# Landscape of the European Chemical Industry

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## Switzerland

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## 1. Description of the priority status of the chemical sector in relation to the overall industry sector ranking of the regions

The business association scienceindustries assembles nearly all important chemical, pharmaceutical and biotech companies operating in Switzerland. Its approximately 250 member companies contribute 40% of all Swiss exports and constitute the country's number one export industry. With exports of CHF 79 billion and imports of CHF 39.4 billion in 2012, science industries companies earned a trade surplus of CHF 39.6 billion during that year – the largest export surplus of all Swiss industrial sectors. With a share of about 5% of world exports of chemical and pharmaceutical products, Switzerland ranked seventh in 2012 among the important export nations.

## 2. Situational analysis of the chemical industry

With a GDP-share of more than 4%, scienceindustries companies constitute one of the most important and dynamic Swiss industries. They rank first, ahead of the machinery industry. Between 1995 and 2011, production increased at an average annual rate of 12.4%; the entire Swiss industry achieved a figure of 2.8% in the same period of time.

With 65 000 employees in Switzerland (2012), science industries companies are one of the largest Swiss industrial employer. However only around 14% (2012) of the world-wide employees of the top ten science industries companies are employed in Switzerland. About 275 000 persons are employed in branch offices and subsidiaries abroad. 62% of all employees in scienceindustries member companies are assigned to a higher qualification category by official statistics, compared to an average 42% in all Swiss industries.

## Research policy

Switzerland is an important location for research and manufacturing for globally active science industries companies. A third of the worldwide research investments of scienceindustries companies are spent in Switzerland. In 2012 around CHF 6.6 billion was spent on research and development in Switzerland, whereas the respective turnover in Switzerland amounted to only around CHF 2.4 billion.

The member companies of scienceindustries operate nearly exclusively in the field of specialties, mainly in life science products. The product focus is on pharmaceuticals and diagnostics, vitamins, crop protection agents, flavours and fragrances and fine chemicals. Specialty chemicals for industry purposes, pigments and dyestuffs constitute the rest. The global annual demand for some of these specialties is often below a few metric tons or even less. All member companies are strongly export-oriented. The Swiss market counts for less than 2% of the production.

The regional locations of the science industries:

Pharmaceuticals:

North-western (Region Basel) and Central Switzerland (Regions Zug, Lucerne). Prescription and over-the-counter drugs (patented or generic) as well as their ingredients to be used in formulations. Companies: Novartis, Roche, Lonza.

Diagnostics:

Central Switzerland (Regions Zug and Lucerne). Health care products which support the physician to get additional information for curing a disease. Company: Roche.

Vitamins:

North-western Switzerland (Region Basel). Bulk product to be used in the manufacturing or pharmaceuticals, foodstuffs and animal feed. Company: DSM.

Flavours and fragrances:

Western Switzerland (Region Lake Geneva). Products not ready for consumption, but rather ingredients in the form of 'bulk products' to be used in the manufacturing of foodstuffs as well as cosmetics and perfumes. Companies: Givaudan, Firmenich.

Crop protection agents:

North-western Switzerland (Region Basel) and Wallis. Herbicides, fungicides and insecticides including their active ingredients. Primarily used in agriculture. Company: Syngenta.

Specialty and fine chemicals:

Throughout Switzerland. Numerous highly specialised products providing specific effects, often manufactured in relatively small quantities and in response to specific needs of individual customers. Professional advice to customers is usually of considerable importance with these products. Companies: Lonza, Clariant, EMS-Chemie.

## 3. Strengths and weaknesses of the existing chemical industry base

### Strengths

The strategy of concentration on high end specialties is the key to success. With their high-grade specialized products, Swiss companies have established a world-wide presence, and often a world market leadership. The strategy of specialties requires important and continuous efforts in R&D. Research and development for new products and processes are the lifeblood of scienceindustries companies. Using scientific findings and methodologies, science industries companies continuously develop new products and processes which satisfy existing and future requirements of customers. The necessary significant investment into research can only be made if the companies can rely on future returns. Research expenditures are funded by the profits made from the sale of today's products. The most important ingredients for this innovation process are the scientific and technological know-how and the skills of the workforce.

Given the dimension of investments necessary for research and development of a new drug or plant protection substance, the innovative activity of small- and medium-sized enterprises in the industry has to be concentrated on areas within well-defined borderlines. The concentration of several companies involved in world leading-edge research in Switzerland – called a "cluster" in innovation theory – creates favourable conditions for the success of SMEs too. The increasing orientation of the large companies towards highly innovative fields is accompanied by a corresponding outsourcing of research and manufacturing activities. The niches that open up allow a fair number of smaller- and medium-sized enterprises to operate innovatively as specialized sub-contractors and service providers. Their innovative activity relates to this specialized, limited role within the entire industrial network in a research cluster.

Because the cost of research and development is, at the end of the day, financed by each company, the regulatory environment – including issues concerning patents and prices – is a very important factor.

### Weaknesses

The lack of skilled professionals and a quota system applying to workers outside Europe represents an hurdle for Swiss industry. The necessary, significant investment in research can only be made if companies can rely on future returns; research expenditures are funded by the profits made from the sales of today's products. Without a repatriation of the industry's sales profits, Switzerland would be inconceivable as a research location.

## 4. Top national strategies (public or private) that are putting the region or country in a European/globally advantaged position

Scientific innovation is the basis for the economic success of the science industries. It is based on well-equipped regional centres, consisting of universities, private research institutes and companies. For some years the research activities of the Swiss scienceindustries companies abroad have shown a particularly dynamic development. Swiss companies have had an extensive international network of research centres for decades. For example, Novartis and Roche operate no less than seven large research centres outside Switzerland, namely in the US, Singapore, Japan, United Kingdom and Germany. Moreover, co-operation with other third companies and universities has become noticeably more important in recent years. The major investments in biotechnology and genetic engineering companies, as well as the tight network of research alliances and licence agreements, illustrate the international nature of Swiss research efforts. Biotech companies are particularly important in identifying and developing new ideas, new technologies and innovative products. Companies in the north-western part of Switzerland currently allocate around 20% of their R&D budgets to co-operative projects with external research groups.