

Eco-efficiency

The concept of eco-efficiency involves the better utilisation of resources with reduced environmental impact. The World Business Council for Sustainable Development (WBCSD), of which Roche has been a member ever since it was founded, has identified the following factors in this connection:

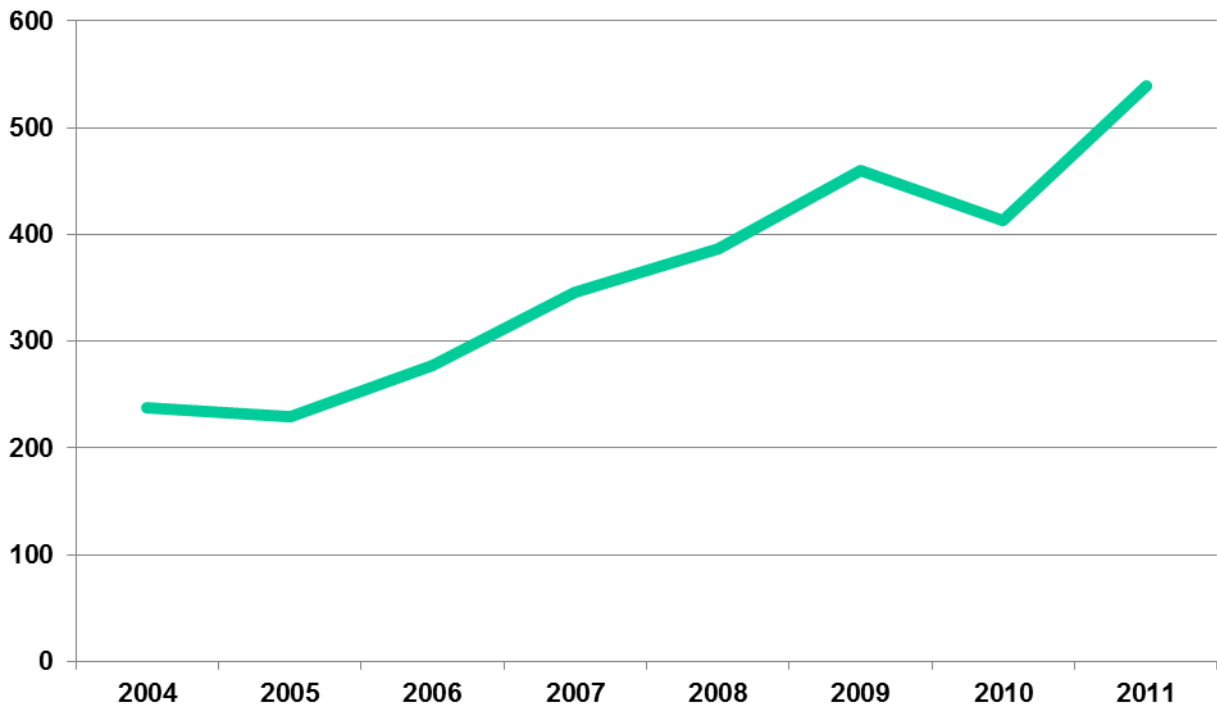
- reducing material intensity
- reducing energy intensity
- reducing waste and emissions
- increasing recycling
- using renewable resources
- improving product life
- increasing dematerialisation, i.e. increasing the proportion of services and reducing consumption of resources

When it comes to improving eco-efficiency, a pharmaceutical company like Roche will primarily focus on reducing the material and energy consumption of processes, reducing quantities of waste and using renewable resources, in addition to increasing levels of non-material services.

Roche quantifies eco-efficiency by the EER value (Eco-Efficiency Rate), a metric which it created itself. This index relates the sales achieved to expenditure on environmental protection and the environmental impact of Roche's activities. This impact is calculated in environmental impact points according to the BAFU method as described in the chapter "ecobalance".

The EER value is the ratio of sales to the product of environmental spending and environmental impact: the more efficiently business activity (sales) is increased while expenditure on environmental protection is limited and environmental harm reduced, the higher is the EER value and thus eco-efficiency.

With a few fluctuations as a result of changes in the business environment due to take-overs or relocation of activities, this value has undergone continuous improvement over the years.



| Jahr | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|
| EER | 237.79 | 229.12 | 277.39 | 346.09 | 386.77 | 460.25 | 413.64 | 538.89 |

The decrease of the EER value in 2010 could be stopped despite decreasing sales figures. The reduced environmental impacts and the lower expenditures for environmental protection in the reporting gave a positive trend to the development.

Ecobalance

The ecobalance is providing a view on the environmental impacts of our activities without considering economical parameters. According to the method set out by the Swiss Agency for the Environment (BAFU) environmental impact points are allocated to ecologically relevant parameters such as emissions, waste, energy- and raw materials consumption. The individual contributions are added and related to the number of employees to give the environmental impact per employee.

For the determination of the weighting factor for individual effects in terms of ecological impact points, the BAFU applies the so called principle of ecological scarcity. The factor is determined via the ratio of critical (or geogenic) and anthropogenic flows of materials. Increasing knowledge, changing use patterns, new legislation require periodic adaptation or new determination of these weighting factors. For calculating total environmental impacts per employee we are using the 2006 weighting factors as published in 2008.

Energy has different weighting factors depending whether it originates from renewable (sustainable) or non renewable sources. In addition landfilled waste is weighted differently depending on its nature, i.e. whether it is inert or degradable (containing organic carbon). In the reporting year the global ecological impact of the Roche operations was 6.86 Mio impact points per employee:

| Group Ecobalance 2011 according to BUWAL | | | | |
|--|--------------------|--|-------------|------------------------------------|
| UBP = Umweltbelastungspunkt (environmental impact value) | | | | |
| | | BUWAL UBP (per MJ, g or m ³) | amounts (t) | impact (= UBP/10 ⁶) |
| Emissions to the air (t) | CO ₂ | 0.31 | 1023521.000 | 317'292 |
| | NO _x | 45.00 | 222.000 | 9'990 |
| | SO ₂ | 30.00 | 8.000 | 240 |
| | VOC | 18.00 | 124.000 | 2'232 |
| | R11 equivalentes | 11000.00 | 3.876 | 42'636 |
| | PM10 | 150.00 | 20.000 | 3'000 |
| | | | | |
| Emissions to the water (t) | TOC | 7.00 | 228.000 | 1'596 |
| | heavy metals | 8900.00 | 0.288 | 2'563 |
| | P | 1200.00 | 37.697 | 45'236 |
| | N total | 64.00 | 87.396 | 5'593 |
| | | | | |
| Landfilled waste (t) | inert | 0.61 | 2945.000 | 1'796 |
| | construction waste | 0.61 | 11724.000 | 7'152 |
| | reactor waste | 2.30 | 6095.000 | 14'019 |
| | | | | |
| Primary energy (TJ) | renewable | 1.10 | 1250.000 | 1'375 |
| | non renewable | 3.30 | 12121.000 | 39'999 |

| | | | | |
|--------------------------|------------|-------|--------------|----------------|
| Raw materials (t) | amount | 1.00 | 67042.000 | 67'042 |
| Water (m ³) | withdrawal | 97.00 | 20421724.000 | 1'981 |
| Total | | | | 563'742 |
| Total number employees | | | 81909 | |
| Impact / employee | | | | 6.88 |