The European limit value for lead and the Flemish limit value for cadmium were achieved throughout Flanders in 2011. The European target values for arsenic, cadmium and nickel must be achieved from 31 December 2012. These values are still not being achieved at some locations. In Hoboken, for example, some 3 000 inhabitants of Hoboken are exposed to too high concentrations of arsenic.

The presence of heavy metals in the surface water and in watercourse sediments is showing a generally favourable trend. But there are still many cases of standards being exceeded. For surface water this is especially the case for arsenic (19 %) and zinc (15 %), and for watercourse sediments copper (41 %) and zinc (40 %).

Dispersion of pesticides

The 'pressure on aquatic life from crop protection agents' indicator weights the quantity of the active substance in each crop protection agent sold each year in terms of its toxicity for aquatic organisms and persistence in the environment. In 2010, the indicator value was more than 60 % lower than in 1990. The MINA plan 3+ (2008-2010) target value was, therefore, met.

Favourable trends can also be seen for the presence of pesticides in surface water and watercourse sediment. Examples include diuron, dichlorvos, endosulfan, hexachlorocyclohexane and atrazine, not coincidentally substances for which restrictions on use or prohibitions were introduced. However, some pesticides are still quite often present in too high concentrations.

Dispersion of particulate matter

The average annual PM_{10} concentration gives an illustration of the long-term exposure to particulate matter in the ambient air. The strong downward trend from the 1990s has not continued in recent years. In the period 2009-2011, the annual average PM_{10} concentration stagnated at $29 \mu\text{g}/\text{m}^3$. The limit value of $40 \mu\text{g}/\text{m}^3$ from the European Air Quality Directive is being achieved everywhere since 2008. The annual average $PM_{2.5}$ concentration fluctuated between 2009 and 2011 at around $19 \mu\text{g}/\text{m}^3$, thus achieving the target in MINA plan 4 (2011-2015). However, the health guideline value of $10 \mu\text{g}/\text{m}^3$ $PM_{2.5}$ of WHO is well below all currently measured values.

Reaching the daily average target value for the PM_{10} concentration continues to be problematic. The number of days in 2011 when the daily average PM_{10} concentration was too high was twice the figure for 2010 and, therefore, climbed again above the limit value applying since 2005.

The chemical composition of particulate matter has a considerable impact on health effects. In 2012, an emissions inventory for elemental carbon (EC) was carried out for the first time. Since 1995, EC emissions have halved due to the decrease in transport emissions.

Nuisance

The results of the Written Environmental Investigation (WEI) in 2008 show that noise, odour and light are major sources of nuisance for the population. Noise was the most important source with 10.3 % of people suffering serious to extreme nuisance in 2008. There was a decrease for noise and odour nuisance compared to 2001 and 2004 but not for light.

Subjective factors, such as the zeitgeist and media attention, were excluded in the calculation of potential nuisance. Some 15 % of the population experiences potential nuisance from road traffic.

Eutrophication

Manure processing helps the agricultural sector to keep manure within the legal limits. In 2011, 19 % of the nitrogen from animal manure was kept outside the Flemish agricultural area thanks to manure processing and export. Nitrogen emissions into the air and the nitrogen and phosphorus pressure on surface water remain much too high. The nitrate concentration is too high at 28 % of measuring points of surface water in agricultural areas. The average phosphorus concentration in agricultural areas is 0.4 mg P/L, while the standard for small streams is 0.1 mg P/L. The contribution by agriculture is essential to meet the targets for surface water, groundwater and nature.

Acidification

The emissions targets 2015 in MINA plan 4 (2011-2015) were met for ammonia in 2005 and sulphur dioxide in 2010. A substantial effort will still be needed before 2015 for emissions of nitrogen oxides (NO_x). About half of NO_x emissions come from transport (diesel car emit more NO_x than petrol vehicles). The further reduction in NO_x emissions should ensure that Flanders meets the European standards for NO_2 concentrations in the air. In 2012, the European Commission granted an extension until 2015 for attaining the annual NO_2 limit in two zones of Antwerp.

Despite a reduction in acidifying emissions, acidifying deposition is still too high in different areas of Flanders to protect nature. The critical load for acidification is exceeded in 32 % of the total area of nature. Efforts are still needed to meet the target 2015 of 20 % in the MINA plan 4 (2011-2015).

Photochemical air pollution

2011 was a favourable ozone year, both for the exceedance days as the excess for health and vegetation. The European target value for 2010 (maximum 25 days per calendar year, with the highest 8-hour average ozone concentration exceeding $120 \mu\text{g}/\text{m}^3$ for the day, averaged over 2010, 2011 and 2012) remains achievable, given that the summer of 2012 was again meteorologically favourable. The European long-term target for the protection of public health will only be achieved if the emissions of ozone precursors are further reduced, not only in Flanders, but in Europe and throughout the world. The high NO_x emissions in particular continue to be a bottleneck.

Depletion of the ozone layer

The MINA plan 3+ (2008-2010) aimed to reduce the emission of ozone-depleting substances by 2010 by at least 74.5 % with respect to the emissions in 1999. Emissions were 28 % and 35 % below this target in 2009 and 2010, respectively. Observations from satellites point in the direction of a recovery of the density of the ozone layer, but it is still too early to interpret this as a definitive recovery.

Climate change

As a result of a clear decrease with respect to 2010, greenhouse gas emissions in 2011 resumed the downward trend initiated in 2005. CO₂ emissions – for 83 % due to the use of fossil fuels - fell in 2011 below the 1990 level for the first time. This can to a large extent be ascribed to the exceptionally mild winter months which saw heating requirements one-third lower than in 2010. The effects of the prolonged crisis also played a role, as did the implementation of energy-saving measures and the switch to more sustainable energy sources.

European emissions trading (ETS) now regulates 42 % of Flemish greenhouse gas emissions. The bulk of European ETS installations can be found in the industry and energy sector. As in most other EU member states, more free emissions allowances were extended to industrial installations, with the exception of power producers, than were really needed. This had an important negative effect on the price of emissions rights. The surplus averaged 1.8 % during the period 2005-2011.

In Belgium it is now on average 2.3 °C warmer than in the pre-industrial period. The temperature increase is significant over the four seasons but is most pronounced in the spring. With an annual average temperature of 11.6 °C, 2011 was the absolute record year since measurements began in 1833. Since the 1990s, we have had on average one heat wave per year. Heat waves can lead to significantly higher excess death rates. Belgium has seen a slow but significant increase in annual average rainfall, notably in the winter months. In 2011, science was able to show for the first time that human activities contribute to the observed intensification of extreme periods of precipitation in the northern hemisphere. The past decade also showed a clear trend in Uccle in the number of days of heavy precipitation (at least 20 mm/day). Over six decades, the average number has increased from three to six per year. The coast showed a clear, significant increase in the annual average sea-level.

Surface water quality

The pollutant load of domestic origin that the Flemish surface waters have to deal with decreased further in the period 2000-2011 due to the systematic expansion and improvement of the public waste water treatment network. The load on the surface water from companies fell noticeably but there has been no further reduction in recent years. The nitrogen and phosphorus losses from agriculture were lower in 2011 than in the early 2000s, but the reduction is less pronounced than for households and companies.

The physicochemical quality of the surface water has improved since 2000 for a number of substances, as has the watercourse sediment quality. However, the standards are still being exceeded in both cases. The biological quality of the surface water also improved but the good state aimed for is still far off.

Considerable efforts are still needed in order to reach the final objective. Further expansion and improvement of the public water treatment system and the approach to nutrient losses from agriculture are needed. Moreover, the watercourses must be restored to a more natural state, e.g. remeandering and nature-friendly river banks.

Water quantity

Total water use (excl. cooling water) showed little or no change over the period 2000-2006. In 2006-2009, there was a clear decrease, which however did not continue in 2010. In 2000-2010, the use of tap water and groundwater decreased. Domestic tap water use fell from 110 to 99 l per person per day. Government initiatives such as permits, levies and awareness campaigns seem to have had an effect. Furthermore, the price of tap water has increased.

Falling groundwater levels can cause problems for companies, drinking water companies, agriculture and nature. Nearly 37 % of the analysed groundwater levels showed no statistically significant trend in the 2000-2011 period, nearly 44 % showed a decrease and nearly 20 % an increase. Climatological conditions often influence phreatic layers but in many places too much groundwater is being pumped from deeper layers. Because the trends often differ greatly according to the layer and the area, a differentiated policy of groundwater levies and permit should offer a tailored approach.

Since 1970, the number of recorded floods per decade has increased markedly in Belgium, (Western) Europe and throughout the world. The economic damage from floods has also increased over past decades. This increase is caused by the increase in population and prosperity, but probably also because of better data collection. There is still no final proof that climate change is the reason for a trend in floodings on a continental scale.

Soil quality

12.9 % (175 967 ha) of the soil in Flanders is sealed. At 7.4 %, Belgium is the country with the highest soil sealing in Europe (38 countries). The Flemish policy for tackling increasing soil sealing is still in the study phase.

11 % of the major erosion problems in Flanders have been tackled. The area of erosion-sensitive crops grew by 3 % during 2007-2011. The erosion policy is in development, with new measures introduced in 2011, mostly based on voluntary action.

The soil in Flanders is contaminated by hazardous substances from all kinds of human activities. The cost of soil remediation (with conformity certificate) in 2011 was estimated at 134 million euros. The estimated amount for the period 1997-2011 was some 1.4 billion euros.

Waste

In 2011, 524 kg of household waste were collected per inhabitant, 6 % less than in 2000. Flanders is still one of the leaders in Europe. In 2010 the amount of primary industrial waste (excl. construction and demolition waste, sludge and contaminated soil) decreased by one-fifth compared to 2004.

The share of non-selectively collected waste is low: residual waste accounts for 29 % of total household waste, and non-selectively collected industrial waste 11 % of all primary industrial waste (excl. construction and demolition waste, sludge and contaminated soil). The amount of residual household waste, however, has stagnated since 2009. The decrease of non-selectively collected industrial waste between 2005 and 2008 did not continue in 2009 and 2010.

3 Consequences for people, nature and economy

The environment, people & health

The number of DALYs reflects the number of years of healthy life that a population loses due to death or disease, taking into account the seriousness and duration of the disease. In Flanders, the burden of disease from a series of environmental pollutants (including particulate matter, dioxins and heavy metals) accounted for some 8 % of the total burden of disease. This means that five healthy days are lost per inhabitant each year or slightly more than one lost healthy life year given lifelong exposure to current levels. For sensitive persons, such as asthma patients, the impact will be greater.

At an international (WHO, European Union) and regional level (Flanders), policy seeks to reduce the exposure to pollutants. There is a clear reduction for a number of POPs in breast milk, and of lead in newborns and young people.

The environment & nature

After years of a clear increase in the number of overwintering waterfowl in Flanders, recent years have seen a levelling-off or reduction in these numbers for most species. This may be a result of the improved ecological quality of the watercourses, making them less rich in food so the food supply falls.

In Flanders, there is growing evidence of the current impact of climate change on nature. Some dragonflies fly earlier in the season and their flight period lasts longer. Pollen production is starting earlier for a number of trees, including birch, and various grass species.

When the MINA plan 4 (2011-2015) started, the 'effective nature' area was 63 329 ha or 90 % of the plan target.

The environment & economy

After a slight reduction in the resources for the environment in 2009 and 2010 as a result of cost savings within the Flemish Government, expenditure increased in 2011 and 2012. More than half of this government expenditure went to 'water and watercourse sediments'.

In Belgium, the share of sustainable investment products with respect to the total capital invested increased from 9.0 % in 2010 to 9.6 % in 2011. The capital accrued in sustainable savings increased by 118 % but with a market share of 1.27 % is still a marginal phenomenon.

The Index for Sustainable Economic Welfare (ISEW), a new welfare indicator for Flanders, was developed in response to the shortcomings of the gross domestic product (GDP). The difference between the GDP and the ISEW increased in the period under study. While GDP grew by 33.8 % between 1990 and 2009, ISEW fell by 16.3 %.